

# EDITOR'S PROFILE of this issue

*from a historical perspective ...*

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

February, 1969:

Cover: Shown is the United Engineering Center in NYC, across the street from the UN. It housed several engineering organizations, including ASME, ASCE, IEEE, AIME, and AIChE. It was known for its extensive library. I attended several meetings on its upper floors over the years. It was sold in 1997 (to Donald Trump) so the site could be redeveloped, and IEEE SPECTRUM moved to Park Avenue (and most of the IEEE's operations to Piscataway, NJ).

Page 6: Charles (Bud) Eldon is running for Section Treasurer. He had been roommates with Fred Terman's son Lewis (Lew, later EDS and IEEE president) while at Stanford; at HP, he founded a predecessor of my IEEE group (now the Electronics Packaging Society) as the PEP/PMP Group in 1956. He goes on to become the president of IEEE in 1985. I had several good discussions with Bud in his later years.

Page 6: Donald Pederson, a professor at UC-Berkeley, is running for Section Vice President. He developed the SPICE modeling language and system for circuit analysis. On page 12 he is awarded an IEEE award for excellence in teaching.



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

[https://ethw.org/IEEE\\_San\\_Francisco\\_Bay\\_Area\\_Council\\_History](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](mailto:p.wesling@ieee.org)

# Grid



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

FEBRUARY 1969





# PHASE II OF WANLASS O.E.M. DC POWER SUPPLIES—SAME LOW PRICES! IMPROVED SPECIFICATIONS...

## WANLASS TYPES 30, 60 AND 120-O.E.M.

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A.C. INPUT:	105-125V, 57-63Hz, 1 phase
D.C. OUTPUT:	See tabulation
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RIPPLE:	0.1% +10MV rms maximum
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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.
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TABULATION OF MANUFACTURER'S TYPES AVAILABLE				
MFGR'S. TYPE	VOLTAGE RANGE	POWER RATING	APPLICABLE PRICES	
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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
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
120-OEM-1	3.6 - 9V	120 Watts	1 - 9	\$75.00
120-OEM-2	9 - 17V	or 10	10 - 24	71.25
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120-OEM-4	30 - 60V	Maximum	50 - 99	63.75

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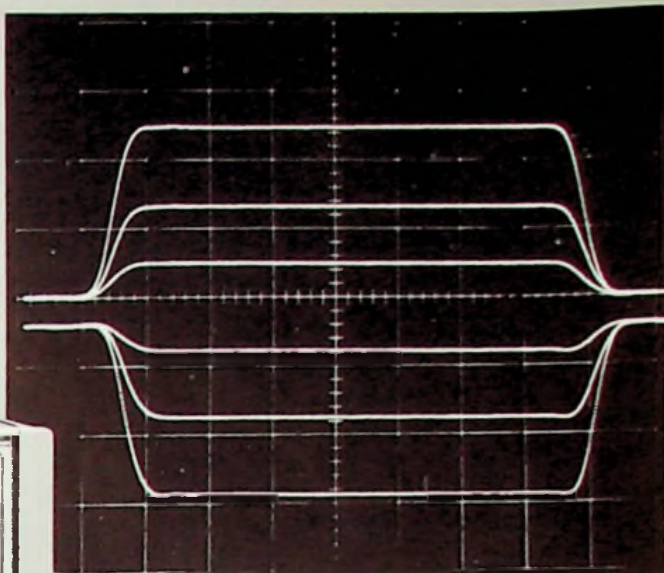


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# Pulse Performance



Multiple exposure showing typical waveform aberrations for positive and negative polarities at various amplitude settings. Notice the constant risetime and falltime with amplitude changes. 20 ns/cm sweep time and 4 V/cm deflection factor.

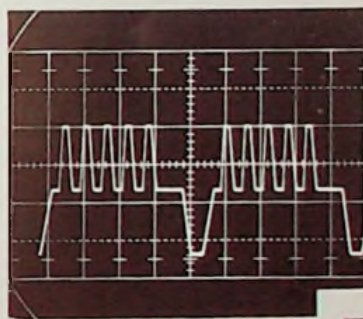
- REPETITION RATE 100 Hz to 10 MHz.
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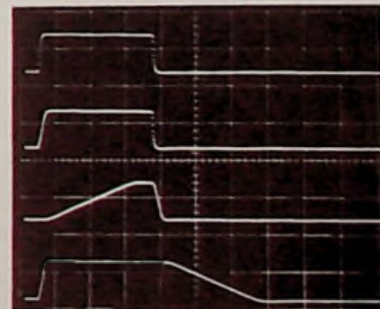
TYPE 115 PULSE GENERATOR .... \$825

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Single exposure showing combined outputs of two Type 115's. The burst of pulses on top of the positive pedestal was triggered by the + delayed trigger from the instrument generating the pedestal. 10  $\mu$ s/cm sweep time and 2 V/cm deflection factor.

Multiple exposure showing variable risetime and falltime. 500 ns/cm sweep time and 10 V/cm deflection factor.



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Pictured on the cover is the United Engineering Center, the International Headquarters of the Institute of Electrical and Electronics Engineers. It serves as a reminder to San Francisco Section members that the IEEE International Convention and Exhibition is upon us, the dates being March 27th through March 29th. As in previous years the exhibits and technical sessions will be held at the Coliseum and the New York Hilton Hotel. For information on exhibits write to W. C. Copp, IEEE Advertising Department, 72 West 45th Street, New York 10036. Publicity inquiries should be directed to J. M. Kinn, IEEE, 345 East 47th Street, New York 10017. Program information is obtained from IEEE headquarters, 345 East 47th Street, New York 10017. The March Grid will feature session and exhibit stories.

