

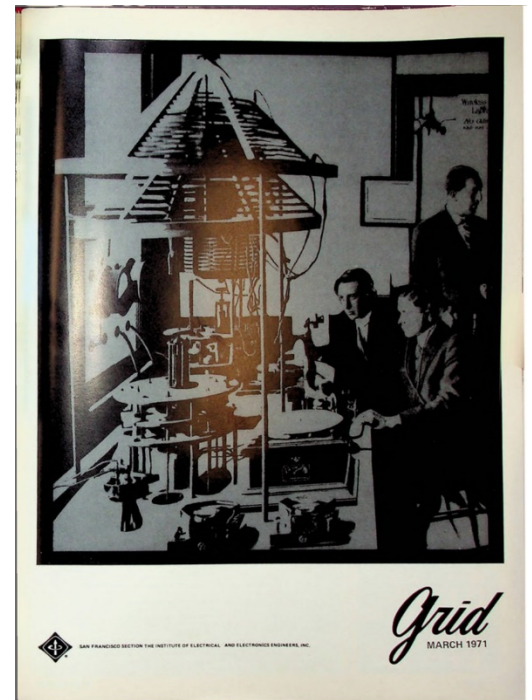
EDITOR'S PROFILE of this issue

from a historical perspective ...

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

March, 1971:

Cover: Shown is the radio transmitter setup of Charles "Doc" Herrold, an early Stanford grad. Herrold had started a company in S.F. that was destroyed in the 1906 earthquake, so he set up a radio school in San Jose. His was the first regularly scheduled broadcast station in the USA, conducted every Wednesday evening for the benefit of his local students. His wife would play the latest records over the air (so, was the first DJ). The station became KCBS. I discuss this early history in my talk, "The Origins of Silicon Valley", on Stanford's YouTube channel.



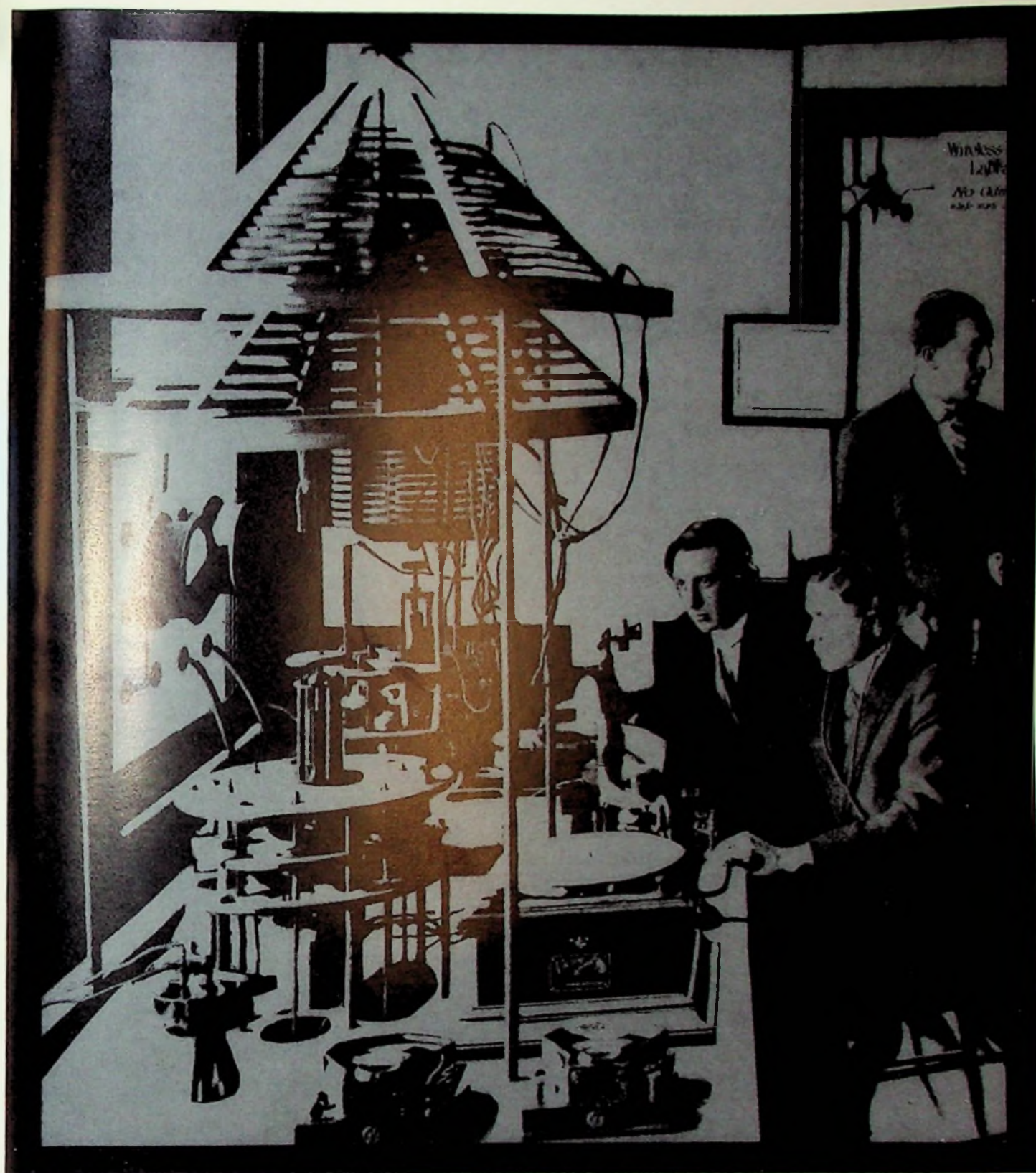
Archive of available SF Bay Area GRID Magazines is at this location:

