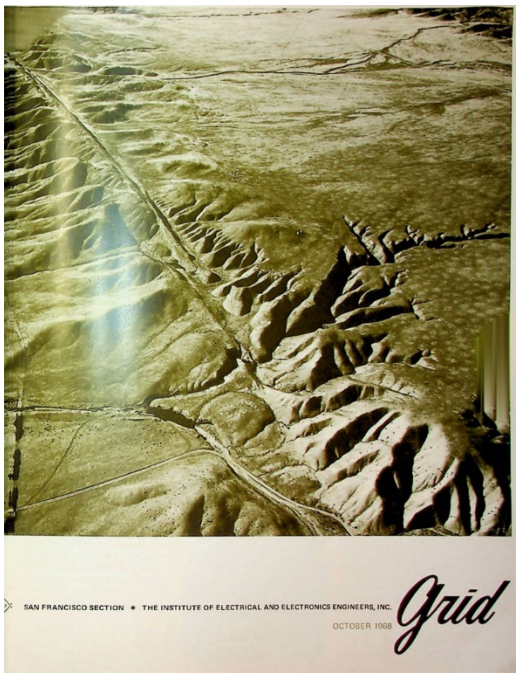
EDITOR'S PROFILE of this issue

from a historical perspective …

with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)



October, 1968:

Cover: The San Andreas Fault, cutting across the Carrizo Plain in central California (article on page 12). Stream channels can be seen jogging as they cross the fault. After a rainy winter, the Carrizo Plain is abloom with wildflowers, as I've witnessed.

Page 2: Gene Amdahl, of IBM Advanced Computer Systems in Menlo Park, speaks on "Balance in Large Computer System Design" for the Computer chapter (story on page 5). He managed the architecture design for the IBM 360 series. He formulated "Amdahl's Law" which focuses on identifying bottlenecks in architectures, and he goes on to found Amdahl Corporation (where I worked for 7 years) to produce IBM-compatible mainframes using air-cooled VLSI (primarily ECL logic). I knew Gene, who was a member of my church in Saratoga.

Page 3: Martin Hellman gives a talk on "Learning with Finite Memory". He gets his PhD in 1969 from Stanford, and is subsequently known for his invention of public-key cryptography in 1976, in cooperation with Whitfield Diffie.

Page 14: Prof. William Rambo, a Fellow of the IEEE (and author of one of my favorite textbooks, on tubes). After graduating from Stanford, he worked on VHF and microwave frequencies for radar at the Radio Research Lab at Harvard during WW II under Fred Terman, then came back to Stanford in 1951 during the klystron era.

Page 16: Planning begins on the Stanford Instructional Television Network (SITN). This program allowed working engineers to take graduate EE classes and earn degrees. I used it in later years to broadcast my IEEE evening short courses (see article in the December 1980 issue). Founding partners were Bechtel, HP, SRI, Watkins Johnson, Lockheed, NASA Ames and others.

Page 19: Fred Terman argues that "have-not" engineering schools can still compete for government research contracts, even though it's difficult. He points out that the "have-not" Stanford of 1946 sparked its upward mobility by competing for these Federal dollars for its faculty members.

SAN FRANCISCO SECTION • THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

OCTOBER 1968

Grid

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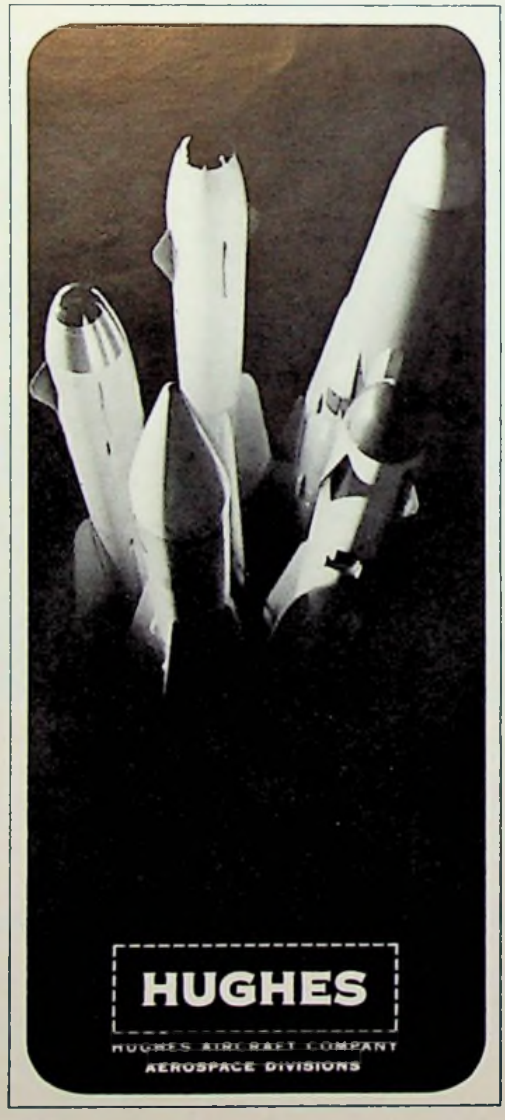

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ON THE COVER

View looking north across the San Andreas Fault. The Fault in the CARRIZO PLAIN area of Central California (Southwest of Bakersfield) shows as a "gash" or series of elongated valleys.

Note that stream channels jog or are offset to the right as a result of "right slip" on the fault.

At least 100 miles of slip has occurred in the area during the past 25 million years, the west side having moved relatively northwestward.

Photographer – Robert E. Wallace, Ph.D., Research Geologist, National Center for Earthquake Research, U.S. Geological Survey.

On Sept. 26th, Drs. Wallace, R. M. Hamilton and H. W. Olsen were speakers at the Santa Clara Valley Subsection meeting, on the subject of earthquakes and earth movement.

At the October 28th East Bay Subsection meeting, Dr. Bruce A. Bolt will discuss earthquakes in relation to the present deformation of California. (STORY ON PAGE 12).

IEEE Grid

volume 15
number 2

OCTOBER, 1968

Published monthly except July and August
by San Francisco Section
Institute of Electrical and Electronics Engineers

Address all mail to

San Francisco Section Office, IEEE
Suite 2210, 701 Welch Road
Palo Alto, Calif. 94304
Telephone: (415) 327-6622

Jean Helmke, Office Manager
Marilynn Dwight, Adv. & Editorial Assistant

Members send address change promptly to
IEEE, 345 East 47th St., New York, N.Y. 10017
(Telephone: (212) PL2 6800)

Advertising
E. A. Montaño, IEEE
701 Welch Rd., Palo Alto, Calif. (415) 327-6622

Second class postage paid at Palo Alto

Subscriptions
$4.00 (members), $6.00 (others);
overseas, $7.00 per annum

MEETING

AEROSPACE & ELECTRONIC SYSTEMS Story on page 6

NEW DEVELOPMENTS IN ALL-WEATHER LANDING. Joint meeting with the Society of Information Display. George Yingling, Flight Dynamics Laboratory, Wright-Patterson Air Force Base.

Oct. 24, Thursday, 8 PM, SRI Conference Room A/B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. No dinner.

AUTOMATIC CONTROL Story on page 19

CONTROL OF THE STANFORD LINEAR ACCELERATOR. Dr. Kenneth B. Mallory, head of instrumentation and control group at SLAC.

Oct. 15, Tuesday, 8 PM, University of Santa Clara Engineering Center. Dinner: 6:30 PM, Le Boeuf, across from the university. Order from menu. No reservations required.

CIRCUIT THEORY Story on page 8

A COMPUTER ANALYSIS OF NETWORKS WITH PERIODICALLY OPERATED SWITCHES. Dr. Ming L. Liou, Bell Telephone Laboratories, North Andover, Mass.

Oct. 30, Wednesday, 8 PM, Room 134 McCullough Bldg., Stanford. No dinner.

COMPUTER Story on page 5

BALANCE IN LARGE COMPUTER SYSTEM DESIGN. Dr. Gene M. Amdahl, IBM Corp., Menlo Park.

Oct. 22, Tuesday, 8 PM, Room 134 McCullough Bldg., Stanford. Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto; chef's special steak $4.15 incl. tax & tip. Reservations: Tom Whitney, 326-7000 ext. 3112 or 2707 by Oct. 21.

EAST BAY SUBSECTION Story on page 12

THE USE OF EARTHQUAKES TO DETERMINE THE PRESENT DEFORMATION OF CALIFORNIA. Dr. Bruce A. Bolt, Director Seismographic Stations and Professor of Seismology at Univ. of California.

Oct. 28, Monday, 7:00 PM, PG&E Oakland Service Center, 4801 Oakport St., Oakland. Dinner: 6:00 PM, Venetian Room, 6701 Foothill Blvd., Oakland, Meeting limited to 75 – dinner limited to 25, so make early reservations: Linda Jarrett, San Jose (408) 291-4567, Ruth Emerson, Oakland, (415) 835-8500, ext. 337; Jean Helmke, Palo Alto (415) 327-6622; Mary Vilter, San Francisco, (415) 399-4974.

EDUCATION Story on page 4

FIRST FORMAL MEETING. COMPUTERS FOR STUDENT USE. Dr. B. M. Oliver, Hewlett-Packard Co., Robert Albrecht, Portola Institute, Menlo Park and John Koudela, Hewlett-Packard.

Oct. 12, Saturday: Coffee 9:30 AM, meeting 10:00 to 12:00 AM. Lunch 12:00 to 1:00 PM. After lunch: machine operation by attendees. Lunch reservations; Jean Helmke 327-6622.

ELECTRO-MAGNETIC COMPATIBILITY Story on page 5

PANEL DISCUSSION: **THE EMC ENGINEER VS. THE DESIGN ENGINEER: A COMMUNICATIONS PROBLEM.** Moderator Rod Carlson, section manager, Hewlett-Packard Co.

