

EDITOR'S PROFILE of this issue

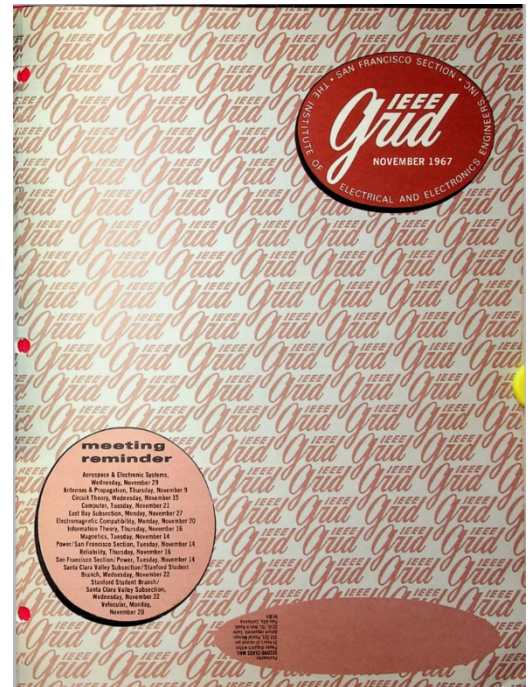
from a historical perspective ...

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

November, 1967:

Cover:

Page 9: Prof. Bernard Widrow of Stanford, father of adaptive systems techniques, discusses adaptive filtering. He is co-inventor of the Widrow-Hoff least-mean-squares algorithm, involving his first doctoral student Ted Hoff. Ted goes on to become the 12th employee of Intel, and is credited with simplifying a set of custom chips for a Japanese company (Busicom) into the 4004 microprocessor (actually, four chips: 4001, 4002, 4003, and 4004). I've been to his house in Los Altos; his extensive basement has rack after rack of IEEE journals, and several rooms are dedicated to fabrication equipment and supplies.



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. July, 2021 Contact p.wesling@ieee.org



**meeting
reminder**

- Aerospace & Electronic Systems, Wednesday, November 29
- Antennas & Propagation, Thursday, November 9
- Circuit Theory, Wednesday, November 15
- Computer, Tuesday, November 21
- East Bay Subsection, Monday, November 27
- Electromagnetic Compatibility, Monday, November 20
- Information Theory, Thursday, November 16
- Magnetics, Tuesday, November 14
- Power/San Francisco Section, Tuesday, November 14
- Reliability, Thursday, November 16
- San Francisco Section/Power, Tuesday, November 14
- Santa Clara Valley Subsection/Stanford Student Branch, Wednesday, November 22
- Stanford Student Branch/Santa Clara Valley Subsection, Wednesday, November 22
- Vehicular, Monday, November 20

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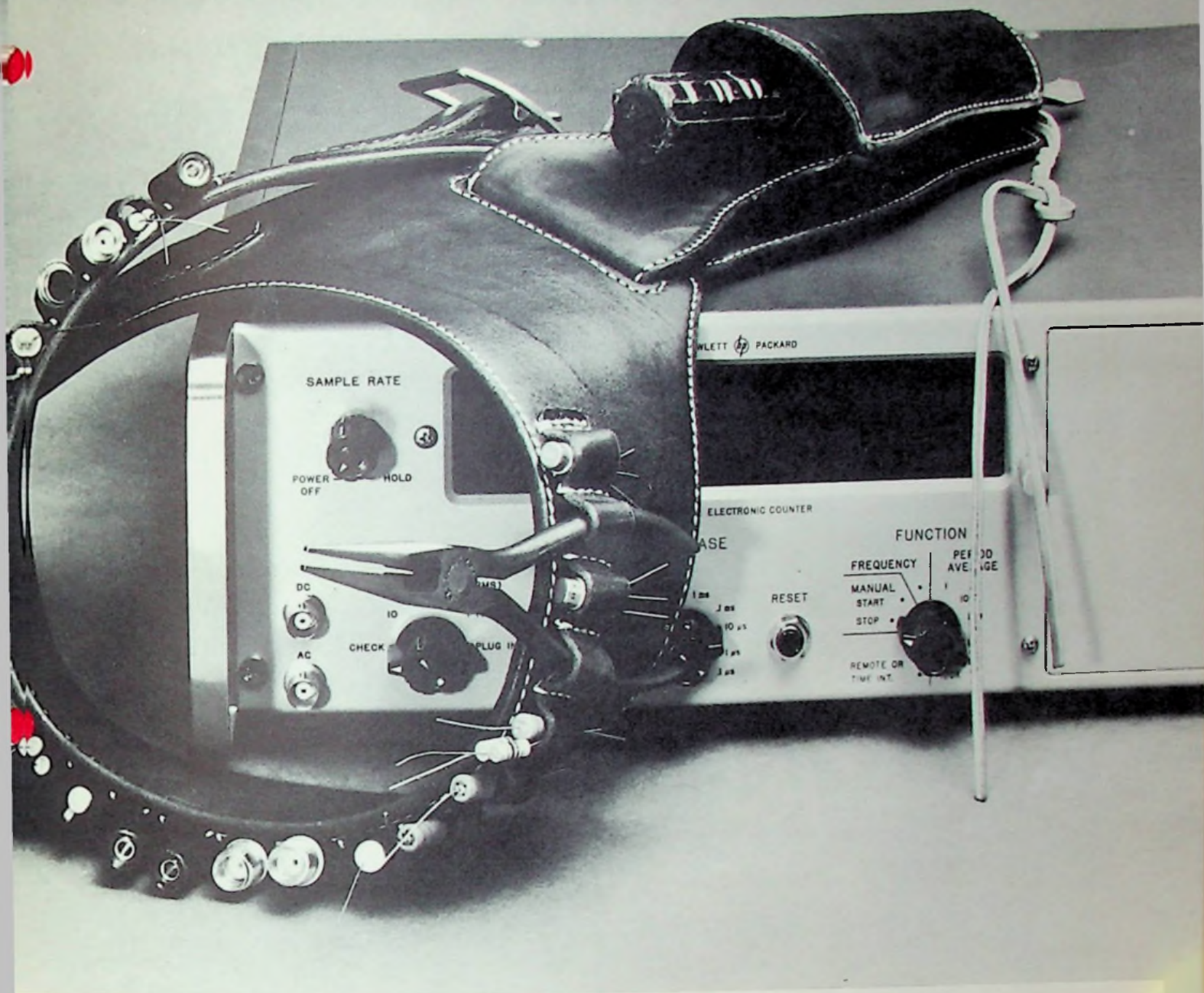
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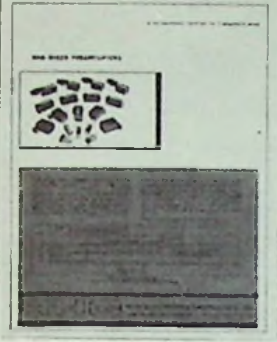
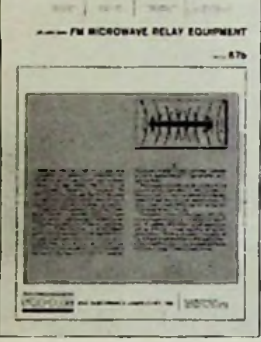