https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

At time of scanning, the bound volumes are held by Paul Wesling.

April, 2025

Contact p.wesling@ieee.org



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MARCH 1971

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THE COVER

Pieces of equipment from the first studio in history for radio broadcasting, built by Dr. Charles D. Herrold of San Jose in 1909. It subsequently became KQW, is now KCBS and has provided continuous broadcast service since its founding. Left to right are Prof. Herrold, Kenneth Saunders, Emile Portal, and Frank Schmidt, some of whom may have been charter members of the San Francisco Section of IRE, founded in late 1915. Old Timers story on page 4.

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meeting

AEROSPACE & ELECTRONIC SYSTEMS MARCH 18

Story on
page 6

MARCH 18, Thursday, 7:30 PM, Philco-Ford WDL, 3825 Fabian Way, Palo Alto. See Story for directions to plant. No dinner. For tour reservations: Pat Hoppe, (415) 326-4350, ext. 6143 by March 15th.

ANTENNAS & PROPAGATION MARCH 17

Story on
page 4

MARCH 17, Wednesday, 8:00 PM, Lockheed Research Lab Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Meet-the-Speaker dinner at Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails 5:30 PM, dinner 6:15 PM, No reservations.

AUTOMATIC CONTROL MARCH 30

Story on
page 4

MARCH 30, Tuesday, Lockheed Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Dinner: Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto at 6:15 PM. No reservations.

COMPUTER MARCH 23

Story on
page 8

MARCH 23, Tuesday, 8:00 PM, Skilling Auditorium, Stanford (near the Durand Bldg.). Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Judie De Metre, 321-3300, ext. 270 by March 22nd.

EAST BAY SUBSECTION MARCH 29

Story on
page 4

MARCH 29, Monday, 7:30 PM, PG&E Service Center, 4201 Oysterport St., Oakland. No dinner.

ELECTROMAGNETIC COMPATIBILITY MARCH 15

Story on
page 8

MARCH 15, Monday, 8:00 PM, Hewlett-Packard Co., 5301 Stevens Creek Blvd., Santa Clara. Dinner: 6:15 PM, Customhouse Restaurant, 20030 Stevens Creek Blvd., Cupertino. Reservations: Don Clark (415) 948-5576 by March 15.

ELECTRON DEVICES MARCH 16

Story on
page 8

MARCH 16, Tuesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails: 6:00 PM, dinner 7:00 PM. Reservations: Section office (415) 327-6622 by noon March 16th.

ELECTRON DEVICES MARCH 29

Story on
page 5

MARCH 29, Monday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails: 6:00 PM, dinner 7:00 PM. Reservations: Section office (415) 327-6622.

ENGINEERING MANAGEMENT MARCH 10

Story on
page 6

MARCH 10, Wednesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No-host cocktails 6:00 PM, dinner 6:30 PM. Reservations: Sue Mendell, 321-2300, ext. 3619 by March 8th.

ENGINEERING MEDICINE & BIOLOGY MARCH 17

Story on
page 7

MARCH 17, Wednesday, 8:00 PM, Stanford University Medical School, Lecture Room M 106. No dinner.

GOLDEN GATE SUBSECTION/ EAST BAY and SANTA CLARA SS/S.F. SECTION MARCH 24

Story on
page 4

MARCH 24, Wednesday, 8:00 PM, San Francisco Engineers Club, 160 Sansome St., San Francisco. Refreshments and get-together: 6:30 PM, dinner: 7:00 PM. Reservations: M. W. McLaren, (415) 764-5294 or Art Wells (415) 467-1880 by noon March 24th.

TOUR OF PHILCO-FORD WESTERN DEVELOPMENT LABORATORIES. Tour limited to 45 persons.

BROADBAND LINEAR ANTENNAS. Ernest T. Harper of GTE, Sylvania.

OPTIMAL CONTROL IN POWER SYSTEMS. Dr. Otto J. M. Smith, EE Dept., University of California, Berkeley.