Oct. 21, Monday, 8 PM, Hewlett-Packard Auditorium, 1501 Page Mill Rd., Palo Alto. Dinner: Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto at 6 PM. Reservations: B. Swift, 326-7000, ext. 3088 by noon Oct. 18th.

ADVERTISER/AGENCY INDEX

CALENDAR

INFORMATION THEORY Story on page 6

LEARNING WITH FINITE MEMORY. Dr. Martin Hellman and Prof. Thomas Cover, Stanford University.

Oct. 17, Thursday, 8:30 PM, Stanford Research Institute Bldg. 1, Conference Room B, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, Scotty Campbell's, 2907 El Camino Real, Redwood City. Reservations: Ethel Weaver, 326-6200, ext. 2389 by Oct. 16th.

NUCLEAR SCIENCE Story on page 8

WHAT CAN BE DONE TO DEVELOP CREATIVITY AND TO KINDLE THE SPARK OF GENIUS? The meeting will consist primarily of an investigation of the contents of the Hall of Science as a glimpse of an answer to this question.

Oct. 15, Tuesday, 8 PM, The Lawrence Hall of Science, North Canyon road east of the University of California, Berkeley. Dinner: Claremont Hotel, Ashby and Domingo at 6:45 PM in the South Porch, $4.50 including tax & tip. Reservations: Mrs. June Costa, Lawrence Radiation Lab., Livermore, 447-1100, ext. 7036.

PARTS, MATERIALS & PACKAGING Story on page 6

FIRST OF A SERIES OF 5 LECTURES ON EIGHT DIFFERENT ASPECTS OF MICROELECTRONICS illustrated on film and tape. Dr. D. A. McWilliams, manager Microelectronics, LMSC, moderator. Speakers are Edward Keonjian of Grumman Aircraft and J. T. Staller of Staller Assoc., Norwood, Mass.

Oct. 22, Tuesday, 7:30 PM, Hewlett Packard Bldg. 5, Conference Room 5M, 1501 Page Mill Rd., Palo Alto. For further information contact George Reyling, 326-4000. No dinner.

POWER Story on page 13

DESIGN OF THE NUCLEAR POWER PLANT, Diablo Canyon site. James O. Schuyler, PG&E Co., San Francisco, Supervising mechanical engineer.

Oct. 8, Tuesday, 7:30 PM, Engineers' Club of San Francisco, Hong Kong Bank Bldg., Pine & Sansome Sts., San Francisco. Cocktails; 5:30 PM; dinner: 6:30 PM; meeting: 7:30 PM. Reservations: Engineers' Club: 421-3184 by Oct. 7th.

RELIABILITY Story on page 13

TOUR OF LOCKHEED R & D LAB. Dr. W. P. Cox, senior staff engineer, LMSC, Palo Alto.

Oct. 17, Thursday, 7:30 PM, Lockheed M & S Co., 3251 Hanover St., Palo Alto, Bldg. 202. "Meet the speaker" 5:30 PM; dinner 6:15 PM at Stanford View Restaurant, 1921 El Camino Real, Palo Alto. Barbecued steak $3.00. Reservations: Fran Hamada/Lew Finch, 743-1577, by Oct. 15.

SANTA CLARA VALLEY SUBSECTION Story on page 8

LASERS AND HOLOGRAPHY. Norman Silbertrust, chief engineer, Optics Technology. Ladies night.

Oct. 16, Wednesday, 6 PM, Holiday Inn, Sunnyvale; turn off Bayshore in Sunnyvale at Lawrence Expressway (east). Dinner: 7 PM at the Holiday; filet of beef en brochette, rice pilaf and vegetable du jour — $5.50. Reservations: Carl Hollstein, 227-7100 ext. 4988 or Don McCauley, 326-4350, ext. 5928 or 5840.

SYSTEMS SCIENCE & CYBERNETICS Story in Sept. Grid

RESEARCH IN INTELLIGENT MACHINES AT SRI. Dr. Charles A. Rosen, head, artificial intelligence group, SRI.

Oct. 10, Thursday, 8 PM, SRI Conference Room B, 333 Ravenswood Ave., Menlo Park. Dinner: 6 PM, Red Cottage, El Camino, Menlo Park. Order from menu. Reservations: Margie Hensley, 324-4701 by 5 PM, Oct. 9th.

1st Meeting: Computers for Students

Dr. B. M. Oliver

The Education Chapter will hold its first formal meeting on Saturday, October 12 at San Jose State College, Education Building Room 100, 7th and San Carlos Streets. The following schedule is planned:

Coffee: 9:30 a.m.; Session: 10:00 to 12 noon; Lunch: 12 to 1:00 p.m. (call Jean Helmke for reservations–327-6622).

1:00 p.m.: Machine operation by attendees.

The session topic will be: COMPUTERS FOR STUDENT USE. Moderator: Bernard M. Oliver, Hewlett-Packard Co.; speakers: Robert Albrecht, Portola Institute, Menlo Park and John Koudela, Hewlett-Packard Co.

This session is NOT about CAI (Computer Assisted Instruction). It IS about the use of computers in the classroom to:

001	Assist in problem solving
010	Extend the range of problems that can be solved
011	Reinforce the learning of concepts
100	Provide a laboratory for experimentation and discovery
101	Excite and motivate students
110	And incidentally teach the art of programming
111	----------(fill in your own reason)

Demonstrations of two systems (computer and calculator) will be given and you will have an opportunity for "hands on" operation.

Dr. Bernard M. Oliver, as a member of the technical staff of the Bell Telephone Laboratories (New York) from 1940 to 1952, worked on the development of automatic tracking radar, television, information theory and efficient coding systems. In 1952 he joined Hewlett-Packard as director of research and in 1957 was appointed vice president of research and development, the position he now holds.

Dr. Oliver holds over 40 U.S. patents in the field of electronics. He is highly active in industry affairs, having been elected a fellow of the IRE in 1954 and a Director-at-Large in 1958. He has served as chairman of the San Francisco Section of the IRE and on the board of directors of WESCON. In 1962 he was elected a vice president of the newly-formed IEEE and served as president in 1965. He is also a member of the American Astronautical Society. In 1966 he became a Consultant to the Army Scientific Advisory Panel and was appointed to the President's Commission on the Patent System.

Robert L. Albrecht received his M.S. in applied mathematics from the University of Colorado in 1961. He is a senior consultant in computer-related educational activities at Portola Institute, Inc., Menlo Park. He was formerly associated with Minneapolis Honeywell, Burroughs Corp., Martin Marietta Corp. and Control Data Corp. He has written several articles, books and papers on mathematics, computer methods and datamation.

John Koudela, Jr. received his Masters in Statistics at the University of Illinois. He has been with Hewlett-Packard Co. 3½ years. He is one of the original members of the Design Group which began the computer activities at HP. Mr. Koudela was with several other manufacturing firms before Hewlett-Packard, the two main ones being Digital Equipment Corp. and Burroughs Corp. He has been in the computer industry for 13 years, and will bring his own equipment giving a demonstration, followed by a question/answer period.

Electrical Insulation Conference

Forty-seven leading manufacturers and suppliers of electrical insulating materials, testing equipment, and associated products have already reserved exhibit space for the 1968 Electrical Insulation Conference to be held December 8-12, 1968, at the Biltmore Hotel in Los Angeles. Under the sponsorship of IEEE and NEMA.

Eighty-five papers have been accepted for presentation during the technical sessions; and highlights of the Conference will include the presentation of the Golden Omega Award to Dr. William J. Pickering, Director, Jet Propulsion Lab, Pasadena, at a luncheon featuring Mr. L. A. Hyland, Vice-President and General Manager of the Hughes Aircraft Company as guest speaker. One of the lead-off activities of the Conference will be the Marketers' Luncheon, during which Mr. Claude D. LaMoree will receive an award as the Marketer of the Year. Dr. Herb True, Research Psychologist with the True-Klemp organization, South Bend, Indiana, will be the featured speaker.

A number of excellent exhibit booth spaces are still available and may be reserved by contacting Mr. C. W. Callow, Exhibits Chairman, Southern California Edison Company, 601 West Fifth Street, Los Angeles, California 90017.

Balance in Large Computer System Design Surveyed by Dr. Amdahl

Dr. G. M. Amdahl

At the Tuesday, October 22, Meeting of the Computer Chapter, Dr. Gene M. Amdahl will discuss the BALANCE IN LARGE COMPUTER SYSTEM DESIGN.

Design of computer systems for the commercial market consists largely of optimizing the selection of techniques by which a given set of functions are realized. The functions, though not precisely known, are derived from user's applications, as are their weightings. Significant discrepancies exist in personal views of workload characteristics, hence polling is an ineffective tool for assessment of these characteristics and actual measurement is required to obtain meaningful weights.

The nature of the optimizing task embedded with the synthesis of the system will be discussed. The possible modification of the optimization process to accommodate personal views as well as actual measurements will be considered as well.

Dr. Gene M. Amdahl received his Ph.D. in Theoretical Physics from the University of Wisconsin in 1952. He then joined IBM where he worked on simulation studies and machine design for character recognition. During this period he was project engineer and chief designer for the IBM 704 and initial planner for the IBM 709 and IBM 7030. In 1956 Dr. Amdahl joined Ramo-Wooldridge for a short time, working on radar track following techniques. He then joined Aeronutronic as Manager of Data Processing Engineering until 1960, when he rejoined IBM. At IBM he was Manager of Architecture for the IBM 360 System following which Dr. Amdahl was an IBM Fellow working on Advanced Computing Systems until June of 1968. He is currently Director of Advanced Computing Systems at IBM's laboratory in Menlo Park, California.