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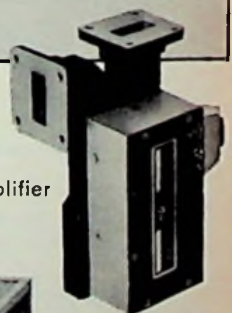
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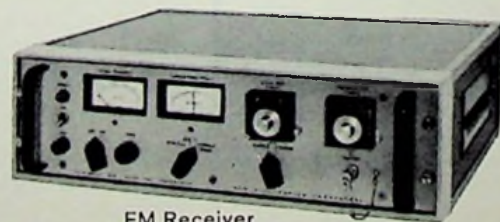


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IF Amplifier

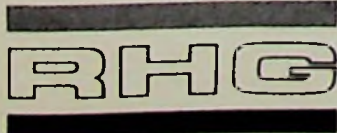


Mixer Preamplifier

Logarithmic
IF Amplifier



FM Receiver



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MEMBERSHIP

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who have been elected to current mem-
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wescon 67

MEMBERSHIP PROMOTION

Eighteen members of the section mem-
bership committee staffed the IEEE
membership counter in the west entrance
of the Cow Palace during WESCON.

They were Fred Doell, R. H. Mar-
chand, Wilbur Hall, J. H. Raber,
H. B. Benner, and Robert S. Howland,
all from PT& T; J. R. Civello and
R. K. Sundquist, Western Electric;
Don Peters and Abe Tilles, Lawrence
Radiation Lab; Gregory E. Austin and
Paul E. T. Jensen, Sylvania EDL;
Norman Williams, EIMAC Div. of
Varian; Leonard Vernier, Litton; Wil-
liam M. Lynch, SRI; Richard Borghi,
Physical Electronics Lab; Wilbert H. K.
Chang, Dalmo Victor; and L. Brown,
Applied Radiation.

chapter news

IE & CI

Lance Pennington, Bechtel Corp.,
433-4567, ext. 3039, has been named
acting chairman of the new Industrial
Electronics & Control Instrumentation
chapter and invites members interested
in this technology to contact him re-
garding chapter organization and pro-
gramming.

events of interest

SYSTEMS SCIENCE & CYBERNETICS

Dr. Kan Chen, Stanford Research
Institute, has been named chairman of
the 1968 IEEE Systems Science & Cy-
bernetics Conference to be held Octo-
ber 14-15 at the Towne House, San
Francisco. Other local members of the
committee are Dr. Hugh Mays, Fair-
child Semiconductor R & D Lab, pro-
gram; Dr. Charles A. Rosen, SRI,
publicity; Prof. Richard D. Smallwood,
Stanford Medical Facilities Planning
Group, financial; and Deane H. Abou-
dara, BART, local arrangements.

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SLAC'S MICROWAVE ASPECTS

Harry Hogg, senior microwave engineer in the accelerator physics dept. of the Stanford Linear Accelerator, will discuss SLAC and its microwave aspects at the November 9 meeting of the Antennas & Propagation chapter.