## Grid

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number 6

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# Meeting Calendar

## AEROSPACE & ELECTRONIC SYSTEMS FEB. 27

Story on  
page 14

FEB. 27, Thursday, 8:00 p.m., Lockheed Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. No Dinner.

## CIRCUIT THEORY/ COMMUNICATION TECHNOLOGY FEB. 19

Story on  
page 14

FEB. 19, Wednesday, 8:00 p.m., 134 McCullough Bldg., Stanford University. Dinner: 6:00 p.m., Red Cottage, El Camino Real, Menlo Park. Reservations: Mrs. Janet Delaney, 642-3705 by 2/18.

## COMPUTER FEB. 27

Story on  
page 14

FEB. 27, Thursday, 8:00 p.m., Room 134, McCullough Bldg., Stanford. Dinner: 6:15 p.m., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Tom Whitney, 326-7000, Ext. 3112 or 2707, by 2/26.

## EAST BAY SUBSECTION FEB. 24

Story on  
page 4

FEB. 24, Monday, 7:30 p.m., PG&E Service Center, 4801 Oakport Road, Oakland. Cocktails: 5:30 p.m.; dinner: 6:00 p.m., Venetian Restaurant, 6701 Foothill Blvd., Oakland. Reservations: Oakland: Florence Wanser, 835-8500, ext. 53; San Francisco: Mary Vilter, 399-4974; San Jose: Linda Jarrett, 291-4567 (AC 408) by 2/21.

## ELECTROMAGNETIC COMPATIBILITY FEB. 17

Story on  
page 4

FEB. 17, Monday, 8:00 p.m., Hewlett-Packard Auditorium, 1501 Page Mill Rd., Palo Alto. Dinner: 6:00 p.m., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Bill Swift, 326-7000, ext. 3088 by 2/14.

## NUCLEAR SCIENCE FEB. 18

Story on  
page 9

FEB. 18, Tuesday, 7:30 p.m., U.S. Navy Radiological Defense Laboratory (see map with story). No dinner, but registration is necessary to get access to the facility. Call reservations to Arlene Lenzi, 837-5311, ext. 700, or the Section office, 327-6622. Reservations must be in by Feb. 11th.

## POWER FEB. 11

Story on  
page 11

FEB. 11, Tuesday, 7:30 p.m., Engineers' Club of San Francisco, 160 Sansome St., S.F. Cocktails: 5:30 p.m.; dinner: 6:30 p.m. Reservations: Engineers' Club, 421-3184 by 2/10.

## RELIABILITY FEB. 20

FEB. 20, Thursday, 8:00 p.m., PH 101, Stanford University. Social: 6:00 p.m., dinner: 6:45 p.m., Stanford View Restaurant, 1921 El Camino, Palo Alto. Barbecued steak \$3.00, including tax and tip. Reservations: Fran Hamada, (408) 743-1577 by 2/18.

## SANTA CLARA VALLEY SUBSECTION FEB. 19

Story on  
page 16

FEB. 19, Wednesday, 8:00 p.m., Santa Clara University Poly Science Room 206, Engineering School. No dinner.

## VEHICULAR TECHNOLOGY FEB. 17

Story on  
page 8

FEB. 17, Monday, 8:00 p.m., Rickey's Hyatt House, El Camino at Charleston Rd., Palo Alto. Cocktails: 6:00 p.m.; dinner: 6:45 p.m. Reservations: Bill Nye, 328-1200 or Al Isberg, 433-3800 by 2/16.

## AEROSPACE IN LAW ENFORCEMENT. Ralph W. Franks, President of Law Enforcement Technology, Inc.

## SPECIFICATION AND DESIGN OF CHANNEL FILTERS FOR PULSE CODE MODULATION. JOINT MEETING. John A. C. Bingham, Lenkurt Electric Co., San Carlos.

## A LOW COST GRAPHIC TERMINAL SYSTEM. Prof. Harry D. Huskey, University of Calif., Santa Cruz.

## AIR POLLUTION - PANEL DISCUSSION. Milton Feldstein, Al Hyne, Roy Renner and Todd Crawford. (See story for details of speakers.)

## PANEL DISCUSSION: EMI TESTING TO MIL-STD-461. Moderator: Richard Kelkenberg, LMSC; speakers: Bob Cowdell, Genesco, H. C. MacQueen, LMSC, George Springer, HP Co., George Stump, Sylvania and Victor Turisin, LMSC.

## RADIATION DOSIMETRY. See story for details of speakers and topics. REGISTRATION IS ABSOLUTELY NECESSARY.

## TECHNICAL STUDIES FOR PACIFIC COAST INTER-TIE. H. R. Perry, Chief Planning Engineer, PG&E Co., S.F.

## LECTURE: RELIABILITY PREDICTION AND MEASUREMENT. Frank Alonzo, Value and Reliability Manager, CALAC, Burbank, and Steve Hovan, Research Specialist, LMSC, Sunnyvale.

## JOINT MEETING WITH STUDENT BRANCHES. ENGINEERING EDUCATION OF THE FUTURE: CONTENT AND METHODS. Prof. Timothy Healy, Santa Clara University and Dr. Glenn Keitel, San Jose State College.

## VEHICLE LOCATOR SYSTEMS. Paul K. Wormeli, Law Enforcement Program Manager, Sylvania Elec. Systems.



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## Diverse Views Presented on Air Pollution

The East Bay Subsection meeting on February 24th will be devoted to air pollution. The meeting will be a panel discussion followed by a question and answer period in which audience participation is encouraged. Air pollution in the Bay Area has become a problem of increasing concern to engineers as well as ordinary citizens. The following speakers will form the panel:

Milton Feldstein, Chief of the Technical Division of the Bay Area Air Pollution Control District, will speak about air pollution in the Bay Area and the role of the district in combatting and controlling air pollution.