PANEL ON IMPLEMENTATION OF NON MEMORY LSI. Rob Walker, Manager of Micromosaic Engineering at Fairchild Semiconductor will chair the panel. Panelists: Bruce Wenniger of Nortec Electronics, Frank Schenstrom of Intersil, Kenneth H. Rose of AMI and Ron Walrod of Signetics.

ECOLOGICAL AND ENVIRONMENTAL CONSIDERATIONS IN THE SITING AND DESIGN OF ELECTRIC POWER PLANTS. B. F. Waters, Biologist at PG&E's Dept. of Engineering Research.

ACTIVE FILTERS: BASIC THEORY AND APPLICATIONS. Bob Shepard Gensco Technology Corp., Compton.

FAMOS: A NEW SEMICONDUCTOR MEMORY DEVICE. Dov Frohman-Bentchkowsky, Intel Corp., Mt. View.

LIQUID LASERS. A Lempicki, Bayside Research Center of GTE Laboratories Inc., Bayside, N.Y.

THE LEGAL ASPECTS: LIABILITY FOR PRODUCT SAFETY AND RELIABILITY. Jay Cooper, Philco-Ford, Palo Alto.

QUALITY ASSURANCE AND RELIABILITY IN MEDICAL ELECTRONICS. Dr. Noel Thompson, Chief, Bioengineering and Physiology Div. of Palo Alto Medical Clinic. Joint meeting with The American Society for Quality Control.

ANNUAL OLD TIMERS NIGHT. Honoring "Chairmen for the first 50 years." C. W. "Brodie" Leihy, former publisher-editor, Electrical West. Pictorial presentation with appropriate remarks. Ladies are invited.

calendar

INDUSTRY & GENERAL APPLICATIONS MARCH 18

Story on page 5

PROCEDURE FOR DETERMINING MAXIMUM SHORT CIRCUIT VALUES IN ELECTRICAL DISTRIBUTION SYSTEMS. Russell O. Ohlson, Manager, Elec. Distribution Systems Planning, Square D Co.

MARCH 18, Thursday, 8:00 PM, Marconi's, 122 Battery St., San Francisco. Dinner: 6:30 PM. Reservations: W. E. Blinn, (415) 391-3230 or Bill Poynter, (415) 697-7040.

INFORMATION THEORY MARCH 18

Story on page 6

TOEPLITZ MATRICES AND STOCHASTIC TIME SERIES. Prof. Robert M. Gray, EE Dept., Stanford University.

MARCH 18, Thursday, 5:30 PM, SRI Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 7:30 PM, Sakura Gardens, 2116 El Camino Real, Mt. View. Reservations: Geri Gibling, 326-6200, ext. 3881 by noon, March 18th.

MAGNETICS MARCH 9

Story on page 7

LSI MEMORY. Dr. Frank S. Greene, member of technical staff and project engineer for the ILLIAC IV SLI memory systems.

MARCH 9, Tuesday, 8:00 PM, University of Santa Clara Engineering Lecture Hall. Meet-the-Speaker dinner: 6:30 PM, Mariani's, 2500 El Camino, Santa Clara. From 101 turn on to De La Cruz Blvd. Follow signs to University. The Engineering parking lot is on the left hand side of the Alameda. AT parking lot, signs will show the way to the meeting. Reservations: Iris Strassner, (415) 367-3112.

MICROWAVE THEORY & TECHNIQUES MARCH 10

Story on page 7

BEYOND ANALYSIS: THE FUTURE OF COMPUTERS IN MICROWAVE DESIGN. Robert D. Hall, Dean Hall Associates, Los Altos.

MARCH 10, Wednesday, 8:00 PM, Applied Technology Div., ITEK Corp., 3410 Hillview Ave., Palo Alto. No dinner.

NUCLEAR SCIENCE MARCH 16

Story on page 6

SEMICONDUCTOR RADIATION DETECTORS — THEIR MEDICAL APPLICATIONS. Dr. Guy Armantrout, Lawrence Radiation Lab.

MARCH 16, Tuesday, 8:00 PM, SLAC, 2575 Sand Hill Road, Menlo Park. Following the presentation, coffee and doughnuts will be available to accompany informal discussions with the speaker.

POWER SOCIETY MARCH 9

Story on page 8

LINEAR MOTORS FOR TRANSIT PROPULSION. Keith M. Chirgwin, Chief Engineer in charge of Ground Transportation for the Garrett Corp.

MARCH 9, Tuesday, 7:30 PM, Engineers Club of San Francisco, 160 Sansome St., S.F. Cocktails: 5:30 PM, dinner 6:30 PM. Reservations: Engineers Club: (415) 321-4184 by noon, March 9th.

RELIABILITY MARCH 11

Story on page 8

RELIABILITY PLANNING FOR A NEW PROGRAM. P. A. Coffman, Program Reliability Engineer, LMSC. Non-members welcome.