The talk will place emphasis on the microwave aspects of the machine. The design and construction of the disk-loaded waveguide accelerating structure and the rf drive structure required for acceleration will be discussed in some detail. The beam position monitoring system will also be discussed as well as the means of phasing and control of the rf system.

A graduate of London University, Mr. Hogg was formerly senior research engineer at Microwave Electronics Corp., Palo Alto, scientific staff member of General Electric Co., Ltd., Wembley, England, and research associate at the Stanford ERL. He holds a number of British patents.



Hogg



Kriessman

meeting ahead

CORES VS. FILMS

Dr. C. J. Kriessman, vice president and director of engineering, Ferroxcube Corp., Saugerties, N.Y., will review core memory techniques versus those using film at the November 14 meeting of the Magnetics chapter.

The memory techniques most likely to succeed in a commercial sense will be reviewed. Cost per bit and manufacturability will be discussed. The ability of core memory to withstand the competition of wire and flat film will be evaluated. New memory elements, such as superconductors, semiconductors and optical devices will also be considered.

Prior to joining Ferroxcube in 1966, Dr. Kriessman was with Univac where he managed various research, development and manufacturing operations.

For advanced hotel reservations during the March 18-21, 1967 IEEE International Convention and Exhibition, write: Miss Sylvia Peltonen, New York Convention & Visitors Bureau, 90 East 42 St., New York 10017. The event will center at the Hilton and Coliseum.

Meeting Calendar

**NOVEMBER 9, THURSDAY, 8:00 PM—Antennas & Propagation
SLAC and its microwave aspects**

Harry Hogg, senior microwave engineer, SLAC

Place: Stanford University PH 104

Dinner: 6:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto

Reservations: Dr. Glenn Keitel, 294-6414, ext. 2206 by Nov. 9

**NOVEMBER 14, TUESDAY, 8:00 PM—Magnetics
Cores versus films**

Dr. C. J. Kriessman, vice president and director of engineering, Ferroxcube Corp., Saugerties, N. Y.

Place: Lockheed Research Lab, 3251 Hanover St., Bldg. 202, Palo Alto
No dinner

**NOVEMBER 14, TUESDAY, 7:30 PM—Power/San Francisco Section
The past, the now and the future of electric vehicles**

Joseph Camp, marketing manager, electric vehicles, Westinghouse Electric Corp., Redlands, Calif.

Place: Engineers Club of San Francisco, 160 Sansome St., San Francisco

Cocktails: 5:30 PM

Dinner: 6:30 PM

Reservations: GA 1-3184 by noon, Nov. 13

**NOVEMBER 15, WEDNESDAY, 8:00 PM—Circuit Theory
A minimum-sensitivity multiple-loop feedback design**

Dr. E. S. Kuh, professor of electrical engineering, UC

Place: Stanford University, McCullough Bldg., Room 134

Dinner: 6:00 PM, Red Cottage, 1706 El Camino, Atherton

Reservations: Gena Goebel, 739-7700 ext. 243 by Nov. 14

**NOVEMBER 16, THURSDAY, 8:30 PM—Information Theory
State space approach to nonlinear filtering theory**

Prof. Richard Mortensen, assistant professor, UCLA

Place: Stanford Research Institute, Bldg. 1, Conf. Rm. B, 333 Ravenswood Ave., Menlo Park

Dinner: 6:15 PM, L'Auberge, 2826 El Camino Real, Redwood City

Reservations: Mrs. Rachel Bingham, 321-3300, ext. 453

**NOVEMBER 16, THURSDAY, 8:00 PM—Reliability
Tour of failure analysis laboratory, Lockheed Missiles & Space Co.,
Sunnyvale**