Dinner will be at Rick's Swiss Chalet at 6:15 p.m. and the meeting at the McCullough Bldg., Stanford University, Room 134 at 8:00 p.m. For dinner reservations see Calendar.

The EMC Engineer vs The Design Engineer:

A communications problem.

A panel of EMC and design engineers from Fairchild, IBM, Lockheed, and Hewlett-Packard will discuss the problems of designed-in compatibility, at the Electromagnetic Compatibility meeting on Oct. 21, Monday 8 p.m., at the Hewlett-Packard auditorium. Dinner at Rick's Swiss Chalet. See calendar.

The objective of this panel discussion is to bring to light some of the problems that EMC engineers and design engineers have when working together. The EMC engineer realizes that he is usually placed in a position of criticizing the design engineer's work. Often his advice is sought too late to be of help in the initial design stages and, therefore, is accepted with some antagonism. On the other hand, the design engineers see EMI work as time-consuming and sometimes irrelevant "to Systems Operations." Deviations from EMI specifications are so commonplace that many engineers feel that the specification limits are unrealistic. Often a design engineer becomes a believer in EMI work only after he has experienced actual problems with his design. The panel will explore some of these differences and some of the problems that are created because of them. Hopefully through better understanding, the two groups can come together and work toward a common goal.

PMP Begins First Series on Microelectronics

Dr. Donald A. McWilliams, Manager, Microelectronics, Lockheed Missiles and Space Company, Sunnyvale, will moderate a series of tape-film lectures on microelectronics to be presented by the professional group of Parts, Materials, and Packaging.

Prior to this he was Assistant Section Head, Microelectronics Research and development, TRW Systems Group, Redondo Beach, responsible for Radiation Hardening, LSI, and Advanced Electronic Analysis. He previously participated in the establishment of the Microelectronics Center at Autonetics, Anaheim, with responsibility for the conception and development of dielectric isolation for integrated circuits in 1963.

He received the Ph.D. in Physics in 1962 at Iowa State University. During this period his research was primarily in the optical properties of intermetallic compounds.

He has been Guest Lecturer at Technische Hochschule Aachen, Germany, and University of California at Los Angeles Extension, lecturing on microelectronics. He is a member of IEEE, American Physical Society, American Association of Physics Teachers, American Association for the Advancement of Science, The New York Academy of Science, Sigma Xi, and Pi Mu Epsilon.

A series of film-tape lectures on eight different aspects of micro-electronics will be presented as part of this year's plans for the Parts, Materials, and Packaging professional group of the IEEE. The series, part of a two-day symposium originally presented at WESCON, will constitute the major program effort for the PMP group this year.

The first meeting, to be held on October 22 at 7:30 p.m., at Hewlett-Packard Company, Palo Alto, will present "Microelectronics in Perspective" by Edward Keonjian of Grumman Aircraft as an introduction to the series. On the same program will be "Microelectronic Packaging – Current Techniques and Future Trends" by J. T. Staller, Staller Associates, Norwood, Massachusetts.

The lectures have been tape recorded by some of the outstanding men in the microelectronics field and will be replayed with projection of slide copies of the figures and illustrations.

Subsequent meetings will cover: Thick Film Networks, Hybrid Microelectronic Bonding and Packaging, Microwave Applications, The Practical Application of Monolithic Analog Circuits, The Impact of LSI, Future Manufacturing Methods, and Reliability Characteristics. It is also presently intended to provide attendees with copies of the written summaries of the presentations.

All meetings will be held in the Hewlett-Packard Company conference room "5M" in Building 5 at the Stanford Industrial Park site, 1501 Page Mill Road, Palo Alto. Each meeting will begin at 7:30 p.m. on the fourth Tuesday of the month scheduled. Lectures are presently planned for October, November, January, February, and April.

There is no charge for attending any meeting, and non-members of the IEEE are welcome. Each lecture is self-contained and does not need attendance at previous lectures for background material.

More information can be obtained from George Reyling, Varian Associates (Phone: 326-4000) or Clyde Coombs, Hewlett-Packard Company (Phone: 326-1755).

Learning With Finite Memory Offered by Information Theory Chapter

At the thursday, October 17 meeting of the Information Theory Chapter Martin E. Hellman and Thomas M. Cover of Stanford University will discuss the topic LEARNING WITH FINITE MEMORY.

This work attempts to lay a foundation for a theory of learning with finite memory by solving the hypothesis-testing problem with a finite memory constraint. The data consists of an infinite sequence of independent identically distributed observations and the constraint is applied by requiring that all past data be summarized by an m-valued, updatable statistic (m an integer). An optimal solution is demonstrated. The results are of primarily theoretical interest when applied to large-memory systems such as digital computers, but should have more practical consequences in low-memory systems such as the human being.

Martin E. Hellman received the B.S. (E.E.) from New York University in 1966, the M.S. from Stanford University in 1967, and is currently completing his doctoral studies at Stanford. He is a student member of the IEEE and belongs to the Information Theory and Automatic Control Groups.

Thomas M. Cover received the B.S. Degree from MIT in Physics in 1960; the M.S. and Ph.D. in Electrical Engineering at Stanford in 1961 and 1964 respectively. He is currently an Associate Professor in the Department of Electrical Engineering at Stanford engaged in research in data processing and applied statistics.

The meeting will be held at SRI, Bldg. 1, Conference Room B at 8:30 p.m. Dinner will be served at Scotty Campbells, at 6:15 p.m. For reservation details and restaurant address see calendar.

Joint Meeting Features Landing Techniques

Mr. George Yingling, Chief of the Systems Integration and Flight Experimentation Branch, Air Force Flight Dynamics Laboratory, Wright-Patterson Air Force Base, will present a paper describing new all-weather landing techniques and instrumentation to a joint meeting of the Aerospace and Electronics Systems Group and the Society of Information Display.

The paper will include a discussion of the visual clues a pilot sees in the last moments before touchdown during a near-zero visibility landing. Movies taken from instrumented test aircraft during such landings will accompany the presentation.

The meeting will be at 8:00 p.m., 24 October, in the SRI Conference Room A/B, Building 1, 333 Ravenswood Avenue, Menlo Park. All interested members and their guests are urged to attend. No dinner.

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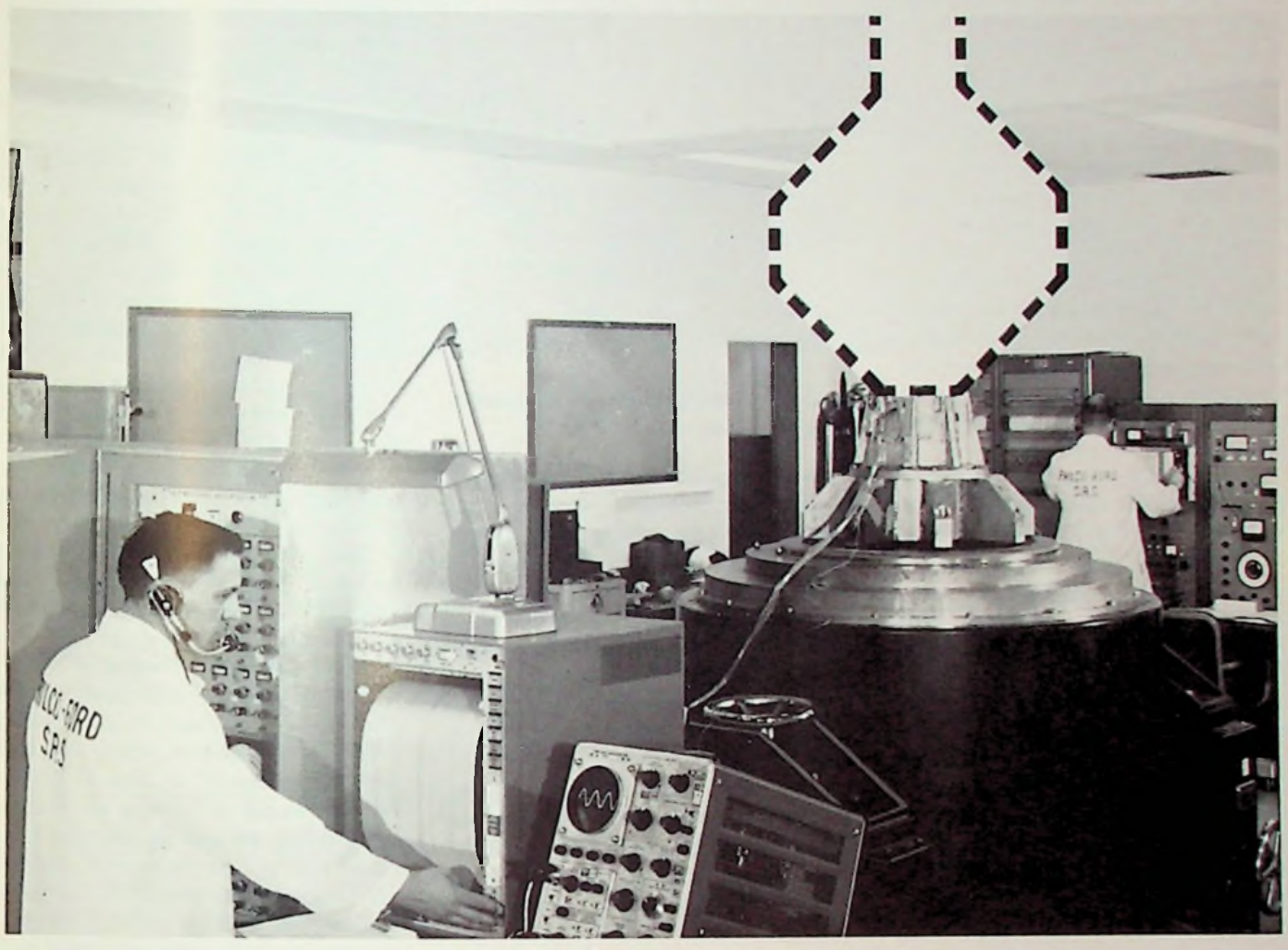

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SCVSS Presents 3 Dimensional Projections Through Holography & Lasers

LADIES NIGHT

Wednesday, October 16 at the Holiday Inn in Sunnyvale is the date and location of the next general meeting of the Santa Clara Valley Subsection membership. The featured speaker will be Mr. Norman Silbertrust, Chief Engineer for Optics Technology Inc., who will demonstrate 3-dimensional projections by means of holography and lasers. This demonstration will be open to individual inspection before the dinner and Mr. Silbertrust will be available to assist in manipulating the equipment and answering questions. After dinner, mechanics and applications of lasers and holography will be discussed in terms readily understood by both members and wives.