MARCH 11, Thursday, 8:00 PM, Stanford Physics Lecture Hall, PH 104. Happy hour: 6:00 PM. Dinner: 6:30 PM, Stanford View Restaurant, 1921 El Camino, Palo Alto. Reservations: Phil Guillot (408) 742-7026 by March 10th.

SYSTEMS SCIENCE & CYBERNETICS MARCH 15

Story on page 6

ACCOMMODATION AND COMPUTER VISION. Dr. Jay M. Tenenbaum, Lockheed Research LAB, Palo Alto.

MARCH 15, Monday, 8:00 PM, SRI, Conference Room B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 6:00 PM, Red Cottage, 1706 El Camino, Menlo Park. Reservations: Section office, (415) 327-6622.

VEHICULAR TECHNOLOGY MARCH 15

Story on page 5

TOUR OF BART AUTOMATIC TRAIN CONTROL AND COMMUNICATION CENTER. Tour host: Allen Rogers, Public Information Officer for BART.

MARCH 15, Monday, 6:00 PM, BART Lake Merritt Complex parking lot located on Oak St. between 7th and 8th Sts., Oakland. Dinner: 8:00 PM, Elegant Farmer Restaurant, 34 Jack London Square, Oakland. Reservations: G. L. Godwin, (415) 894-4675 or Elizabeth Hudson, 894-3127 by March 12th.

The Parts, Materials and Packaging group sponsored a six-session course on the Quality Aspects of Microelectronics. Previous to this, two six-session courses were held on Microelectronics emphasizing technology and manufacturing.

This year a course has been organized to complement the past sessions by emphasizing selected topics and presenting recent advances in microelectronics. There will be four to six sessions starting in April.

The general course outline will include:

1. Plastic Packaging for LSI Arrays: Technology and Reliability; 2. Failure Analysis; 3. Hybrid Process Technology and Control; 4. Testing. For advance registration, please contact Jeff Schlageter, PMP Secretary-Treasurer at Fairchild Semiconductor, 464 Ellis Street, Mountain View, 94040. Phone: 962-3393.

Radar Transmitter Design Engineers

Our Radar Microwave Laboratory has several openings for hardware development engineers who have extensive state-of-the-art experience with high performance, airborne, fire control radar systems. Expertise with tube technology and RF circuitry design are required.

The Radar Microwave Laboratory is responsible for developing much of the hardware associated with the F-14 and F-15 fire control systems and the Condor Data Link.

Transmitter design

Engineering assignments exist which involve the conceptual design and development of complete transmitter subsystems including modulators, power supplies, control logic and built-in-test employing BWO, CFA Magnetron, Klystron and Traveling Wave Tubes. Additional desirable background would include a working knowledge of pulse compression techniques, complex waveform generation, thermal control, micro-miniaturization and high voltage design.

Openings are available on nearly all levels—from those with a minimum of 2 years of applicable, professional experience through those who are interested in and qualified for senior supervisory positions.

Accredited degree and U.S. Citizenship are required. For immediate consideration, please airmail your resume to:

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Annual old timers night

Old Timers night 1971 will honor "Chairmen for the first 50 years." C. W. "Brodie" Leihy, former publisher-editor of *Electrical West* will handle the pictorial presentation, with appropriate remarks, depicting highlights of the early days from the establishment of the San Francisco section of AIEE in 1904 and the San Francisco section of IRE in 1916 — until 1955.

We hope that we will be able to have as many of the past chairmen of the two original societies as possible in attendance and we would appreciate help from the membership and friends in contacting past chairmen who might not presently be receiving the "Grid." We also look forward to the many friends of these past chairmen in joining us for this occasion.

Many of us will remember the historical 75th anniversary edition of the *Electrical West* which featured a pictorial presentation and resume of the first 75 years of the electrical industry. Brodie Leihy, who prepared the publication, will be our host. Come meet your friends and talk over old times. Ladies are invited. See Calendar for dinner and meeting schedules.



C. W. Leihy

Ecology in design of power plants

"Ecological and Environmental Considerations in the Siting and Design of Electric Power Plants" will be the subject of the March 29 meeting. The speaker will be Mr. B. F. Waters, Biologist in PG&E's Department of Engineering Research.

With electrical demand doubling every ten years or less, and with the recent upsurge in concern over the impact of man's activities on his environment, it has become imperative that power producing organizations protect the integrity of the resources they use and affect in order to be able to meet the ever-increasing power demand. The ecological communities most commonly affected are aquatic, whether in hydroelectric or thermoelectric production. In the foreseeable future, the bulk of the increased power supply will come from nuclear thermoelectric power plants; therefore Mr. Waters will devote the majority of his time to discussion of



B. F. Waters

PG&E's approach to the siting and design aspects of these plants which are influenced by ecological and environmental considerations.