Place: Bldg. 104, Lockheed, Sunnyvale

Dinner: 6:30 PM, Stanford View Restaurant, 1921 El Camino, Palo Alto, 53

Reservations: Robert Welch or Adeline Fako, 966-3342 by Nov. 14

**NOVEMBER 20, MONDAY, 8:00 PM—Electromagnetic
Compatibility
The WJ 1007 reconnaissance system**

Archie Morez, project engineer at Watkins-Johnson Co., Palo Alto

Place: Lockheed Auditorium Bldg. 202, 3251 Hanover St., Palo Alto

Dinner: 6:30 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto

Reservations: A. R. Carlson, 326-7000 by noon, Nov. 20

**NOVEMBER 20, MONDAY, 6:00 PM—Vehicular
Performance testing of a new digital selective signaling equipment**

Chandos A. Rypinski, C. A. Rypinski Co., San Rafael

Place: Spenger's Fish Grotto, 1919 4th St., Berkeley

Cocktails: 6:00 PM

Dinner: 6:30 PM—\$3.75 including tip

Reservations: Mrs. Nathan, 349-3111, ext. 220 by noon, Nov. 20

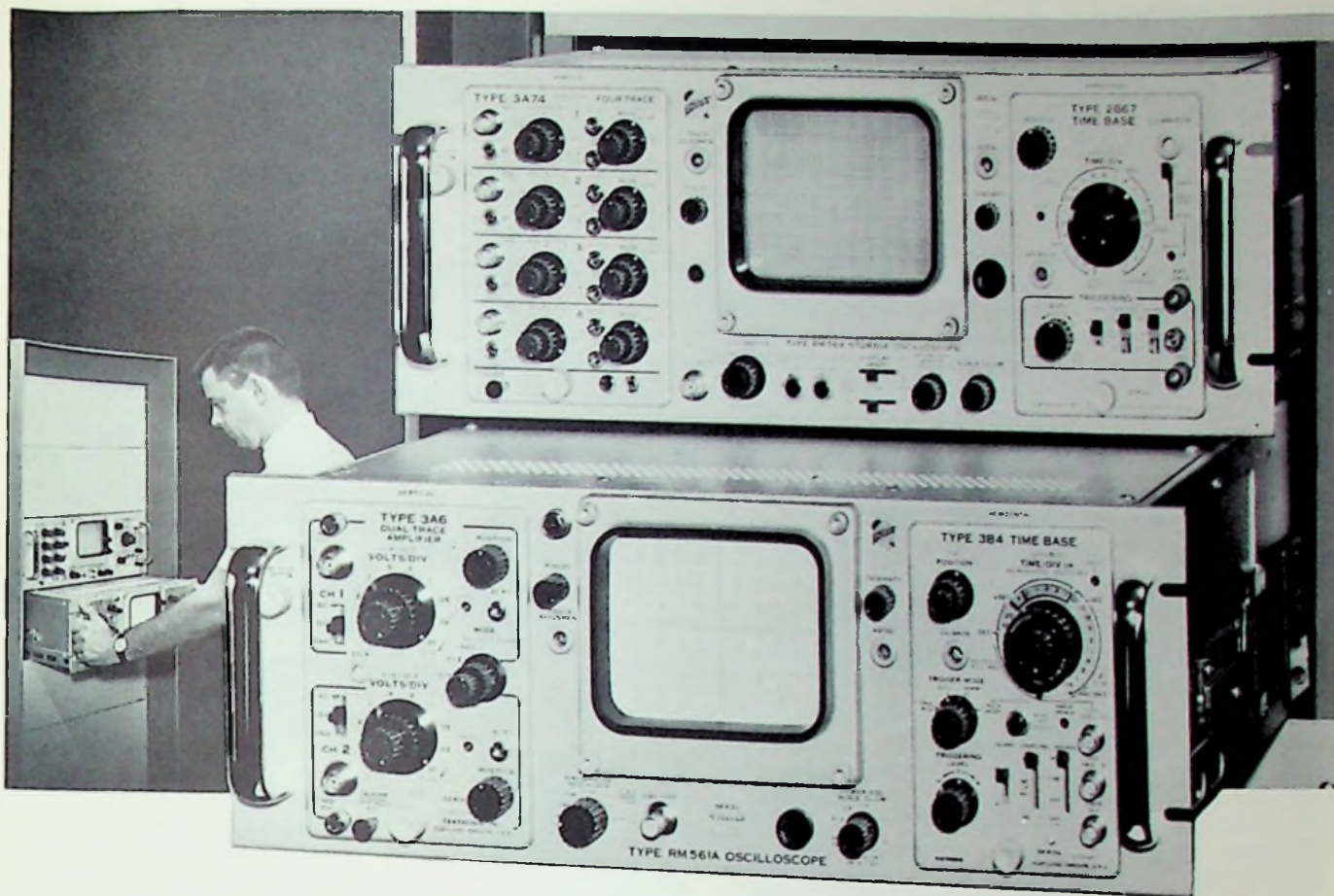
**NOVEMBER 21, TUESDAY, 8:00 PM—Computer
Anticipated uses of EDP in the banking industry**

B. C. Hogan, senior vice president, Wells Fargo Bank, San Francisco

Place: Room 139, McCullough Bldg., Stanford University

Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto

Reservations: Merrilee Ressel, 321-3300, ext. 451 by noon, Nov. 20



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SELECTIVE SIGNALING

Chandos A. Rypinski, C. A. Rypinski Co., San Rafael, will describe performance testing of a new digital selective signaling equipment at the November 20 meeting of the Vehicular chapter.

A graduate of Cal Tech, the speaker has worked for a number of companies including the Collins Radio Co., principally in development of military HF and UHF radio equipment, and Secode Corporation as engineering Vice-President. In this responsibility, he conducted a development of the non-radio mobile equipment for the Bell Laboratories which became the type MJ mobile radiotelephone system. He holds several issued patents including an important patent (3,173,996) on multi-channel telephony.

When a new selective signaling system is proposed, the size, price and numbering capability are obvious from the manufacturer's description, however it is all important to the potential user to have as much knowledge as possible about the potential reliability in service. The difficulties in finding objective methods to express performance in numerical values is evident from its absence in manufacturer's specifications and the omission of such procedures from EIA specification TR-120.