In line with the excellent program, a special dinner has been arranged. It is to be Filet of Beef en Brochette (tender cubes of choice beef, onions, peppers and mushrooms, marinated in wine, charcoal broiled on a skewer), Rice Pilaf, and Vegetable du Jour, all for $5.50.

The laser and holography display will begin at 6:00 p.m. concurrent with the cocktail hour. Dinner will be served at 7:00 and Mr. Silbertrust will explore lasers and holography at 8:00. To allow preparation of the dinner, reservations will be required prior to Monday, October 14.

Model 177, Holographic Camera produced by Optics Technology

No other opportunity to examine a 3-dimensional hologram close-up has been offered, and early reservations are recommended because attendance is limited.

Your reservations may be made with:

Mr. Carl Hollstein, IBM San Jose, Phone: 227-7100, ext. 4988, or

Mr. Don McCauley, Philco-Ford, Palo Alto, Phone: 326-4350, ext. 5928 or 5840.

The Holiday Inn is reached by turning off Bayshore in Sunnyvale at Lawrence Expressway (East). It is immediately adjacent to this intersection.

Dr. Liou to Address Circuit Theory Chapter

At the October 30 meeting of the Circuit Theory Chapter a computational orientated method for the analysis and design of linear circuits containing periodically operated switches and sinusoidal inputs will be discussed by Dr. M. L. Liou of Bell Telephone Laboratories, North Andover, Mass. Using the state space approach, explicit, closed form solutions for both the time and frequency domains are obtained. The analysis is applicable to any circuit configuration and can handle cases in which discontinuities in state variables occur at the switching instants. A new concept of pseudo transfer function matrix is introduced. An immediate application of this concept is to the design of switched filters in time division multiplex systems.

The meeting is scheduled for 8:00 p.m. at 134 McCullough Bldg., Stanford University. No dinner.

Ming-Lei Liou received a B.S. Degree from National Taiwan University in 1956, a M.S. Degree from Drexel Institute of Technology in 1961, and a Ph.D. degree from Stanford University in 1964.

He taught in the Department of Electrical Engineering at Drexel Institute of Technology from 1958 to 1961. As a research assistant he was employed at the Stanford Electronics Laboratories from 1961 to 1963. From 1963 to June, 1966, he has been a Member of Technical Staff at the Bell Telephone Laboratories, Inc., North Andover, Mass., and presently is Supervisor, Transmission Studies Group. His current interests lie in the area of computational analysis of linear and non-linear systems.

Dr. Liou is a member of Eta Kappa Nu, Sigma Xi, and IEEE.

Nuclear Science Chapter Inspects Lawrence Hall

"What can be done to develop creativity and to kindle the spark of genius?" is a question often asked. Members of the Nuclear Science Group will have an opportunity to get a glimpse of the answer at their October meeting at the Lawrence Hall of Science.

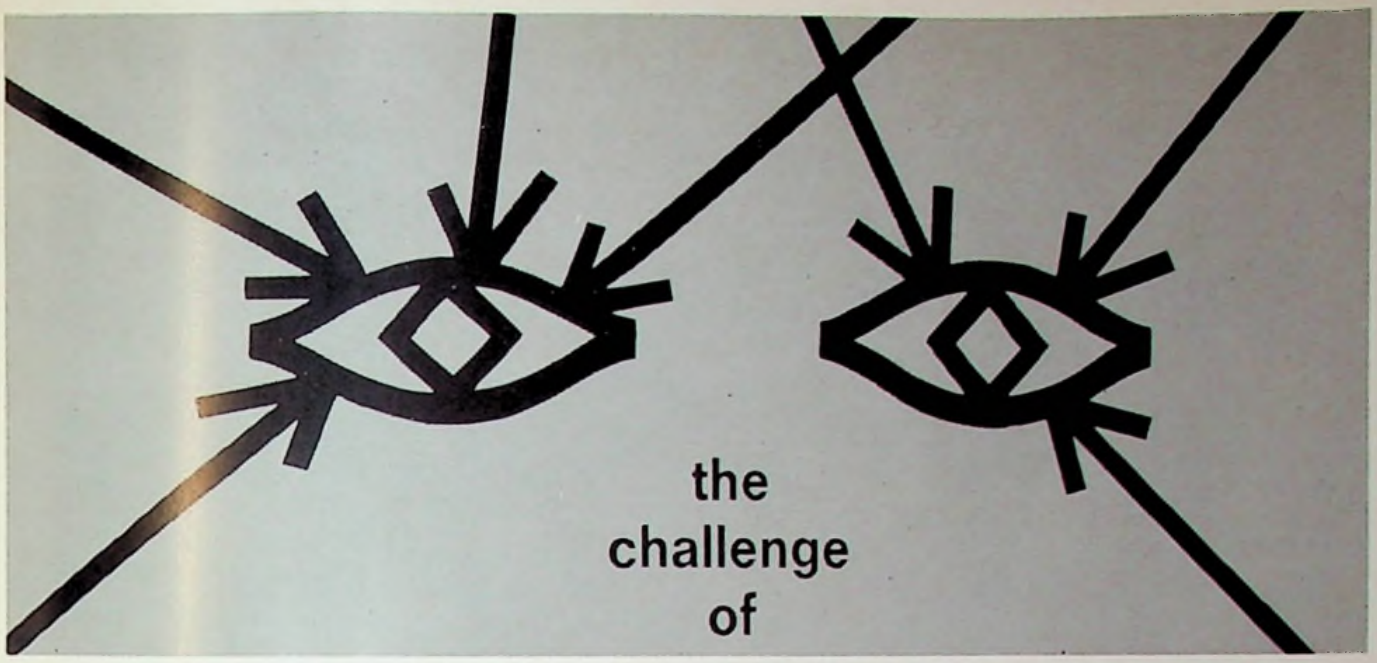
The Lawrence Hall of Science, named in honor of the inventor of the cyclotron, Ernest Lawrence, was originally conceived as being a major museum of scientific apparatus and achievements. The emphasis now is on teaching the scientific principles which have led to our understanding of the world around us from the atomic scale through the cosmic scale. Working experiments throughout the Hall encourage individuals to make their own discoveries in the fields of physics, chemistry, and biology.

The meeting will begin at 8:00 p.m. Tuesday, October 15 and will consist primarily of an investigation of the contents of the Hall of Science. Since the Hall normally closes at 4:00 and is being reopened especially for this meeting, it will not be crowded and everyone should have ample time to try the "experiments" at leisure. All interested persons, as well as all members, are invited to attend. North Canyon Road east of the University of California campus leads directly to the Hall of Science.

Arrangements have been made at the Claremont Hotel, located at Ashby and Domingo, for a buffet dinner at 6:45 in the South Porch. The cost is $4.50 which includes tax and tip. If you wish to attend the dinner reservations must be made by October 14. Please contact:

Mrs. June Costa, L-383, Lawrence Radiation Laboratory, Box 808 Livermore, Calif. 94550, Phone: 447-1100, Ext. 7036.

HELP THE SECTION GROW
BRING IN A NEW MEMBER.



visibility

Does anybody know you're there?

Let's face it, many engineers feel safe as the unknown, no-name, undiscovered, anonymous man. "Others" desire recognition and its attendant rewards. A portion of these "others" possess the talent and professional maturity to meet the challenge of visibility.

These "others" are the men we want.

MICROWAVE TUBE ENGINEERS

TWT Engineer

Our Challenge: Design and development of high-power Klyston, high and low power traveling wave tubes.

Our Man: Degree in Electrical Engineering or Physics with experience in microwave tubes and electro-magnetic theory.

Crossed Field Engineer

Our Challenge: Development and Production of Magnetrons and MBWO's. Customer liason, product improvement and cost reduction are part of the challenge.

Our Man: BSEE. Prefer 2 years appropriate experience.

ELECTRICAL ENGINEERS

Solid State Circuitry

Our Challenge: Design of solid state circuitry for inverters, regulated power supplies, pulse modulator, video amplifiers, etc.

Our Man: BSEE with 3 years experience in the design of solid state circuitry. Must be able to work independently to develop prototype subsystems.

RESEARCH ENGINEERS

Solid State and Photocathode Research

Our Challenge: Work on novel low light level and infra red detection and imaging devices.

Our Man: BS-MS in EE or Physics. Experience in GaAs desirable, thin film deposition background advantages.

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Our Man: BSEE minimum. Experience in high power microwave tube.