Al Hyne, Division Head of Electronics' Nuclear Apparatus Systems Division, Electronics Engineering Department, Lawrence Radiation Laboratory, Livermore, has an electric car under construction. He will present a plan for a simple electric vehicle with electronic controls. Electric power plants are potentially competitive with internal combustion engines and future technology will focus more attention in this direction.

Roy Renner, mechanical engineer in the Military Applications Group at LRL, Livermore, will discuss steam automotive technology of the past, present, and future. Mr. Renner's view is that steam power is potentially competitive with the internal combustion engine, and contributes very little to the atmosphere in terms of noxious emissions.

## Dalmo Victor Names Director

Larry G. Larson has joined Dalmo Victor as director of programs. In his new post, Larson will be responsible for all phases of contractual performance on all programs that require administration under the program manager concept.

Current programs in this category include the deep space communications antennas for both the lunar and command-service modules of the Apollo spacecraft, the E-2C airborne early warning radar antenna, numerous low light level television programs, and the AMSA radar location, homing and warning system.

He received his B.E.E. (Electronics/Acoustics) from the University of Minnesota. He has also done graduate work in corporation finance at the University of California. He is the author of numerous technical papers.



Milton Feldstein

Todd Crawford, Chairman of the City of Livermore Air Pollution Control Study Committee, will discuss the meteorology of air pollution in the area and the various approaches which local government can take to minimize the problem.

It is also hoped that a speaker from the automobile industry will round out the panel.

This meeting should be quite interesting. Diverse views will be presented on air pollution. The general public will be invited and there is a strong possibility that a local television station will tape the discussion for later broadcasting. The meeting will be held at the PG&E Service Center, 4801 Oakport Road, in Oakland. A dinner will precede the meeting at the Venetian Restaurant. See meeting calendar for meeting time and dinner reservations.



Larry Larson

His professional memberships include the Acoustical Society of America, American Association for the Advancement of Science, American Institute of Aeronautics & Astronautics, American Institute of Physics, and the Institute of Electrical & Electronics Engineers.

## EMI Testing to MIL-STD-461: A Panel Discussion

The new tri-service EMC specifications (MIL-STD-461,2,3) have been approved and are now being written into contracts. Many of us who have only been able to scan the specifications have questions concerning their implementation. Therefore, a panel has been organized to discuss some of these questions, at the Monday, February 17 meeting of the Electromagnetic Compatibility Group. The members have had experience with these specifications and their experience can be of great help to us. There will be opportunity to discuss questions from the floor so please come prepared to participate in a very worthwhile meeting.

The panel members will be: Moderator Richard Kelkenberg, Lockheed M & S; Bob Cowdell, Genesco Technology; H. C. MacQueen, Lockheed M & S; George Springer, Hewlett-Packard; George Stump, Sylvania; and Victor Turesin, Lockheed M & S.

The meeting time: 8:00 PM; place: Hewlett-Packard Auditorium; dinner at 6:00 PM, Rick's Swiss Chalet. Reservations. See Calendar.

## Engineering Principles to be Reviewed

The Santa Clara Valley Chapter of CSPE is presenting a review of basic engineering principles as an aid to those preparing for the EIT examination. Passage of this eight-hour examination is the engineer's first step in obtaining professional registration. Certification as an Engineer-in-Training, or waiver therefrom, is required for eligibility to take the professional examination.

Local practicing engineers have volunteered their time and services to instruct in their fields.

Place and Time: University of Santa Clara, Room 551, Mechanical Engineering Bldg.

First Meeting: 7:00 PM, Tuesday, February 4, 1969.

Regular Class Meeting: 7:00 - 9:00 PM, Tuesdays and Thursdays.

Fees: \$30.00. Members of CSPE, Santa Clara Valley Chapter, may audit any or all sessions at no charge.

Any required texts or problem sets will be furnished free of charge by CSPE.

For additional information contact: Al Moellenbeck, 371-2206 (H), or Morris Courtright, 266-2994 (H).



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## Avionics Display Systems

Engineers are needed with backgrounds in radar, infrared, TV displays and other aircraft sensors and subsystems. Experience in proposal preparation, avionics system design, human factors and avionics EMI considerations desirable. Responsibilities include development from concept through proposal and participating in the system design of aircraft display subsystems. Degree and 3 years' experience in several of the above areas are minimum requirements.

## Electronic Design

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Engineers needed with circuit design experience using operational amplifiers, MOS FET switches, and other state-of-the-art linear integrated circuits in severe aircraft environments. Responsibilities include circuit design through testing of initial prototype. Minimum of BSEE with four years' circuit design with at least one year using above components.

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# NOMINATIONS

## 1969-1970 PROGRAM YEAR

Nominations for section officers for the 1969-70 program year have been announced and will appear on a postcard ballot to be received by the voting membership in May.



**John B. Damonte**



**Donald O. Pederson**



**L. G. Fitzsimmons, Jr.**



**Charles A. Eldon**



**Raymond D. Egan**



**Fred J. MacKenzie**

### John B. Damonte FOR CHAIRMAN

Present Vice-Chairman, former chairman and vice chairman of the membership committee, former chairman of the Antennas & Propagation chapter, presently Secretary-Treasurer of the Antennas & Propagation ADCOM, and a senior member of IEEE. Manager, microwave engineering department, Dalmo Victor Co., 1958-1966, formerly assistant director of research, supervisor of microwave section, research lab, and research microwave engineer. Manager, Antennas & Microwave - electrical, at LMSC, Sunnyvale, since 1966. University of California, 1948-1950 as research engineer and teaching assistant. B.S. and M.S., UC. Author and co-author of numerous papers in the antenna and microwave fields.