This presentation will demonstrate semi-laboratory testing methods for obtaining statistical statements for missed calls and false indications for various signal to "noise" ratios. Noise is put in quotation marks because in addition to white noise, as produced by un-squelched receivers, there is the sound of saturated usage land mobile radio channels, and of high frequency channels with radio teletype and facsimile signals, all of which are forms of noise to which the input of a selective signaling device may be exposed, and which have been recorded on magnetic tape.

The selective signaling address detectors and senders used for this demonstration will be a new type of digital tone keyed equipment developed for a particular private system application by the C.A. Rypinski Co. The signaling language is similar to that used for teleprinters.

By exposure of selector inputs to simultaneous noise and pre-recorded signaling programs, and by recording the outcome, it is possible to obtain numbers for misses and falses which have meaning if the competing interference can be standardized.

In addition, the use of tape recorded programs enables reproducible experimental evaluation of frequency translation and path modulation effects.

If you plan to change your address, notify headquarters and the section office at least three weeks in advance.

NOVEMBER 22, WEDNESDAY, 7:45 PM — Santa Clara Valley Sub-section/Stanford University Student Branch Using adaptive systems techniques to increase noise rejection on phased antenna systems

Dr. Bernard Widrow, Stanford University

Place: Stanford University, McCullough Bldg., Rm. 134
Refreshments

NOVEMBER 27, MONDAY, 7:30 PM — East Bay Subsection The electric car

James D. Fahey, consulting engineer, San Francisco

Place: PG&E service center, 4801 Oakport, Oakland

Cocktails: 5:30 PM, Venetian Restaurant, 6701 Foothill Blvd., Oakland

Dinner: 6:30 PM, Venetian

Reservations: Oakland: Ruth Emerson, 835-8500, ext. 337; San Francisco, Mary Vilter, 399-4974; San Jose, Linda Jarrett, 291-4567 (AC 408) by Nov. 24

NOVEMBER 29, WEDNESDAY, 8:00 PM — Aerospace & Electronic Systems

Engineering and scientific manpower: the problem of mass lay-offs

Dr. Rajinder A. Loomba, San Jose State College

Place: Lockheed Auditorium, 3251 Hanover St., Palo Alto
No dinner



Rypinski



Kuh

FEEDBACK DESIGN

Dr. Ernest S. Kuh, professor and chairman-elect of the department of electrical engineering and computer sciences at the University of California, Berkeley, will discuss a minimum-sensitivity multiple-loop feedback design at the November 15 meeting of the Circuit Theory chapter.

A member of the Bell Telephone Labs technical staff from 1952 through 1956, Prof. Kuh received his doctorate from Stanford in 1952 and is the co-author of "Basic Circuit Theory," "Principles of Circuit Synthesis," and "Theory of Linear Active Networks."

A multiple loop feedback configuration has been proposed for realizing arbitrary transfer functions. The configuration contains n identical single-pole active stages and all possible feedback interconnections which are frequency independent. Method for minimizing a multi-parameter sensitivity index in the realization has been obtained and programmed. The realization of a second-order system corresponding to a narrow-band bandpass amplifier is illustrated. Since no inductance is needed, the design may have greater significance in linear integrated circuits.

EDP IN BANKING

B. C. Hogan, senior vice president in charge of marketing, systems and data processing, Wells Fargo Bank, San Francisco, will describe anticipated uses of electronic data processing in banking at the November 21 meeting of the Computer chapter.

"Given solid hardware and software performance in third generation file-oriented computer equipment, there are definite possibilities for the complete and scientific control of a large bank by its chief executive officer."

The speaker will discuss what is behind this statement including the data required, file organization, real time tie-in, simulation and control models, organization and personnel implications, and the management involved.

Mr. Hogan is a graduate of Annapolis, was a regular Navy officer for 4 years, joined IBM in 1953 in data processing sales, joined RCA in 1958 in the EDP division as district manager of a 5 state area, and in 1960 went to Fidelity Philadelphia Trust, where he directed the sales, programming and systems efforts of this bank until he joined Wells Fargo in 1963. His present responsibilities include advanced systems and operations research, internal systems, programming, and all automated operations.

The IEEE emblem has been fashioned onto a tie bar and is available from the Section Office at the following prices: Fellow, \$6; Senior Member, Member and Associate, \$5.



Hogan



Loomba

meeting ahead

MASS LAYOFFS

Dr. Rajinder P. Loomba, director, manpower research group, Center for Interdisciplinary Studies, and professor of electrical engineering, San Jose State College, will discuss "Engineering & Scientific Manpower: The Problem of Mass Layoffs" at the November 29 Aerospace & Electronic Systems chapter meeting.

Prof. Loomba recently directed a study of the unemployment and reemployment experiences of engineers and scientists who were laid off by aerospace and electronics companies in the seven counties of the San Francisco Bay Area during 1964. This study was financed by the U.S. Department of Labor. Concurrent with his duties at San Jose State College, he is a part-time staff member at SRI.

In May of 1964, Dr. Loomba conducted a pilot study of unemployed graduate defense engineers in the San Francisco Bay Area. In the spring of 1964 he conducted a survey of high school seniors from the Santa Clara, San Mateo, and San Francisco counties in order to determine what type of high school students planned to go into engineering and what their reasons were for this decision. At the same time he studied the individuals who did not plan to go into engineering and examined the reasons for their decisions.