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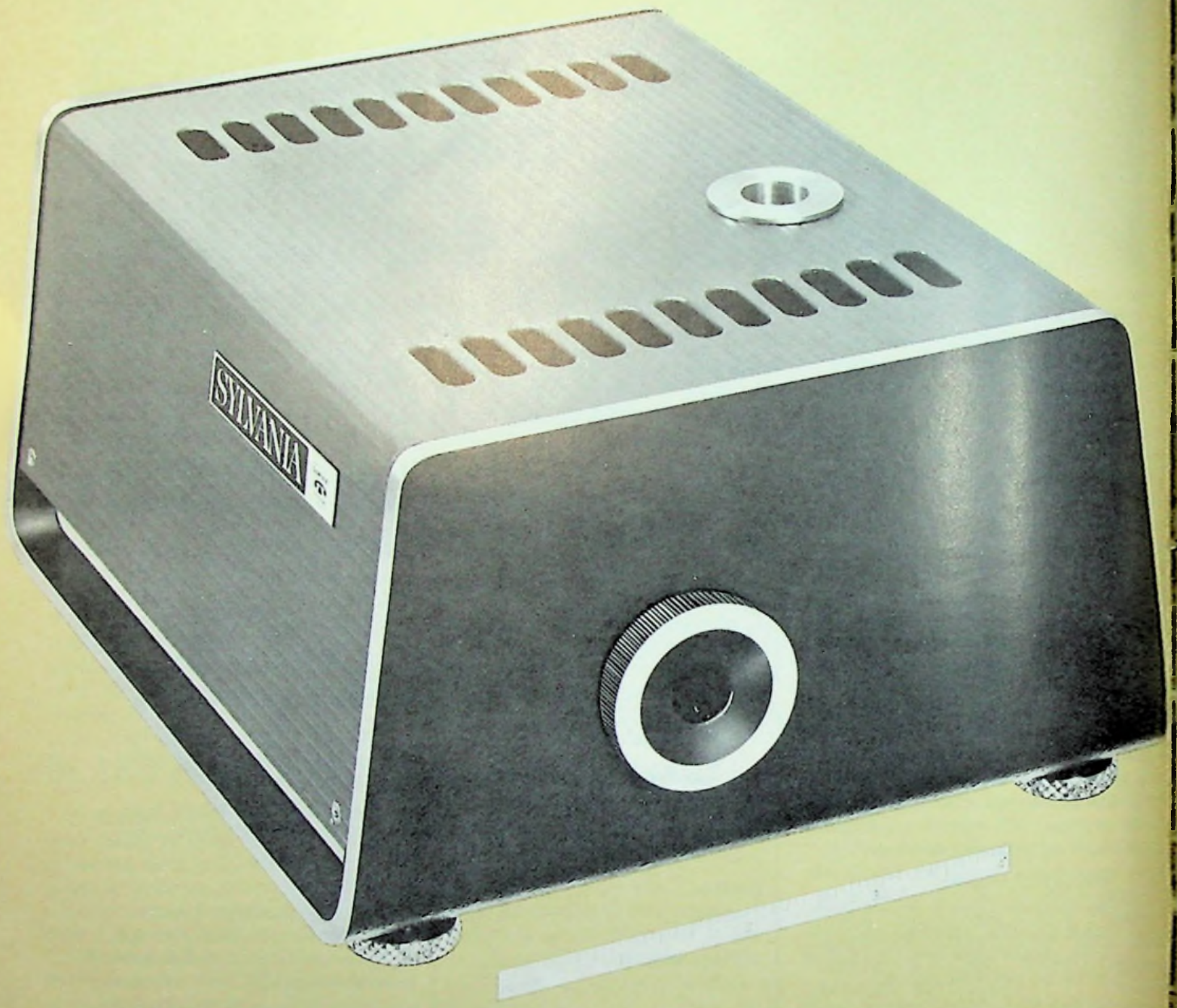

Here's the resume for the Model 502 Crossed Field Photomultiplier:

Response time	0.1 nanosecond
Modulation bandwidth	0 to 3 GHz
Nominal gain	5×10^5
Load impedance	50 ohms
Photosurface	S-1

Now may we have *your* resume?

WANTED:
Electro-optical engineers who can improve on the best.

. . . such as the new Model 502 high-speed, high-gain crossed-field photomultiplier shown at left. It has no equal for high time resolution and applications demanding wide bandwidth, high modulation rates, or detection of short fast-rise pulses.

But someday it *will* be equaled, and bettered; and we'd like to be the ones who do it. That's where you come in.

Sylvania's newly chartered Electro-Optics Organization headquartered in Mountain View, California, handles work for both government and industry in the electro-optics field.

This new organization is responsible for expanding Sylvania's electro-optics activities in a variety of fields. Equipment designed and manufactured by the organization will incorporate lasers and conventional light sources.

This organization currently has openings for the following individuals:

Systems Engineers/Physicists
Manager — Provide technical leadership to systems engineers in the laser electro-optical systems field. Requires BS in Electrical Engineering or Physics, MS or PhD preferred.

Manager — Primary responsibility of this position is to prepare detailed operating plans for establishing a LLLTV systems capability. BS in Electrical Engineering or Physics with MS desired.

Engineers (1) Analyze general systems requirements and establish specific design goals and specifications for electro-optical systems and equipment. BS in Physics or EE, MS desirable. Experienced in design or analysis work relating to electro-optical equipment or systems.

Engineers (2) Perform system analysis on Electro-Optics EW systems. Requires MS/PhD Physics or Electrical Engineering, two years electro-optic systems analysis or electro-optic system design.

Engineers (3) Design mechanisms, structures and packaging for electro-optical devices, equipment and systems. BSME required.

Equipment Design
Managers — Responsible for organizing, directing and participating in the design and development of a variety of electronic equipment for use in electro-optical systems. BSEE required, MSEE preferred. Must have recent experience directly applicable to LLLTV camera design.

Engineers — Electrical, Optical and Mechanical
Your professional résumé will receive immediate attention. Please address it to Mr. G. E. Hall,
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Use of Earthquakes to Determine Present Deformation of California

Earthquakes and other earth movements touch the lives of all of us at some time or other. These tremendous potential forces can be disastrous to lives and property. Our greatest defense against this force is an understanding of earthquakes and earth deformations.

Almost every Engineering field must be concerned with these potential forces. They must be considered when we design and construct utility lines, antennas, sensitive electronic equipment and the structures that house them.

We are fortunate to get one of the foremost leaders in this field to talk to a joint meeting of the San Francisco Section and East Bay Subsection on October 28, 1968. Dr. Bruce A. Bolt, M.Sc., Ph.D., Dip. Ed., F.R.A.S., was educated at Maitland Boys' High School and New England University College, Armidale, Australia. After graduation, he taught mathematics and science at Sydney Boys' High School before joining the staff of the Applied Mathematics Department at Sydney University in 1954. During 1960-61, he spent his sabbatical leave at Columbia University, New York, and Cambridge University, England.

Dr. Bolt was appointed Professor of Seismology at the University of California in January 1963 and Director of Seismographic Stations in March 1963. He is a member of both the Committee on Seismology of the National Academy of Sciences and the Board of Directors of the Seismological Society of America. He was appointed Editor of the Bulletin of the Seismological Society of America in 1965.

The meeting will begin at 8:00 p.m. in the P G & E Oakland Service Center. Dinner is called for 6:00 p.m. at the Venetian Room. Meeting limited to 75, dinner limited to 25. See calendar for details.

The Engineer as Expert Witness

Engineers who don't necessarily have experience or training in judicial processes are increasingly being called upon to serve in the crucial role of expert witnesses. In this special three-hour program, Oakland attorney Edwin A. Heafey will discuss important aspects of the role of the expert witness, covering such subjects as necessary qualifications, preparation requirements, the law of evidence as it applies to expert opinion testimony, how to be an effective witness, and what to expect in cross examination.

Edwin A. Heafey, Jr., A.B., LL.B., was admitted to the California Bar in 1955 and is a member of the Oakland firm of Heafey, Clark and Martin. He specializes in trial work, and since 1963 has been a lecturer in law at Boalt Hall, University of California, Berkeley. He is a past president of the Northern California Chapter of American Trial Advocates, and is a member of the American Trial Lawyers Association, the Association of Railroad Trial Counsel, and the Northern California Defense Counsel Association. Mr. Heafey is the author of California Trial Objections, published in 1967, and has lectured in several programs for attorneys presented by Continuing Education of the Bar, University of California Extension.

Time and Date:	7 to 10 p.m. November 6
Location:	Room 150, Boalt Hall, Berkeley campus
Fee:	$10.

Other courses concerned with various legal questions of interest to engineers may be organized if there is sufficient interest. For further information about this program or to express interest in future programs on similar topics, please write or telephone Continuing Education in Engineering, University of California Extension, Berkeley 94720, (415) 642-4151.

Editor's Note

We continually urge program chairmen to give us more vivid and informative meeting announcements—photos of lecturers with biographies. In this day and age you've got to hard-sell your message.

Nuclear Power Plant Diablo Canyon Site

J. O. Schuyler

Licensing approvals have been obtained from the Atomic Energy Commission and California Public Utilities Commission for the first 1,060,000 kw nuclear unit at Diablo Canyon and application has been made for the second unit. This represents a giant step up from the existing 70,000 kw unit at Humboldt Bay and will be more than twice the size of any nuclear plant in the West. Mr. J. O. Schuyler, who has been active in nuclear work since P G & E's early pioneer efforts, will discuss the unique features of the plant design, the complex licensing picture and the special considerations in the construction of the Diablo plant.

James O. Schuyler is a Supervising Mechanical Engineer in the Department of Mechanical Engineering, Pacific Gas and Electric Company. He is primarily responsible for the mechanical design, project supervision, engineering coordination and licensing of the Nuclear Power Plant at Diablo Canyon in San Luis Obispo County.

Mr. Schuyler joined P G & E in 1950 and has been engaged in the electrical and mechanical design of steam power plants. He is a registered professional engineer in California and a member of the American Nuclear Society (ANS) and the American Society of Mechanical Engineers (ASME).

The Engineers Club of San Francisco will be the scene of cocktails at 5:30 p.m., dinner at 6:30 p.m. and the meeting at 7:30 p.m. Reservations. See Calendar.