### Donald O. Pederson FOR VICE-CHAIRMAN

Present Secretary, a professor, dept. of electrical engineering, U.C. Berkeley. Received the B.S. degree in 1948, and the M.S. and Ph.D. degrees in 1949 and 1951. He was research associate at Stanford, and on the technical staff at Bell Labs, N.J. Since 1955, he has been a faculty member at U.C., Berkeley. He was a Guggenheim Fellow in 1964, is a member of Sigma Xi and Eta Kappa Nu. He is a member of the Ad Com for Circuit Theory, member of the committee on Solid State Center, and has been chairman and vice-chairman of the East Bay Subsection.

### L. G. Fitzsimmons, Jr. FOR SECRETARY

Present Treasurer, now Chief Engineer in San Jose for Central Counties Pacific Telephone. Graduated from University of California in 1940 with B.S.E.E. Completed one-year Applied Communications course at Naval Postgraduate School, Annapolis. Eleven years with Bell Telephone Laboratories. Since 1951 with Pacific Telephone in various engineering, maintenance and staff assignments. Member of Tau Beta Pi, Eta Kappa Nu and American Society for Engineering Education. Fellow of the IEEE. Member of the Communication Technology group and on their National Awards Committee.

### Charles A. Eldon FOR TREASURER

Received a B.S. degree in Physics from Stanford University in 1948, and an M.B.A. from Stanford in 1950. He joined Hewlett-Packard Company in 1951 and following a series of managerial assignments became production manager for the Microwave Division in

1957. Early in 1961 he was named assistant to the operations vice president and later that year moved to the Rockaway Division as manufacturing manager. In 1962 he became manager of corporate electronic data processing systems, and since 1967 has served as planning manager for the Frequency & Time Division.

He is a Senior Member of IEEE, and in 1956 started the San Francisco Chapter of PEP. He subsequently served in all offices, and was national chairman from 1963 to 1965. He was active in the establishment of PMP, and is currently a member of the national administrative committee. He has also served as Chairman of the Future Engineers Show judging committee for the San Francisco Section each year since 1963.

### Raymond D. Egan FOR TREASURER

Vice-President for Research at Granger Associates; has been a member of IEEE since 1950. Previous IEEE services include terms as Secretary-Treasurer, Vice-Chairman and Chairman of the San Francisco Chapter, Antennas and Propagation during the period from 1961 to 1964; served as General Chairman of the 1966 IEEE International Antennas and Propagation Symposium held in Palo Alto in 1966; was an ex-officio member of G-AP AdCom for two years during that period; graduated from Stanford University in 1955 with a BSEE; received the MS and Ph.D. degrees in 1956 and 1960, respectively; was affiliated with Stanford University as a Research Associate in the Department of Electrical Engineering; has published a number of papers in professional journals and is currently a member of URSI-USA Commission 3 and Sigma Xi.

### Fred J. MacKenzie SECTION/WESCON DIRECTOR

Fred J. MacKenzie, Administrative Engineer, Stanford Research Institute. Current Jr. Past Chairman. Previously Chairman, Vice-Chairman, Secretary, Treasurer of the Section. Member IEEE Committee on Sections, formerly Member IEEE Membership and Transfers Committee, AdCom IRE Military Electronics Group and Los Angeles Section Operating and Finance Committees. Has Chaired a number of WESCON Committees. Active in WEMA. Educated University of Chicago and Northwestern University. Staff member Northwestern Infra-red Communication Lab '47-'49, Cal Tech Synchrotron Lab '49-'51, held various engineering and administrative positions - Consolidated Electrodynamics Corp. '51-'59 - at SRI since 1959.



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Present Secretary, a professor, dept. of electrical engineering, U.C. Berkeley. Received the B.S. degree in 1948, and the M.S. and Ph.D. degrees in 1949 and 1951. He was research associate at Stanford, and on the technical staff at Bell Labs, N.J. Since 1955, he has been a faculty member at U.C., Berkeley. He was a Guggenheim Fellow in 1964, is a member of Sigma Xi and Eta Kappa Nu. He is a member of the Ad Com for Circuit Theory, member of the committee on Solid State Center, and has been chairman and vice-chairman of the East Bay Subsection.

### L. G. Fitzsimmons, Jr. FOR SECRETARY

Present Treasurer, now Chief Engineer in San Jose for Central Counties Pacific Telephone. Graduated from University of California in 1940 with B.S.E.E. Completed one-year Applied Communications course at Naval Postgraduate School, Annapolis. Eleven years with Bell Telephone Laboratories. Since 1951 with Pacific Telephone in various engineering, maintenance and staff assignments. Member of Tau Beta Pi, Eta Kappa Nu and American Society for Engineering Education. Fellow of the IEEE. Member of the Communication Technology group and on their National Awards Committee.

### Charles A. Eldon FOR TREASURER

Received a B.S. degree in Physics from Stanford University in 1948, and an M.B.A. from Stanford in 1950. He joined Hewlett-Packard Company in 1951 and following a series of managerial assignments became production manager for the Microwave Division in

1957. Early in 1961 he was named assistant to the operations vice president and later that year moved to the Rockaway Division as manufacturing manager. In 1962 he became manager of corporate electronic data processing systems, and since 1967 has served as planning manager for the Frequency & Time Division.

He is a Senior Member of IEEE, and in 1956 started the San Francisco Chapter of PEP. He subsequently served in all offices, and was national chairman from 1963 to 1965. He was active in the establishment of PMP, and is currently a member of the national administrative committee. He has also served as Chairman of the Future Engineers Show judging committee for the San Francisco Section each year since 1963.