Before coming to San Jose State College, Dr. Loomba worked at the Jet Propulsion Laboratory, California Institute of Technology, in Pasadena as a senior research engineer. Prior to joining JPL he was a senior engineer at the Laboratory for Electronics in Boston. Since 1960, Dr. Loomba has published four of his research findings in addition to his two theses.

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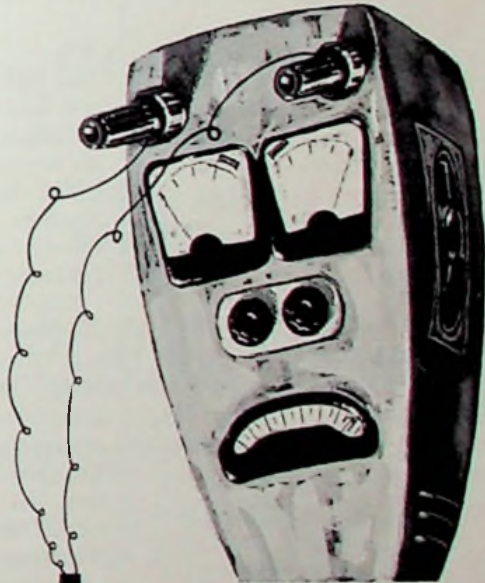
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meeting ahead

ELECTRIC VEHICLES

Joseph Camp, marketing manager-electric vehicles, Westinghouse Electric Corp., Redlands, will discuss the past, present and future of electric vehicles at the November 14 Power chapter meeting, under the joint sponsorship of the San Francisco Section.

Mr. Camp has been acquainted with the electric car business for 20 years and was instrumental in the original development of the Marketeer Manufacturing Company of Redlands, where the first electric golf cart was born. After service in World War II with the U.S. Navy, he became a charter employee of Marketeer, which started off with four people in 1947. This company has engaged in considerable research in the field of electric vehicles. Further development and progress has taken place since Marketeer became part of Westinghouse in 1965. A staff of 250 now devotes itself to the new electric automobile.

The talk will present a history of the small electric vehicle, describe the nature of the electric automobile that can be manufactured with present technology, discuss uses and adaptation to specific markets, and offer predictions on the future of electric vehicles.

meeting ahead

LMSC LAB TOUR

C. Ross Bumstead, Lockheed Missiles and Space Company, will host the Reliability chapter on November 16, at the Sunnyvale facility for a tour of the LMSC failure analysis laboratory, of which he is the manager. The meeting will start at 8 P.M. in the lobby of the Lockheed 104 building.

Prior to the tour of the laboratory, Mr. Bumstead will discuss its operation as a vital activity in the analysis of equipments reported failing to meet requirements during functional checkout or acceptance. He will indicate the organizational requirements of the laboratory and the skill levels of personnel needed for successful operation of such a laboratory. Details will be given of the unique and specialized equipments needed for performing the complex and exacting steps in the analysis of the failures, which frequently include the dissection of the failed devices. He will discuss the results of some of the more intriguing failures which have been analyzed by his laboratory.

Following the discussion, Mr. Bumstead will conduct a tour of the laboratory to show the equipment and provide a feel for the flow of a problem equipment under investigation. He will also demonstrate some devices and analyses currently under investigation.



meeting ahead

NONLINEAR FILTERING

Prof. Richard Mortensen, information systems division, department of engineering, UCLA, will describe a state space approach to nonlinear filtering theory at the November 16 Information Theory chapter meeting.

A state space theoretic approach to nonlinear filtering will be described based on the theory of stochastic differential equations and Markov processes. The concept of the Ito stochastic integral and probability distributions on function space will be briefly reviewed.

A graduate of M.I.T. and UC, Berkeley, Dr. Mortensen is an assistant professor.

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meeting ahead

ADAPTIVE FILTERING TECHNIQUES

Dr. Bernard Widrow, father of adaptive systems techniques, will present a review of his latest research effort, adaptive filtering techniques applied to phased array antennas, at a joint meeting of the Santa Clara Valley Subsection and the Stanford Student Branch on November 22.

During the past eight years Dr. Widrow, working at Stanford, has developed the Adaline adaptive threshold element and the Madaline network of adaptive threshold elements. Madaline systems have been used in self learning pattern recognition, for weather prediction, EKG diagnosis, and speech recognition.

The memistor, an analog memory element, has been developed by Dr. Widrow and Dr. M.E. Hoff, Jr. of Stanford and is now produced by Memistor Corp. Soon to be published in the *Proceedings* is an article by Dr. Widrow, P.E. Mantey, L. Griffiths, and B. Goode on "Adaptive Antenna Systems."

meeting ahead

EAST BAY SUBSECTION

James D. Fahey, consulting engineer, San Francisco, will discuss the electric car at the November 27 meeting of the East Bay Subsection. This new mode of transportation can provide the answers to many of the problems created by the internal combustion engine. The rewards offered for developing such a vehicle are impressive, both from an economic and environmental standpoint.