Reliability Chapter Tours LMSC R & D Lab

The Professional Group for Reliability (G-7) Chapter members will be given an opportunity to tour the Lockheed Palo Alto Research Laboratories on October 17 starting at 7:30 p.m. as guests of Dr. W. P. Cox, Senior Staff Scientist in the Research & Development Division at LMSC. The tour will begin in the auditorium of Building 202 in the research complex located at 3251 Hanover Street in the Stanford Industrial Park. The facilities to be visited will include all those involved in R & D work on the reliability of solid state components such as the Reliability Physics, Thin Films, and Metallography laboratories. In addition, we will see certain specialized equipment used in the reliability work including the electron microscope, electron microprobe, and the FEBETRON flash x-ray machine.

Dr. Cox has been one of the leaders in the semiconductor research field and just prior to joining Lockheed was the manager for Applied Research at Raytheon. He is currently head of the Reliability Physics activities at LMSC and will provide the brief talk in regard to what we will see prior to the tour. Dinner at Stanford View Restaurant. See Calendar.

Dr. W. P. Cox

Rambo Appointed to Advisory Group

Prof. W. R. Rambo

Professor William R. Rambo, Associate Dean of the School of Engineering at Stanford University, has been appointed to the Army Electronics Command's Electronics Advisory Group.

Prof. Rambo becomes the ninth member of the advisory group, composed of leaders from universities, industry and professional societies who advise the Commanding General on scientific, technical and other matters relating to ECOM's mission.

Professor Rambo is a fellow of the IEEE and the American Association for the Advancement of Science, and a member of Sigma XI, Tau Beta Pi and the American Society for Engineering Education. He holds a number of patents and has contributed numerous papers to technical publications and books.

Subsections and Chapters Program Schedule

San Francisco Section 1968-69

	SECOND	THIRD	FOURTH
MONDAY		Electromagnetic Compatibility Vehicular Technology	East Bay Subsection
TUESDAY	Instrumentation Measurements Magnetics Power	Automatics Control Engineering in Medicine & Biology Nuclear Science	Computer Parts, Materials & Packaging
WEDNESDAY	Electron Devices Microwave Theory & Techniques Engineering Management	Circuit Theory Santa Clara Valley Sub-section	Communication Technology Audio & Electroacoustics
THURSDAY	Antennas & Propagation Industry & General Applications Systems, Science & Cybernetics	Information Theory Reliability Industrial Electronics & Control Instrumentation	Aerospace & Electronic Systems
SATURDAY	Education		

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We need more.

The ones we need are systems, design, and applications engineers to put System 9000 to still wider use in the petroleum, water and power utility, pipeline, and communications industries.

Systems Engineers: For project responsibility from system conception through design, manufacture, checkout and installation. 3–8 years experience with solid-state system components such as A-to-D converters, multiplexers, power supplies, communications equipment, and related logic circuitry. BSEE required.

Design Engineer: For work in development and design of new digital units and systems for industrial application. 2–5 years experience in digital logic design with direct emphasis on digital integrated circuits. BS required, MS preferred.

Applications Engineers: For defining system specifications, preparing proposals, and customer liaison. 2–5 years experience in logic design for supervisory and telemetry system applications, including proposal or report preparation.

Please write or phone Wayne Earl, Moore Associates, 815 American Street, San Carlos, California 94070. (415) 591-5363.

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New University-Industry Instructional Network

Eleven Bay Area industrial firms and research organizations have announced they will participate in the new university-industry instructional television network being established by the Stanford School of Engineering.

Charter members of the network include Bechtel Corp., John Blume & Associates, and Kennedy Engineers, all of San Francisco; Hewlett-Packard Co., Micro-Magnetics Industries, Inc., Utah Construction and Mining Co., and Watkins-Johnson Co., all of Palo Alto; Stanford Research Institute of Menlo Park; Genesys Systems Inc., and NASA-Ames Research Center of Mt. View; and Lockheed Missiles and Space Co.

Associate Dean Donald J. Grace, director of the new program, added that a number of additional firms now considering it are expected to join the network. Plans call for telecasts to begin next January.

With class lectures televised to easily equipped rooms at their own company locations, more engineers will be able to participate. Considerable travel time and expense to campus classes will be eliminated, and progress toward advanced degrees will be speeded up.

The instructional TV network will broadcast simultaneously on four channels in the 2500 megahertz ITFS (Instructional Television Fixed Service) microwave band already approved by the Federal Communications Commission. A two-way video-audio link with UC-Berkeley, and one-way video and two-way audio links with San Jose State College and the University of Santa Clara also are planned.

The two-way links will allow student-engineers at company locations to ask questions. Transmissions in the ITFS band cannot be received on ordinary TV sets, and the network will be essentially "closed circuit."

1969 IEEE National Telemetering Conference

The 1969 (9th) IEE National Telemetering Conference will be held April 22-24, 1969 in Washington, D.C. The conference is jointly sponsored by the IEEE Groups on Aerospace and Electronic Systems and Communication Technology. Papers are especially solicited on the sub-heading topics listed below; however, good technical papers on other telemetry subjects will be fully considered:

Aerospace Telemetry: Stored-Program Flight Computers; Deep Space Convolutional Coding; S-Band Conversion Results; LSI Applications; and Range Instrumentation.

Oceanographic Telemetry: Sensors; and Underwater Communications.

Industrial/Environmental Telemetry: Urban Transportation Systems; Oil and Gas Telemetry; Product Measurement; Earth Resources Surveillance; and Weather and Pollution Monitoring.

Biomedical Telemetry: Personal and Animal Systems; and Diagnostic Systems.

Communication Technology: Data Compression; Recent Advances in FM Techniques; PCM Bit Synchronizers and Signal Conditioners; and Stored-Program Data handling Systems.

Please send two copies of your full paper (not necessarily in final format) and three copies of an abstract not exceeding 100 words to the Technical Program Chairman before December 20, 1968: Dr. Robert W. Rochelle, NASA-Goddard Space Flight Center, Code 710, Greenbelt, Maryland 20771, (301) 982-4615.

Lunar Vulcanism

Bedrock underlying the lunar maria ("seas,") as early astronomers erroneously called them) has a much thinner covering of soil than the moon's highlands, according to results of a new radar scanning technique reported by a Stanford University engineer.

Dr. G. Leonard Tyler, research associate at the Radioscience Laboratory, used moon-reflected two-meter wavelength radio telemetry signals from lunar Explorer 35. The reflections were caught by Stanford Research Institute's 150-foot dish antenna and recorded on tape.

The significance of these measurements results from the ability of a space probe to sense scattering properties of the surface over a wide range of angles. It was the first time systematic bistatic radar observations of the moon had been attempted. A previous experiment has been conducted by the Stanford group using signals radiated from "Lunar Orbiter" series spacecraft to prove the feasibility of the techniques.

The observations appear well correlated with the depth of the lunar soil, which varies between 3 to 60 ft. There is apparently no marked stratification, or layering, as in the earth's soil.

Geologists interpret the results as consistent with the hypothesis that the vast lunar maria are probably younger than the highlands. That is, the maria bedrock was more recently spewed up as lava from the moon's interior, and therefore has accumulated less soil covering on its surface.

Infra-red studies of the moon's surface also have shown the maria to be warmer. Thus these findings closely match Dr. Tyler's radar results, giving further credence to theories of lunar vulcanism.

C.S.P.E. Panel Discussion

The Santa Clara Valley Chapter of the California Society of Professional Engineers plans tentatively a panel discussion on the subject: "Ethics of the Engineer in Industry." The affair is to be the evening of October 25 at Foothill College Auditorium, Los Altos. The public will be invited. For your suggestions as to good panelists and for further information, call Gene Sullivan, (408) 295-4330.

Thomson New Chief Engineer at Fairchild Microwave

George Thomson has joined Fairchild Microwave Products, a group of Fairchild Instrumentation, as Chief Engineer. Fairchild Instrumentation is a division of Fairchild Camera and Instrument Corporation.

Thomson was associated with Airborne Instruments Laboratory (AIL), as Section Head with the Communications Department of the Engineering and New Product Division. During his ten years at AIL, Thomson directed development work of L-, S-, C-, and X-band solid state multipliers as well as tunnel diode oscillators, amplifiers, and mixers for solid state receivers. He also directed the development of two S-band solid state detector amplifiers and a parametric amplifier system for use in the ground terminal of the SYNCOM–Satellite Communications System. This development activity included the design of individual components used in the systems.

He presently has a patent pending, "Tunnel Diode Oscillator F_1F_1 Repeater for FM signals." He is a member of IEEE, and the IEEE Technical Group on Microwave Theory and Techniques.

1968 Systems Science and Cybernetics Conference

Kan Chen

Nelson Dorney

Dr. C. A. Rosen

R. D. Smallwood

1968 CONFERENCE COMMITTEE

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Vice-Chairman: Nelson Dorney, University of Pennsylvania

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Local Arrangements Chairman: James Lewis, San Jose State College

The Proceedings of this Conference will be available at registration time.

Printed Circuit Soldering Symposium

DATE: November 12, 13, 1968 9:00 a.m. to 5:00 p.m.

PLACE **The Proud Bird Restaurant**
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ADVANCE REGISTRATION FEE: **Members $45, Non-Members $55**

For Information Contact:
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Palos Verdes Estates
California 90274

New Wescon Directors

J. R. Hummes and Charles M. Edwards have been named to four-year terms on the board of directors of the Western Electronic Show and Convention.

Hummes is marketing vice president of Bell Electronics Corp. and Edwards is vice president and director of technical programs at United Geophysical Corp. (Pasadena), a subsidiary of The Bendix Corporation.