Mr. Waters joined PG&E in 1967 and has been concerned with the protection of resources affected by all phases of PG&E's activities since that time. He received a BS degree in Fisheries Biology from Humboldt State College and a MS degree in Fisheries Biology from the University of Washington.

Broadband linear antennas

The Group on Antennas and Propagation returns to the Peninsula for the March meeting. Mr. Ernest T. Harper of GTE Sylvania will speak on Broadband Linear Antennas.

Linear antennas are known for their inherently narrowband impedance properties. A class of linear dipole antennas has been designed and developed at Sylvania over the past several years. This improved aerial is a coaxial dipole antenna in which the conventional sleeve is replaced by a broadband cable choke. Bandwidths attained have ranged from ten percent for applications requiring an

essentially perfect impedance match to nearly an octave for receive applications with less stringent VSWR requirements. The talk will describe the design theory for both the antenna and the balun and present the practical results of many applications of the technique to radiating systems.

Mr. Harper is an Engineering Staff Specialist at Sylvania where he has been active in antenna design and Project Management. He received the BS, MS and Master of EE degrees from the University of Washington. See Calendar for details.

Optimal control in power systems

Power systems are very efficient and consequently lightly damped. The oscillations excited by lightning, switching, transmission lines, and sudden changes of power flow should be quenched to prevent secondary undesirable effects. An effective control point is the excitation of each alternator. Measurable state variables are shaft acceleration, velocity, and angle, field current and terminal voltage. A nonlinear weighting of these is used to control the excitation with constraints on maximum and minimum field voltage.

Dr. Otto J. M. Smith will speak on this subject at the Automatic Control Group meeting on March 30. He is a professor of electrical engineering and computer sciences at the University of California in Berkeley. He is a fellow of IEEE and has published many articles on adaptive control, state estimation, large sparse systems, economic simulation, and measurements. He is the inventor of the low-frequency function generator, variable-speed and variable-phase dual excitation alternator, and low-vibration stepping motors.

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Short circuit calculations

A straightforward comprehensive procedure for short circuit calculation will be featured at the IGA Chapter meeting March 18.

The procedure is not intended to present any new radical and empirical schemes, but rather to employ the simplest, most widely known concepts in a manner easily used even by those who do not often perform short circuit analysis. It has been presented at major engineering conferences in the Textile, Pulp and Paper, and Petroleum Industries and published in IEEE Transactions. Over 50,000 copies of this procedure are now in circulation.

The procedure also has been programmed for computer use and the presentation will include how circuit values placed on easily prepared input data forms enable the computer to provide comprehensive easily understood output short circuit information.

The featured speaker will be Russell O. Ohlson, Manager, Electrical Distribution Systems Planning, Square D Company, Lexington, Ky. Mr. Ohlson obtained his BSEE degree from Washington State University.

BART center tour

BART's Central Control Room supervises and controls the operation of the entire Rapid Transit System network. BART is the first completely new rapid transit system built in the U.S. in the last 60 years and the very first to be fully automated.

The system is composed of 23 miles of underground and underwater construction and 27 miles of construction at grade. The total 75 miles of railway will be equipped with double tracks for two-way traffic.

A tour of BART's automatic Train Control Center will be a feature of the Vehicular Technology Chapter meeting on March 15. See calendar for details.

IEEE INTERNATIONAL CONVENTION & EXHIBITION

March 22-25, 1971 — Coliseum & New York Hilton Hotel, New York

SIXTH REGION TECHNICAL CONFERENCE

May 11-13, 1971 —
Woodlake Hotel,
Sacramento, California

Liquid lasers surge ahead

Liquid lasers have been in existence for eight years. At the present time they are rapidly becoming competitive with solid state devices and in some respects are already ahead.

Two quite different categories of materials are being currently used. One utilizing the neodymium ion in inorganic solvents can be regarded as a liquid analog of the familiar Nd:YAG or Nd:glass but capable of higher average power output. The second category

utilizes polyatomic dye molecules (rather than ions) in inorganic solvents. The most important feature of dye lasers is easy tunability of output. This may soon establish them as the most useful sources of coherent radiation over broad regions of the spectrum.

A talk on these devices will trace the historical ups and downs of research leading to the recent developments. The speaker at the Electron Devices Chapter meeting on March 29 will be Alexander Lempicki.

Mr. Lempicki was born in Poland. He studied at the Universities of Cracow and Rome, was graduated from the Imperial College of Science, London, where he obtained the Ph.D. degree. Since 1955 his research has centered around luminescence of solids and liquids, organo metallic compounds, rare-earth spectroscopy and in particular laser action in the liquid state. He is currently with GTE Laboratories in Bayside, N.Y., as Manager of the Quantum Physics Group. See Calendar.



Alexander Lempicki

University of California Extension, Santa Cruz, presents two new microelectronics courses

MOS IC DESIGN X404

Provides the knowledge necessary for applying fundamental principles to the design of advanced MOS IC's and MOS LSI. Second of a two-course sequence. 3 quarter units, \$60.