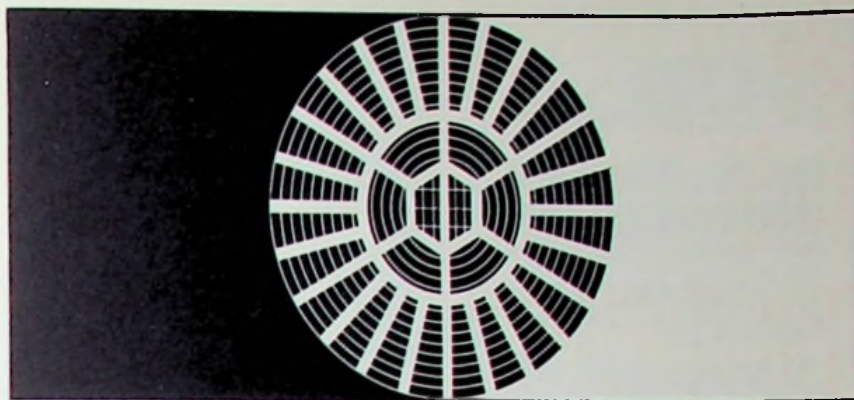
Mr. Fahey participated in the recent Electric Car Symposium at San Jose State College. Prior to establishing his own practice as a private consultant he worked for Lawrence Radiation Laboratory and is an expert in the fields of D. C. machines and electrical equipment.

It is the intent of the officers of the East Bay Subsection to provide technical sessions of general interest to all members. The subsection meetings are not intended to be highly technical or extremely specialized. Wives are welcome at all meetings.

Meetings planned during 1968: January 29—tour of Lawrence Radiation Laboratory at Berkeley; February 26—aerospace subject—title to be announced; March 25—tour of General Motors plant at Fremont; April 29—The Pacific Northwest-Southwest 700 kv DC lines; June 7—Ladies' Nite—wine tasting and dinner, location to be announced.

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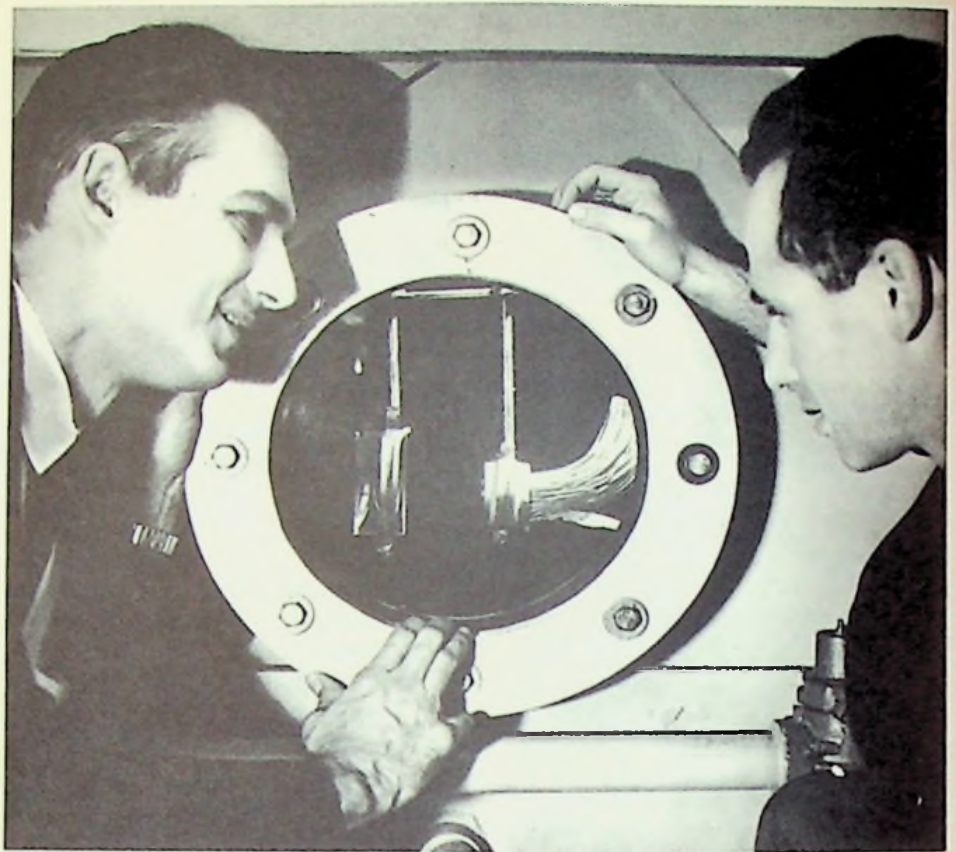
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LMSC scientists Alvin E. Brown, left, and Dr. Philip S. Green discuss progress in experiments with underwater imaging setup, seen through porthole in water tank. Lens at left "focuses" reflected sound onto imaging head, right, from which sound waves are sent as electrical impulses through wires to television screen. Project may produce undersea detection system for Office of Naval Research.

oceanography news

UNDERWATER SOUND USED IN DETECTION

Scientists are helping pave the way toward the kind of all-seeing underwater detective U.S. officials were longing for after an H-bomb was lost off Palomares, Spain.