The eight-man WESCON board equally represents the two sponsors of the event–IEEE Region 6 and the Western Electronic Manufacturers Association–and the two WESCON "host" areas, Los Angeles and the San Francisco Bay Area.

Hummes and Edwards will join the following holdover directors: Floyd L. Goss, Los Angeles Department of Water and Power; Donald C. Duncan, Duncan Electronics Inc.; William H. Heflin, Fisher Research Laboratory; Ernest W. Pappenfus; Emmet G. Cameron, Varian Associates; and John C. Beckett, Hewlett-Packard Co.

Call for Papers

This SECOND CONFERENCE ON APPLICATIONS OF SIMULATION will bring together an international group of experts to examine current progress in the fast-developing art of applying digital computers to performance prediction of events, processes, organizations and systems.

One thousand engineers, scientists, and managers are expected at the three-day conference, where discussions will range from corporate, financial, and distribution system models to simulation of human behavior, transportation, and communciations.

New techiques, new computer languages, and new applications will be stressed.

The conference will be held December 2-4, 1968, at the Hotel Roosevelt, New York, New York, and is sponsored by the Association for Computing Machinery (ACM), the Institute of Electrical and Electronics Engineers (IEEE), Simulation Councils, Inc. (SCI), and SHARE (Computer User's Association).

For additional information, contact Mr. Julien Reitman, Norden-United Aircraft Corp., Norwalk, Connecticut 06856.

The SEVENTH INTERNATIONAL CONFERENCE ON MAGNETICS (INTERMAG) will be held on April 15-18, 1969, in Amsterdam, The Netherlands, under the joint sponsorship of the Magnetics Group of the IEEE, the Nederlandse Natuurkundige Vereniging, and the Division T.W.O. of the Koninklijk Instituut van Ingenieurs.

Papers are solicited on all areas of applied magnetics, including magnetic phenomena and superconductivity. Abstracts in English of two pages in length must be received no later than December 1, 1968, by: Dr. U. F. Gianola, Bell Telephone Laboratories, Mountain Avenue, Murray Hill, New Jersey 07974. Papers will be selected by the Program Committee on the basis of technical content and subject timeliness.

Abstracts accepted for presentation at the Conference will be printed exactly as received, in the INTERMAG Conference Digest. Oral presentation of the papers at the Conference must be in English.

One issue of the IEEE Transactions on Magnetics will be reserved for publication of papers accepted for presentation at the Conference. March 1, 1969, is the anticipated deadline for submission of completed manuscripts.

The 1969 ELECTRONIC COMPONENTS CONFERENCE will be held April 30–May 2, 1969 in Washington, D.C. Papers for the Conference are invited on significant new developments in the broad fields of electronic materials, components and their processing technologies, including their application and reliability in relation to equipment design and production. The scope of the Conference program will include: Discrete Linear and Non-Linear components; thick and thin-film Technologies; New Functional Approaches; Filters and Networks; and Interconnection and Assembly Techniques.

Four copies of a 500-word summary should be sent by November 1 to James A. O'Connell, Technical Program Chairman, Electronic Components Conference, ITT Headquarters, 320 Park Avenue, New York, N.Y. 10022. Final papers are due on January 30, 1969. Papers will be published in the Conference Proceedings which will be available at the start of the Conference.

The Electronic Components Conference is co-sponsored by the Parts Division of the Electronic Industries Association and the Parts, Materials and Packaging Group of the Institute of Electrical and Electronics Engineers.

The 1969 JOINT AUTOMATIC CONTROL CONFERENCE (JACC) will be held at the University of Colorado, Boulder, Colorado, August 5-7, 1969. The sponsoring societies are the American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers which is the host society for 1969, American Society of Mechanical Engineers, Fluid Power Society, The Institute of Electrical and Electronics Engineers Automatic Control Group, Instrument Society of America, and Simulation Councils, Inc.

Authors are invited to submit full length papers (no abstracts) to the 1969 JACC by November 15, 1968. Papers dealing with all apsects of automatic control engineering and science (theory, design, applications, components, simulation, machine computation, etc.) are solicited by the Program Committee. Submit: One full length copy of the paper to Prof. W. E. Schiesser, Program Chairman, 1969 JACC, Department of Chemical Engineering, Lehigh University, Bethlehem, Pennsylvania 18015. Send five copies for review to Prof. J. B. Lewis, Department of Electrical Engineering, Pennsylvania State University, University Park, Penna. 16802.

All copies of the submitted papers should be clearly marked "For 1969 JACC" and they should indicate the name of the society to which they are submitted. No author should submit the same paper to more than one society.

The 1969 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE will be held on February 19-21, 1969, in Philadelphia, on the campus of the University of Pennsylvania and at the Sheraton Hotel.

The conference, the leading annual forum for the announcement of important new advances in the solid-state circuits field, is again sponsored by the IEEE Solid-State Circuits Council, the Philadelphia Section of the IEEE, and the University of Pennsylvania.

Papers not previously published or presented, describing significant contributions in the following or related areas, are invited: Circuit Techniques; Integrated Circuits and LSI; Memories; New Device Applications; Optoelectronics; and Energy Conversion, Control and Distribution Circuits.

Authors must submit BOTH a 35-word abstract and a 300-500 word summary, appropriate to a 20-minute oral presentation, to reach the Program Committee secretary, J. H. Wuorinen, Bell Telephone Labs., Murray Hill, N.J. 07971 by OCTOBER 18, 1968.

Dr. Mallory on SLAC Control System

At the October 15 meeting of the Automatic Control Chapter, Dr. Kenneth B. Mallory, head of the instrumentation and control group at SLAC, will discuss the original guidelines for the design of the SLAC control system. Dr. Mallory has been involved with the control system since the original proposal study group was formed in 1957. His activities have included building three accelerators for hospitals and an X-Band accelerator, generation of millimeter waves and development of microwave impedance measuring techniques. He is also teaching microwave measurements at Stanford.

Among the original guidelines for the design of the SLAC control systems were suitability for ultimate computer control of the accelerator and the capability of delivering different experimental beams on successive machine pulses. The installation of computer control was only authorized this year, and the management of multiple beams is already taxing the operators. Dr. Mallory will discuss features of the control system which allow multiple beams, some anomalies resulting from delayed installation of computer control, and the plans for development of computer control of the accelerator during the next three years.

Meeting time is 8:00 p.m. at the University of Santa Clara Engineering Center. Dinner will be at LeBoeuf's located across from the Engineering center. Reservations not necessary. (See Calendar)

New Standard Graphic Symbols

A new edition of USA Standard Symbols for Electrical and Electronics Diagrams containing significant changes has just been published by the USA Standards Institute. The revision, identified as USA Standard Y32.2-1967, has been approved for mandatory use by the Department of Defense.

Since electrical and electronics diagrams are used in international trade and one common language ensures clear presentation and economical diagram preparation for a variety of users, USA Standard Y32.2-1967 has in general been coordinated with international standards on graphic symbols prepared by the International Electrotechnical Commission.

The new USA Standard Y32.2-1967 was prepared by the Graphic Symbols Subcommittee (SCC 11.1) of Standards Coordinating Committee 11 of the Institute of Electrical engineers. The standard represents a national consensus of domestic manufacturers and users of electrical and electronics equipment, components, and accessories, including federal government agencies such as the Department of Defense.

Copies of USA Standard Y32.2-1967 are available from the USA Standards Institute at $6.00.

"Have-Not" Schools Research Funds

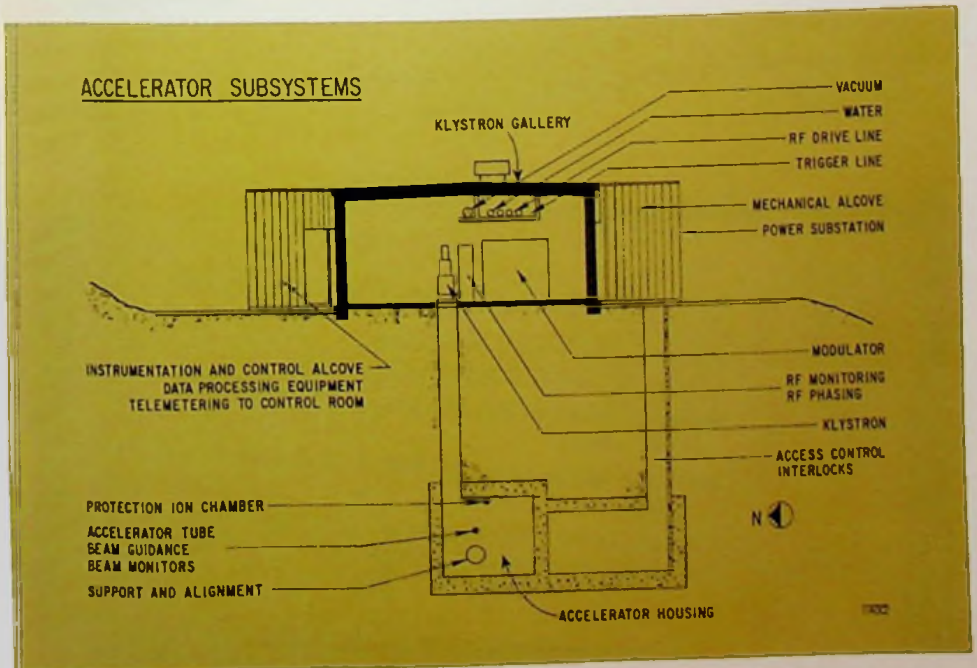
The claim that "have-not" schools are being kept in limbo by the continued funneling of government research funds into already outstanding universities is false, a famous Stanford University educator asserts.

Dr. Frederick E. Terman, retired Stanford vice-president and provost, counters this often asserted claim in an article published in the Journal of Engineering Education.