### Raymond D. Egan FOR TREASURER

Vice-President for Research at Granger Associates; has been a member of IEEE since 1950. Previous IEEE services include terms as Secretary-Treasurer, Vice-Chairman and Chairman of the San Francisco Chapter, Antennas and Propagation during the period from 1961 to 1964; served as General Chairman of the 1966 IEEE International Antennas and Propagation Symposium held in Palo Alto in 1966; was an ex-officio member of G-AP AdCom for two years during that period; graduated from Stanford University in 1955 with a BSEE; received the MS and Ph.D. degrees in 1956 and 1960, respectively; was affiliated with Stanford University as a Research Associate in the Department of Electrical Engineering; has published a number of papers in professional journals and is currently a member of URSI-USA Commission 3 and Sigma Xi.

### Fred J. MacKenzie SECTION/WESCON DIRECTOR

Fred J. MacKenzie, Administrative Engineer, Stanford Research Institute. Current Jr. Past Chairman. Previously Chairman, Vice-Chairman, Secretary, Treasurer of the Section. Member IEEE Committee on Sections, formerly Member IEEE Membership and Transfers Committee, AdCom IRE Military Electronics Group and Los Angeles Section Operating and Finance Committees. Has Chaired a number of WESCON Committees. Active in WEMA. Educated University of Chicago and Northwestern University. Staff member Northwestern Infra-red Communication Lab '47-'49, Cal Tech Synchrotron Lab '49-'51, held various engineering and administrative positions - Consolidated Electrodynamics Corp. '51-'59 - at SRI since 1959.



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## Paul Wormeli Describes the Vehicle Locator Problems

Three parts of the vehicle locator problem will be discussed — system requirements; locator system techniques; and system output display and application — at the Monday, February 17 meeting of the Vehicular Technology Chapter, by Paul K. Wormeli.

Preliminary work in the derivation of system selection criteria will be presented first. The variation in accuracy required as a function, both of time and of situation for various users, will be briefly described and a preliminary cost model will be discussed. Difficulties in defining suitable measures of effectiveness and possible approaches will be mentioned.

A brief review of the most promising locator techniques will be given, including available test data and comparative advantages of the various approaches. One of the advanced design concepts being studied by Sylvania will be described in detail. This concept is a modified hybrid single-pulse ranging and angle-of-arrival system (i.e., polar coordinate system), based on the Sylvania developed monopulse direction finding system which accurately measures angle-of-arrival on a single pulse basis for all azimuth angles using small non-rotating fixed antennas.

In addition to describing specific equipment, a trade-off analysis will be presented showing how the components can be reconfigured to meet varying system requirements.

A typical error analysis will be presented showing how the system elements contribute to the overall system accuracy. Computed emitter location accuracy using 2, 3, and 4 stations and angle-only measurements will be presented.

The ranging approach to be discussed is based on the signal design accuracy achievable with a digital pseudo-random (PN) sequence. Trade-off between input signal-to-noise ratio and bit rate will be described at varying accuracies down to a few meters. The use of time and frequency division multiplexing to handle high vehicle loads will be described.

Finally, system output considerations indicating the influence of user control requirement on output display will be described. Potential display equipment will also be shown.

Paul K. Wormeli received his BSEE from the University of New Mexico, his Master of Engineering Administration from George Washington University,

and did graduate work in Operations Research at Stanford University.

Mr. Wormeli is presently directing the Law Enforcement and Community Safety program of the Sylvania Socio-



systems Laboratory. Prior to this assignment, he was manager of Sylvania's consolidated ocean surveillance program. His primary technical contribution in this area has been in requirements analysis and system concept development.

He has also participated in and directed a number of company-oriented operations research studies, including the design of several management information systems. Finally, he has participated in the derivation of inspection system requirements for potential arms control measures, under contracts with the Arms Control and Disarmament Agency.

On a part-time basis, Mr. Wormeli is an instructor in Operations Research at the University of Santa Clara.

He is a member of the IEEE, Professional Groups on Systems Science and Cybernetics, Aerospace and Electronic Systems; the International Association of Chiefs of Police; Sigma Tau; Kappa Mu Epsilon; and Blue Key.

Rickey's Hyatt House is the scene of the 8:00 PM meeting, with cocktails at 6:00 PM and dinner at 6:45 PM. Reservations. See calendar.



Vehicle locator display methods being evaluated by Paul Wormeli (standing), Law Enforcement Program Manager, and Mike Trimble, Systems Engineering Department Manager, of Sylvania's Sociosystems Laboratory. The console with its color CRT display shown here is part of a test bed for Sylvania's police force allocation system, designed to provide computer-assisted dispatching of police vehicles.



## Dr. J. P. Hurley Discusses Nuclear Science

The February 18 Nuclear Science Group meeting will be held at the Navy Radiological Defense Laboratory at Hunter's Point. Meeting time will be 7:30 PM in the main laboratory building (Bldg. 815). Adequate parking is available next to the building.

Registration no later than February 11 is essential in order to obtain access to the facility. Call reservations in to Arlene Lenzi at Aerojet General, San Ramon, Area 415/837-5311, Ext. 700, or Section office, 327-6622. Include name, address, and country of citizenship: U.S. citizenship is not required.

An introductory survey of the Laboratory's research efforts will be given by Harry Zagorites followed by discussions on specific experimental programs.

Eugene Tochilin, who is in charge of the Radiation Physics Branch, will discuss radiation dosimetry with emphasis on the development of advanced radiation detection systems. Dr. J. P. Hurley, as Senior Investigator in the Nuclear Radiation Physics Branch, will give a general description of the equipment and techniques used in the nuclear spectroscopy program at NRDL, including the fabrication and use of Lithium-drifted Germanium detectors. Kenneth Zim-

merman will describe a hybrid model of FET transistors which includes radiation effects and he will present calculations of how these transistors will function in r-f circuits.