Instructor:

Charles M. Botchek, Manager, MOS Engineering, Larse Corp.

MICROELECTRONICS FABRICATION TECHNIQUES X412

Photolithography; oxidation, diffusion, epitaxial deposition; thick- and thin-film substrate processing; packaging; lead-bonding; quality control; testing; microelectronics industry trends. Second of a two-course sequence. 3 quarter units, \$60.

Instructor:

Edward C. Thompson, Manager, LMSC Microelectronics Facility

Dates and Place:

Both courses meet on Tuesdays, 7-9:30 p.m., March 30-June 15, at LMSC Education and Training Center, 1184 N. Mathilda Avenue, Sunnyvale.

For Information:

Phone Donald B. Hummel, (408) 429-2761

Robot vision

A machine, like a person, encounters far more visual information than it can process. Because no physical sensor can simultaneously provide information about the full range of the environment, both man and machine must accommodate their sensors to emphasize selected characteristics of the environment. Heretofore, the accommodation of the machine was done manually, an unacceptable constraint for an autonomous robot.

At the March meeting of the Systems Science and Cybernetics group, Dr. Jay M. Tenenbaum will describe an evolving robot vision system in which the parameters of the camera are controlled by the computer. This system is distinguished from conventional picture processing systems by the fact that sensor accommodation plays an integral and active role in the recognition process.

Accommodation improves the reliability and efficiency of machine perception by matching the information provided by the sensor with that required by specific perceptual functions. The advantages of accommodation will be illustrated in the context of five key functions in computer vision: acquisition, contour following, edge verification, range-finding, and color recognition. Automatic accommodation can also be applied to other perceptual domains, such as speech recognition.

Dr. Tenenbaum, currently a member of the Lockheed Palo Alto Research Laboratory, received his Ph.D. in Electrical Engineering from Stanford University. Dr. Tenenbaum also holds three other electrical engineering degrees from M.I.T.

Toeplitz matrices

The Information Theory Chapter meeting on March 18 will feature a tutorial discussion of the asymptotic properties of Toeplitz matrices and their application to the study of stationary and nonstationary linear models of random time series. A Toeplitz matrix, illustrated in Figure 1, is a useful representation of a linear filter for discrete time signals. Thus, the mathematic properties of these matrices are useful tools in the analysis of stochastic time series and linear filtering systems. New simple proofs for the fundamental theorems and some recent extensions of these theorems will be described.

The speaker at this meeting will be Robert M. Gray. He is an Assistant Professor of Electrical Engineering at Stanford University. He is engaged in teaching and research in Communications and Information Theory.

Dr. Gray received the BS and MS degrees in electrical engineering from MIT and the Ph.D. from U.S.C. He is a member of Sigma Xi and Eta Kappa Nu.

Figure 1. Toeplitz Matrix

a					
b	a				
c	b	a			
d	c	b	a		
e	d	c	b	a	
f	e	d	c	b	a

Radiation detectors in medicine

The Nuclear Science Group will meet Tuesday, March 16, 1971, at 8:00 PM in the Stanford Linear Accelerator Auditorium, 2575 Sand Hill Road, Menlo Park. The speaker, Dr. Guy Armantrout, will talk on "Semiconductor Radiation Detectors - Their Medical Applications."

Semiconductor radiation detectors have found widespread application in nuclear physics during the past ten years. They have the advantages of tremendously improved spectral resolution over alternate schemes (up to several orders of magnitude), but they do suffer, in many applications, from reduced efficiency and increased complexity. This presentation will consider the properties of the detectors which affect their usefulness in medical applications. Included also will be a summary of their advantages and a consideration of the specific problems and their solutions in applying these detectors.

Dr. Guy Armantrout received his BS and MS from Oregon State University in 1962 and 1964 and his Ph.D. from Purdue in 1969. Since 1962 he has worked part-time and full-time at the Lawrence Radiation Laboratory. He has been actively engaged in the development of semiconductor radiation detectors since 1964 and has authored 17 papers in this area. See Calendar.

Philco WDL tour for AES

The Aerospace and Electronic Systems Ground will feature a tour of the Philco-Ford Western Development Laboratories in Palo Alto on Thursday, March 18, at 7:30 PM.

The tour will include the Developmental Test Facility (DTF), which is an operating replica of current satellite tracking stations, the large space simulation and environmental test chamber, the Human Engineering Laboratory, the photographic facility for developing printed circuits and other areas of interest.

To reach Philco-Ford, take the Bayshore San Antonio Road turnoff, south to Charleston, west to Fabian Way (one block) and proceed north to the auditorium at 3825 Fabian Way (Building 56). The tour starts at the auditorium. See Calendar.