"It was the availability of government support for a few very able faculty members in the 'have-not' Stanford of 1946 that gave Stanford engineering its opportunity for upward mobility," he said.

"Such opportunities still exist for those who develop sound plans that include faculty qualified to receive support on a competitive basis, and are prepared to work hard and systematically over an extended period.

Equally important, he added, is the fact that "the soundest programs sponsored in research are those that are based upon the demonstrated productivity of the faculty, rather than upon the grantsmanship of the administrators."



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Write or call Ernesto A. Montano, IEEE Grid, Suite 2210, 701 Welch Rd., Palo Alto. Telephone (415) 327-6622.

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New Members

The Section welcomes the following new members:

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J. M. Ketzelman	G. A. Rigby
L. Lawler	T. A. Schatzel
F. Matin	T. B. Tan
S. Mazor	L. A. Taylor
C. L. McAfee	T. G. Terzakis
J. J. Menard	R. J. Warner
G. D. Miller	J. F. Wozniak

Congratulations to these members who have recently advanced to the grade of Senior Member:

R. Fruin T. J. Wortman

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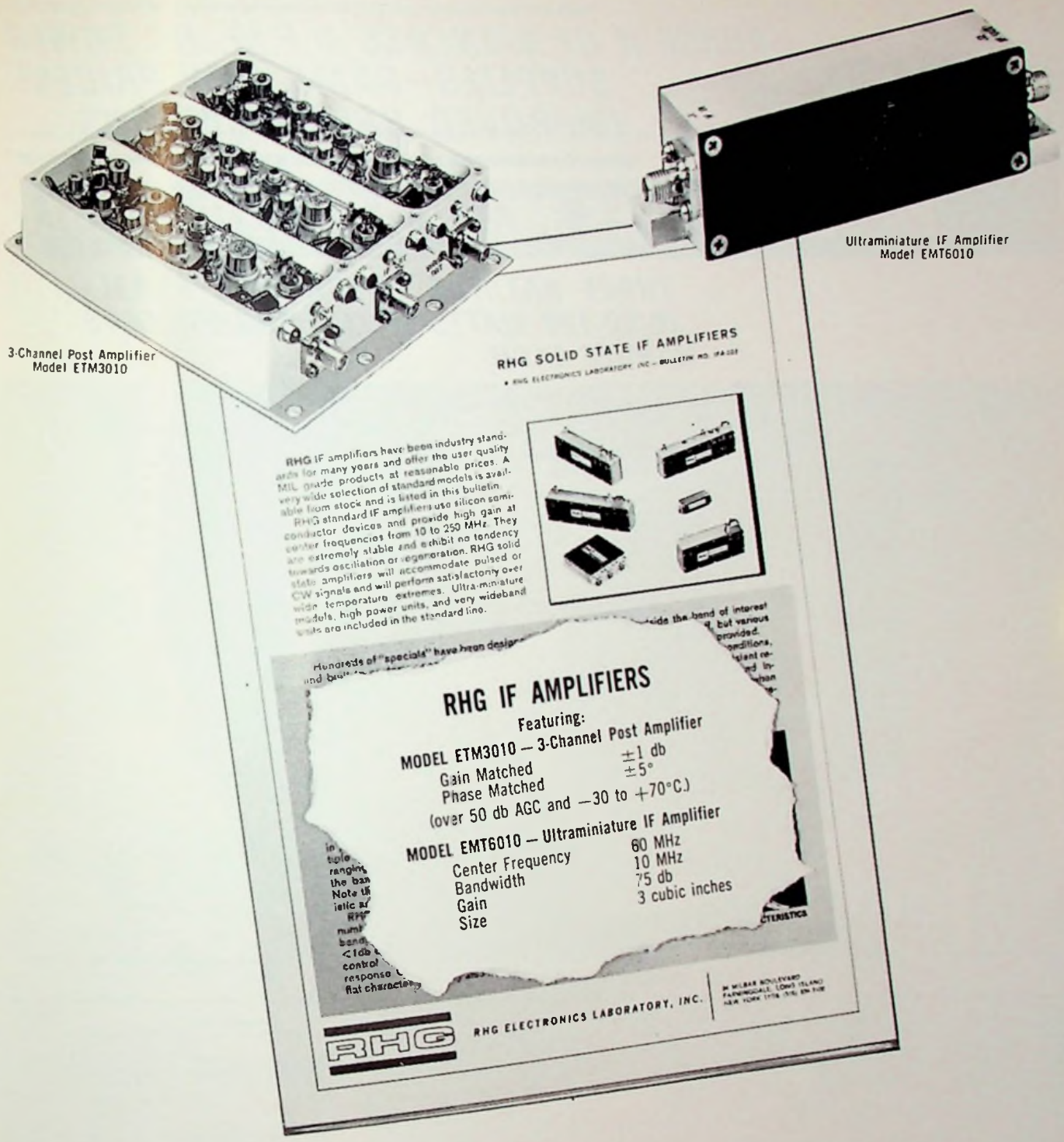

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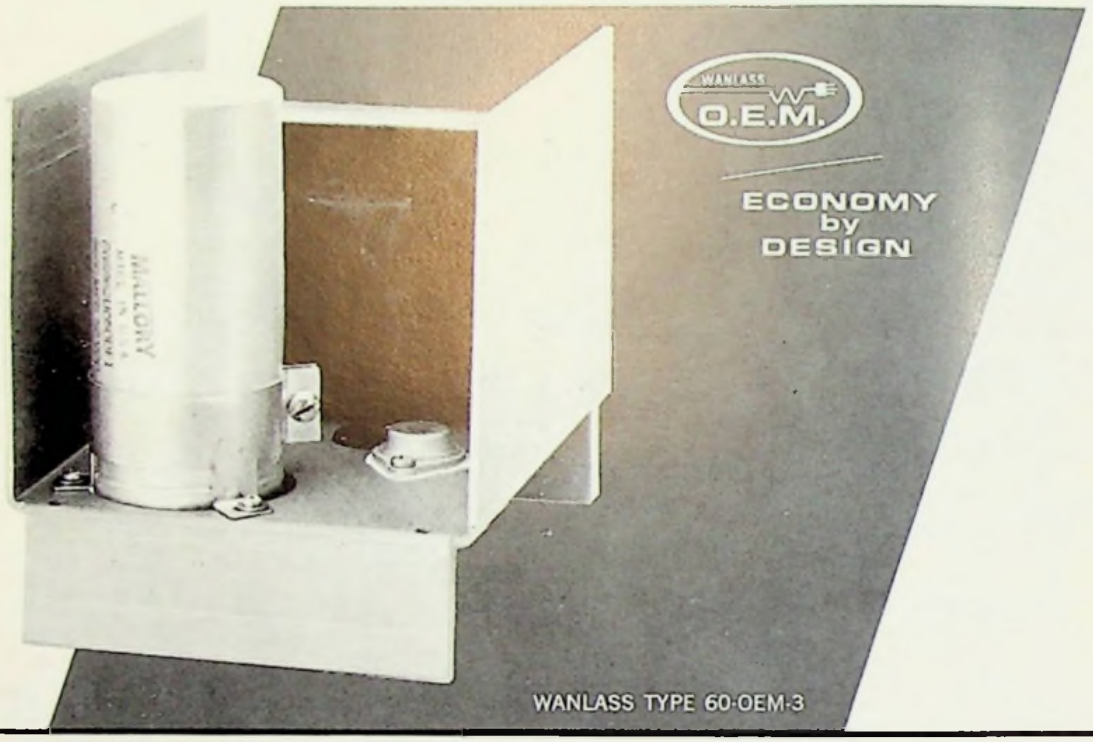

WANLASS TYPE 60-OEM-3

SPECIFICATIONS:

A.C. INPUT:	105-125V, 57-63Hz, 1 phase
D.C. OUTPUT:	See tabulation
REGULATION:	±1% for ±10% line change ±1% for no load to full load
RIPPLE:	0.1% +10MV rms maximum
GROUNDING:	Floating output; either positive or negative may be grounded.
PROTECTION:	Automatic short circuit protection
DIMENSIONS & WEIGHTS:	30-OEM 5"H x 5"W x 5"L; 5# max. 60-OEM 7"H x 5"W x 7"L; 7# max. 120-OEM 7"H x 5"W x 10"L; 12# max.
CONSTRUCTION:	Open Chassis type for OEM systems
TEMPERATURE:	0°C to 45°C

TABULATION OF MANUFACTURER'S TYPES AVAILABLE

MFGR'S. TYPE	VOLTAGE RANGE	POWER RATING	APPLICABLE PRICES	
30-OEM-1	3.6 - 9V	30 Watts	1 - 9	$40.00
30-OEM-2	9 - 17V	or 2.5	10 - 24	38.00
30-OEM-3	17 - 30V	Amperes	25 - 49	36.00
30-OEM-4	30 - 60V	Maximum	50 - 99	34.00
			100 - 999	31.00
			1,000 - 9,999	27.00
			10,000 - up	23.00
60-OEM-1	3.6 - 9V	60 Watts	1 - 9	$50.00
60-OEM-2	9 - 17V	or 5	10 - 24	47.50
60-OEM-3	17 - 30V	Amperes	25 - 49	45.00
60-OEM-4	30 - 60V	Maximum	50 - 99	42.50
			100 - 999	36.00
			1,000 - 9,999	31.00
			10,000 - up	27.00
120-OEM-1	3.6 - 9V	120 Watts	1 - 9	$75.00
120-OEM-2	9 - 17V	or 10	10 - 24	71.25
120-OEM-3	17 - 30V	Amperes	25 - 49	67.50
120-OEM-4	30 - 60V	Maximum	50 - 99	63.75
			100 - 999	54.00
			1,000 - 9,999	46.50
			10,000 - up	40.50

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