Some experimental setups will be available for viewing and further discussions.

No dinner is planned prior to the meeting. See map for directions.



## Spring Lecture Series

The Power Group of the San Francisco Section announced that it will offer two lecture series in the Spring of 1969.

A class in "Computer Applications in the Power Field" will be repeated, and a class on "Insulated Conductors" will be offered for the first time. Both classes will be held in San Francisco on Tuesday evenings commencing February 18th. The Computer series will run for 9 or 10 weeks, while the Insulated Conductor series will consist of 8 lectures. Preference in enrollment will be given to members of the Power Group. A tuition fee of \$7.50 for IEEE members and \$110.00 for non-IEEE members will be charged to cover expenses.

For information on the Computer Applications class contact: Jim Malinowski, PG&E Company, 245 Market Street, San Francisco, Calif. 94106, Phone 781-4211, Extension 2693.

For information on the Insulated Conductors class contact: Ed Bledsoe, Kaiser Aluminum and Chemical Sales, Post Office Box 5338, San Leandro, Calif. 94577, Phone 569-2012.

## New Engineering Manager

Mr. Herbert P. Radding has been named Engineering Manager of the Microwave Components Division at Western Microwave, effective this month.

Mr. Radding will be responsible for all research and development activities for the Division and will concentrate on the development of a sophisticated line of Microwave Integrated Circuits.

Prior to joining WML, Mr. Radding was associated with WML Advanced Microwave Labs, a company he co-founded, where he held the position of Vice President of Operations. Mr. Radding is widely known in the industry for a number of significant accomplishments relating to the development of Microwave Ferrite Devices.

Mr. Radding is a graduate of San Jose State College where he earned a BSEE degree and also did graduate work. He is a member of IEEE and is active in several of its professional groups.

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# Continuing Education: A Must for Engineers...

As a literary and educational technical society, IEEE has a traditional interest in Continuing Education which we define as "The acquisition of knowledge on a deliberate and continuing basis." Certainly, the tremendous evolution of technology during the past few decades has made it mandatory that engineers continue their education if they are to remain technically knowledgeable and capable. Your Section, along with industry and local colleges, is looking into the possibility of modernizing and simplifying the acquisition of this vital information. For example, Stanford University and the Association for Continuing Education will soon have four instructional TV channels in operation, providing day-long university courses — for credit — to some 40 industry affiliates, whose classrooms are located throughout the Bay Area. This network will be available for Continuing Education courses from 5-10 PM. It will then be a simple matter for an engineer to attend class at his place of business or by traveling a short distance to one of the TV classrooms. Although this approach may not be the complete answer to our problem, it is a step in the right direction. We need your help in determining what course of action IEEE should take. If we can determine what kind of courses you want, we will influence the local schools to make such

courses available. Where college support is unavailable, IEEE will attempt to organize and conduct the courses. We foresee four general course areas:

**ACADEMIC COURSES** — Traditional college courses leading to college degrees.

**STATE-of-the-Art Courses** — Keeping designers up to date in specialized fields.

**NEW TECHNOLOGY COURSES** — Providing graduate engineers with the background and design details necessary to work in new technical areas, e.g., integrated circuits, computer aided design.

**PROFESSIONAL DEVELOPMENT COURSES** — Non-engineering courses designed to broaden the perspective of engineers and managers.

Which of these course areas are of interest to you? Do you have specific suggestions? Here's your opportunity to help shape the future plans of Continuing Education in the San Francisco Bay Area. While your letters with comments and suggestions are most welcomed, won't you take a minute NOW to fill out the attached, stamped, self-addressed post card indicating your preferences.

John B. Damonte, Vice-Chairman  
IEEE — San Francisco Section

## Pappenfus Joins Hoffman Electronics

E. W. (Ernie) Pappenfus, a veteran electronics executive, has joined the Military Products Division of Hoffman Electronics Corp. as manager of communications operations, a newly created post.

He will be responsible for all communications development and production programs, including an advanced single-sideband communications system, designated the AN/ARC-98.



E. W.  
Pappenfus

Pappenfus spent the last six years as vice president of engineering at Granger Associates, Palo Alto, Calif.

He has written more than 20 technical articles and is co-author of "Principles and Circuits for Single Sideband," published by McGraw-Hill.

Pappenfus has held a variety of chairmanships and other offices with WEMA, the IEEE, the Armed Forces Communications and Electronics Association, and WESCON.

## NEW MEMBERS

The Section  
welcomes these new members:

J. D. Foster  
K. N. Lew  
S. A. Malmstrom  
F. J. Pasek  
A. O. Sturba  
B. M. Sutter

Congratulations to these members  
recently advanced to the grade of

Senior Member:

S. P. Chan  
L. P. Hahdu  
W. Soule, Jr.

## Qualidyne Corporation Names General Manager

Qualidyne Corporation announced today that Robert S. Stein has been elected Executive Vice President and a director of the company. He will serve as general manager of the company, with particular emphasis in the areas of finance and planning.

Immediately prior to joining Qualidyne, Stein was with the General Electric Company as Manager, Peripheral Device Planning in the Advanced Development and Resource Planning Division of the Information Systems Group in Bridgeport, Connecticut.

Stein received a BS in Accounting from Arizona State University and a BE in Industrial Engineering from USC in Los Angeles. Additionally, he has done graduate work in Operations Research at Case Institute of Technology. Stein is a member of the San Francisco Section of IEEE and is a reserve officer in the USAF.

## New Standard on Semiconductors

A new USA Standard will benefit members of the electrical and electronics industry who use a large amount of dc power in their processes. USA Standard Practices and Requirements for Semiconductor Power Rectifiers, C34.2-1968, gives definitions, letter symbols, general requirements, test procedures, and a recommended practice and operating guide applicable to semiconductor power rectifiers employing monocrystalline semiconductor rectifier diodes or thyristors.