EM presents Jay Cooper

The various aspects of product liability are steadily growing in importance. Numerous examples regarding environmental pollution, vehicle safety, defense equipment performance, etc., are requiring the engineer and manager to worry as never before that the product new in design or production may be an economic catastrophe. While undoubtedly there are moral, political, and public relations facets, the legal consequences are most easily measurable regarding company profit or loss.

Those legal consequences will be discussed by Jay Cooper at the Engineering Management Group meeting on March 10 at Rick's Swiss Chalet. Mr. Cooper will relate, in layman's terms, on the express and implied warranties under the Uniform Commercial Code with focus on product liability, the imposition of consequential damages in private and public contracts; and discuss the development of the theory of strict liability in tort.

Mr. Cooper is group legal counsel to all Philco-Ford Divisions in Northern California, where he specialized in contract and subcontract matters, doing work also in taxes, real estate, antitrust, and patent law, and the legal aspects of labor and personnel matters.

The meeting is at 8:00 PM. There will be a dinner at 6:30 PM, with Veal Cordon Bleu, for \$4.05 including tax and tip. See calendar for dinner reservation information.

Computers in microwave design

Robert D. Hall will address the Microwave Theory and Techniques Chapter at their March 10th meeting in the cafeteria at Applied Technology in Palo Alto.

Past trends in microwave design have taken what was once a black art through stages of increasingly accurate design and measurement. The next phase, involving modeling, optimization, and automatic testing, will bring much greater engineering productivity. Design ideas will be tested as representations on a computer under practical constraints determined by the engineer.

Examples of the use of network optimization will be presented, including two-state networks, interpretation of measured data, and active networks. An on-line demonstration will be available following the address.

Robert D. Hall graduated from Reed College with a BA in physics and received the MS in math from Stanford. He worked for Sylvania Electronics Defense Laboratories and for the Hewlett Packard Company. He is president of Dean Hall Associates, holds several patents and has written articles on various microwave circuits and components.

Dr. Greene on LSI memory systems

On March 9th, the Magnetics Chapter will hear Dr. Frank S. Greene on LSI Memory. Integrated circuit technology now makes possible digital memories of a variety of functional, performance and cost characteristics. In this presentation, the speed, power, size and packaging characteristics for the dominant memory cells are given. In addition, the system characteristics of LSI serial, random access, read only, and content addressable memories are included. Bipolar memory cards, of the type used in the ILLIAC IV machine, and the reliability and maintainability considerations of memory are mentioned.

Dr. Greene received his Ph.D. in Electrical Engineering from Santa Clara University in 1970. He is presently a member of the technical staff and project engineer for the ILLIAC IV LSI memory systems. He is a part-time lecturer at Santa Clara University. See calendar for details of meeting.

Dr. Thompson speaks on medical electronics

Dr. Noel Thompson will address a jointly sponsored meeting of the GROUP ON ENGINEERING IN MEDICINE AND BIOLOGY and THE AMERICAN SOCIETY FOR QUALITY CONTROL on March 17th in the Stanford University Medical School.

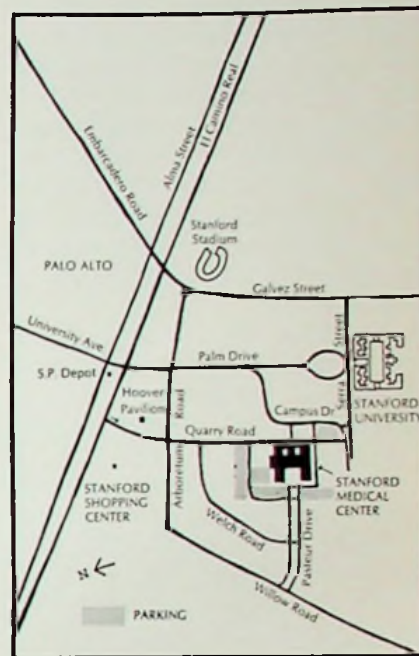
Dr. Noel Thompson, Chief, Bioengineering and Physiology Division of the Palo Alto Medical Research Foundation will speak on "PROBLEMS IN RELIABILITY AND QUALITY CONTROL IN MEDICAL ELECTRONICS." He will provide an overview of the current status of medical electronics to encompass available devices, acquisition confusion, difference in standards and communication barrier.

Dr. Thompson received his MD degree from UCLA in 1955 and MSCE from Stanford University in 1961. Presently he is both the Chief, Medical Instrumentation Laboratory at the Palo Alto Medical Clinic and Chief, Bioengineering and Physiology Division, Palo Alto Medical Research Foundation. Dr. Thompson holds academic teaching appointments at Stanford University in both schools of Engineering and Medicine and is lecturer in the Department

of Electrical Engineering at the University of Santa Clara.

This presentation is not scheduled on the usual monthly meeting date, nor will there be a pre-meeting dinner.

See calendar for details of meeting.