Electronics experts at the Palo Alto research laboratory of Lockheed Missiles & Space Co. are experimenting with a sub-surface sleuthing system using sound waves, under a contract from the Office of Naval Research. A similar study is being performed for the Navy by another company.

"One of the troubles with the H-bomb search off Palomares was that the search submersibles stirred up so much mud," said Alvin E. Brown, Lockheed staff scientist and one of two principal investigators in the underwater project. "A boat could make one pass trying to drag the bomb up, but then had to back off to let the mud settle."

Underwater workers have found that in roily conditions, illumination by floodlight may fail just as the headlights of a car fail in fog.

LMSC project scientists, headed by Brown and Dr. Philip S. Green, senior scientist, have conducted research based on knowledge that sound waves can be directed through murky water at an object and are developing techniques for

translating their reflections into a faithful image of the object—a refinement of the way a submarine's sonar works. Turbidity, or murkiness, is no obstacle.

An independent research project, financed wholly by Lockheed, proved the imaging concepts had promise. Company scientists arrived at the best combination of system elements by testing their equipment in a turbid-water tank at the laboratories here.

The Navy learned of Lockheed's work, and the current contract was the result.

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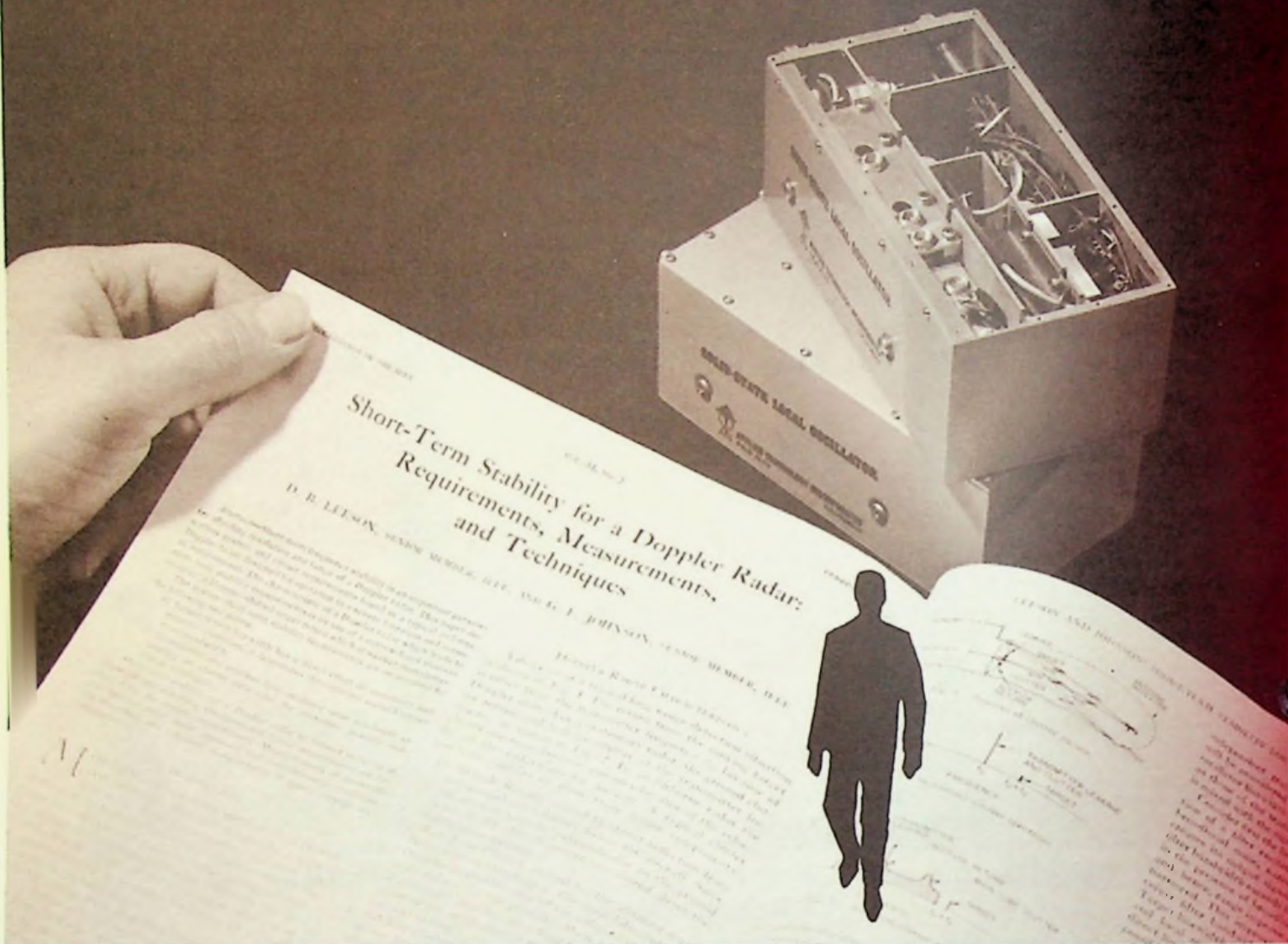
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