This new standard reflects the current trend toward the use of semiconductor device materials instead of pool cathode mercury-arc power convertors in electronics.

USA Standard C34.2-1968 is available from the United States of America Standards Institute, 10 East 40 Street, New York, N.Y. 10016 at \$3.00 per copy.



# Technical Studies for Pacific Coast Intertie by H. R. Perry

The Pacific Northwest-Southwest Intertie is the largest EHV transmission facility in the United States. The project consists of about 2000 miles of 500 KV a-c lines, 500 miles of 345 KV a-c lines and 1700 miles of 750 KV d-c lines extending from the Columbia River to Los Angeles including the states of Oregon, California, Nevada and Arizona. This pioneering endeavor has produced many new and challenging engineering problems.



Among the more interesting problems was system stability. To achieve the maximum benefits from these lines while maintaining a high level of reliability, special equipment such as series capacitors and supplementary excitation controls are required to improve the natural characteristics of the transmission system. Mr. H. R. Perry, speaker for the Tuesday, February 11, Power Group meeting, has participated in the Joint Intertie Studies, since their inception, as Chairman of the Stability Working Group. In addition to the special equipment requirements, he will also discuss the new and improved techniques that were developed through these studies. For these studies it was

necessary to represent the bulk power supply systems throughout the eleven Western states.

Mr. Perry is the Chief Planning Engineer at the PG&E Company. He received his B.S.E.E. from the Georgia Institute of Technology in 1940. Since joining PG&E in 1946, he has spent most of his career in planning work. He is a member of the Power Systems Engineering Committee and the System Planning Subcommittee of IEEE, a member of IEEE Committee on Coordinated Area Planning and the Committee on Interconnection Arrangements. He is also Chairman of the Reliability Criteria for System Design Subcommittee and a member of the Technical Studies Subcommittee of the Western Systems Coordinating Council.

The meeting will be held at 7:30 PM, The Engineer's Club of San Francisco, with cocktails at 5:30, dinner at 6:30 PM. Reservations. See calendar.



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# triple awards for s.f. section

## Edward Ginzton

For his outstanding contributions in advancing the technology of high power Klystrons and their application, especially to linear particle accelerators, Dr. Edward Leonard Ginzton has been awarded the IEEE Medal of Honor, to be presented at the IEEE Convention in March.

Dr. Ginzton, Chairman of the Board at Varian Associates, was born in Russia in 1915 and came to the United States in 1929. He received a B.S. degree from the University of California in 1936 and an M.S. in 1937. He attended Stanford University from 1937 to 1940, receiving an E.E. degree in 1938 and a Ph.D. in 1940. In 1939 and 1940 he was Research Associate in the Physics Department at Stanford, and as a member of the Varian Brothers-Hansen group, con-



tributed to the development of the klystron tube. In 1941, with this group, he was transferred to the Research Laboratories of the Sperry-Gyroscopic Company in Garden City, N.Y.

He was one of the founders of Varian Associates and has been a member of its

Board of Directors since the Company's inception in 1948 and was elected Chairman and Chief Executive Officer of the Company in 1959. He was also President of the Company from 1964-1968.

Dr. Ginzton has written many papers in the field of electronics and microwaves, and has published a text "Microwave Measurements." He is the sole or joint holder of approximately 50 patents in the field of electronics and microwave devices.

He is a member of the National Academy of Sciences, National Academy of Engineering, Sigma Xi, Tau Beta Pi, Eta Kappa Nu, and a Fellow of the IEEE. In 1958 he was the recipient of the Morris Liebmann Memorial Award presented by the IEEE (formerly the IRE) for his contribution to the development of high-power pulsed klystrons.

## E. Finley Carter

The 1969 Founders Award has been given to E. Finley Carter for outstanding contributions to the electrical engineering profession and to the Institute of Electrical and Electronics Engineers through wise and imaginative leadership in the planning and administration of technical developments in electronics and telecommunications.



Mr. Carter received his B.Sc. in E.E. (with distinction) from the William Marsh Rice Institute in 1922. From 1922-29 he was with General Electric Co., Schenectady, N.Y., engaged in development and engineering, radio reception and transmission, industrial electronic controls, carrier current power line communication and control, high power broadcasting systems, facsimile, television, and photophone. From 1929-32, he was with United Research Corporation, Long Island City, N.Y., as Director, Radio Division, in broadcast receiver development and design. From

1932-54, he was with Hygrade Sylvania Corp. (Sylvania Electric Products, Inc.) as division engineer, vice president Engineering, and technical director. From 1954-65, he was with Stanford Research Institute, Menlo Park, California, as Manager of Research Operations, director and member of the board, president and executive director, and senior management counselor.

Mr. Carter is an IEEE Fellow, a member of AAAS, RESA, ARRL, and Tau Beta Pi. He is an honorary member, Rice University Engineering Society, and was a member of R and D advisory council to Chief Signal Officer from 1954-62. He was awarded the Civilian Outstanding Service Medal by the Secretary of the U.S. Army in 1963.

## Don Pederson

The 1969 IEEE Education Medal will be presented to Donald O. Pederson at the IEEE International Convention in March. The award, given annually to a member of IEEE, consists of a Bronze Medal, Certificate and \$500. It is given for excellence in teaching and ability to inspire students; leadership in electrical engineering education through publication of textbooks and writings on engineering education; innovations in curricula and teaching methodology; contributions to the teaching and engineering profession through research, engineering achievements, technical papers, and participation in the education activities of professional societies.