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Linear motors for transit propulsion

The application of electric motors in the high-speed transit propulsion field has been an area of recent growing interest. Mr. Keith M. Chirgwin, Chief Engineer in charge of ground Transportation for the Garrett Corporation will speak on this subject at the March 9, 1971 Power Society meeting.

Mr. Chirgwin will first consider the linear induction motor (LIM) and some of its possible configurations. This will include a discussion of the advantages and disadvantages of the LIM in high-speed ground transportation applications. A comparison will be made between applications of the LIM using active guideways and active vehicle arrangements.

In addition, Mr. Chirgwin will present two programs sponsored by the Department of Transportation. The first involves an actual full-scale test of a LIM driving a specially designed test vehicle to speeds of 250 MPH. The second is still in the design stage and involves application of a LIM to a 300 MPH tracked air-cushion research vehicle.

The program will conclude with a brief discussion of a program that is designed to move passengers and baggage to the Los Angeles International Airport. See Calendar for dinner and meeting details.

FAMOS: charge storage device

Operation and characteristics of the FAMOS device and the 2048 bit memory chip will be described by Dov Frohman-Bentchkowsky at the Electron Devices Chapter meeting on March 16. Mr. Frohman-Bentchkowsky is employed at the Intel Corporation.

The Floating-gate Avalanche injection MOS (FAMOS) memory device is a p-channel gate MOS insulated gate field effect device in which no electrical contact is made to the silicon gate.

It was introduced first at the International Solid State Circuits Conference, February 1971. The initial application, a fully decoded 2048 bit electrically programmable ROM, constitutes a significant advance in the art of semiconductor memories.

Operation of the FAMOS memory structure depends on charge transport to the floating gate by avalanche injection of electrons from either the source or drain p-n junctions. A junction voltage in excess of -30 volts applied to a p-channel FAMOS device will result in the onset of injection of high energy electrons from the p-n junction surface avalanche region to the floating silicon gate. See Calendar for meeting, dinner and reservation details.

Implementation of NON-memory LSI

On March 23rd, the Computer Chapter will hold a panel on implementation of non-memory LSI.

Attention has been focussed on the high volume, largely standard market place for LSI implementations of shift-registers, random-access-memory (RAM), and read-only-memory (ROM). Non-memory LSI has had a relatively slow start, but it is now reaching significant volume in several applications, most notably calculators and computer terminals. The panel members are experienced with the actual tradeoffs inherent in a production LSI environment. The discussion topics will cover the following subjects: (1) Which of the emerging new technologies are most suited for non-memory LSI? (2) What are the packaging trends? What pin-to-gate ratio may be expected? How good are the new edge connector packages? (3) What are the tradeoffs between static, two phase and four phase logic forms? Ratio versus ratioless logic? (4) How necessary is computer-aided-design (CAD) for non-memory LSI? How usable are the proprietary CAD services being provided by software firms? (5) What will the non-memory LSI market be during the next few years?

The panel will be chaired by Rob Walker, manager of Micromosaic Engineering at Fairchild Semiconductor. He is a Senior member of IEEE. See calendar for names of panelists and meeting details.

Active filters

"Active Filters: Basic Theory and Applications" will be the subject of the presentation at the March meeting of the Electromagnetic Compatibility Group (G-EMC) on Monday, March 15, 1971. The speaker will be Bob Shepard of the Genisco Technology Corporation.

Active filters have become an important application of semiconductor technology to the field of communications and to frequency control in general. "Inductorless" filters together with microcircuit packaging, are becoming an increasingly important tool of the EMC engineer because of the need to miniaturize filter assemblies for avionics and other weight-sensitive equipment.

Bob Shepard received a BSEE and MSEE degrees from UC Berkeley, in 1963. For the past 5 years he has been in charge of computer design programs for Genisco's R&D Division. See Calendar for meeting details.

Reliability planning for new programs

The planning and implementation of an aerospace reliability program and the perils and pitfalls which can occur in the process will be the subject of the Reliability Group's meeting at 8:00 PM on March 11, 1971, at Stanford Physics Lecture Hall PH104.

Mr. P. A. Coffman will present reliability program planning from both the technical and managerial aspects with the emphasis on the cost-effectiveness of this final program. One of the main goals of reliability planning is the development of a discipline for assuring product life integrity which has become more important in these days of competitive pressure and exposure to consumer liability. He will feature the actual experiences which relate to the rewards and penalties which are part of the reliability planning operations.

Mr. Phillip A. Coffman is a Program Reliability Engineer at Lockheed Missiles and Space Company. Mr. Coffman received his BS and MS degrees in Industrial Engineering from San Jose State College and most recently earned the Master of Aerospace Operations Management degree (MAOM) from the University of Southern California.

Come and "Meet the Speaker" at the Stanford View Restaurant (El Camino at Stanford St.) before the meeting. Non members are welcome. See Calendar for dinner reservations and meeting details.