Professor Pederson received the B.S. degree from North Dakota Agricultural College (now North Dakota State University) in 1948, and the M.S. and Ph.D. degrees from Stanford University in 1949 and 1951 respectively. From 1951 to 1953 he was a Research Associate in the Electronics Research Laboratory, Stanford University. Dr. Pederson worked at Bell Telephone Laboratories, Inc., Murray Hill, N.J., and was also a lecturer at Newark College of Engineering, Newark, N.J., from 1953 to 1955. In 1955 he joined the Electrical Engineering Department of the University of California, Berkeley, where he is now a professor and engaged in research in semiconductor electronics and optimum integrated circuit realizations. He and three co-authors were awarded a best paper award for a paper at the 1963 International Solid-State Circuits Conference. He received a Certificate of Appreciation for his participation in the 1966 International Solid-State Circuits Conference.



## New WESCON Convention Director



Fred MacKenzie has been appointed by the Section EXCOM to act as WESCON Convention Director this year in place of E. W. Pappenfus, who has left the EBay Area to accept an executive position with Hoffman Electronics Corporation in El Monte, California.

### To The Editor ...

Mr. Ernesto Montano  
Editor, The IEEE Grid  
San Francisco Section Office, IEEE  
Suite 2210  
701 Welch Road  
Palo Alto, California 94304

Dear Ernesto:

I wish to apologize to you and your readers for the tasteless advertisement on pages 4 and 5 of your January issue. I had no prior knowledge of it and was stunned when I opened my Grid on 31 December.

Election to Fellow Grade in the IEEE is a tremendous honor, for which I am grateful and feel humble. Humility is hardly the impression conveyed by the ad.

Finally, let me assure you that Sylvania is indeed a fine organization worthy of praise and strong support. Occasionally, we have internal communication problems, of which this ad was a regrettable example.

*Burton J. McMurtry*

Burton J. McMurtry  
Sylvania Electric Products  
Western Division  
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## WHOEVER HEARD OF VAPOR COOLED MAGNETRONS?



Anticipating the demands for long range surveillance radar that the Supersonic Transport planes of the 70's will bring, English Electric has developed a compact L-Band, vapor cooled 2 MW magnetron that is likely to knock power klystrons from their present hold of that market.

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871 E. Hamilton Ave., Campbell, Calif. 95008  
Tel: (408) 377-1782



## Low Cost Graphic Terminal System

The February 27 meeting of the Computer Group will present Professor Harry D. Huskey as speaker, who will discuss a current research project in computer graphics at the Santa Cruz campus of the University of California.

Professor Huskey received his M.S. and Ph.D. degrees in Mathematics from Ohio State University. His background includes association with the National Physical Laboratory on the ACE computer project; the Institute for Numerical Analysis, UCLA, where he was responsible for the design and construction of the National Bureau of Standard Western Automatic Computer which is still in operation at UCLA; technical director of the Computation Lab at Wayne University; faculty member of the University of California, Berkeley, as Professor of Mathematics and Electrical Engineering; Cambridge University, England, as lecturer on the logical design of computers; and consultant to the Bendix Corporation, being primarily responsible for the logical design of the Bendix G-15 computer and participating in the logical design of the Bendix G-20 computer.

He is co-author with Professor G. A. Korn of a McGraw-Hill computer handbook. He is the author of various chapters in technical books on computers, and of numerous articles in the field.

Professor Huskey helped to set up a computer center at the Indian Institute of Technology as part of the U.S. foreign aid activity, and spent six weeks at Catholic University in Santiago, Chile, on a Ford Foundation cooperative program.

He was the first chairman of the Los



Professor  
Huskey

Angeles chapter of the IRE Professional Group on Electronic Computers and participated in the formation of the national group and was its first vice-chairman. From 1953-57 he was Review Editor of the IRE TRANSACTIONS ON ELECTRONIC COMPUTERS. Currently he is Editor-in-Chief for the Computer Group of the IEEE, which publishes regularly the TRANSACTIONS ON ELECTRONIC COMPUTERS and the COMPUTER GROUP NEWS.

Professor Huskey is currently chairman of the ACM Government Advisory Committee, and has served as a director and member of the ExCom of AFIPS. He is a Fellow of AAAS and IEEE.

In 1963, he initiated the Berkeley Time-Sharing project (GENIE). He spent the fall term of 1966 as visiting professor in the Electrical Engineering Department and Project MAC program at MIT. Since February, 1967, he has been at the Santa Cruz campus of the University of California.

The meeting will be held at 8:00 PM, Thursday, February 27, room 134, the McCullough Bldg., Stanford University, with dinner at 6:15 PM, Rick's Swiss Chalet. Reservations. See calendar.

## Circuit and Comtech Join Forces

"Specification and Design of Channel Filters for PCM" is the topic of the talk to be given to the Circuit Theory and ComTech groups' joint meeting on February 19, by John A. C. Bingham.

It is shown that the total subjective effects of lower sideband distortion introduced by sampling in a PCM system for voice band transmission can be expressed as a weighted integral and the attenuation required from the channel filters can be derived from the maximum allowable value of this integral. A simple iterative design method (there is no known straight forward design method for filters driven by resonant transfer circuits) which uses this integral as a performance criterion is described and the results obtained with the filters de-

signed thereby are briefly discussed.

John Bingham received a B.Sc. degree in physics from Imperial College, London in 1956, emigrated to Canada in 1956 and from thence to California in 1957. He joined Lenkurt in 1959 and obtained an M.S. degree in electrical engineering from Stanford in 1962. Most of his professional work has been on filters, and particularly, the design of them by computers. He has recently started working on data transmission systems and, particularly, adaptive equalizers for same.

The meeting place is 134 McCullough Bldg., Stanford University, at 8:00 PM. Dinner at 6:00 PM, The Red Cottage. Reservations. See calendar.

## Reminder for Fellow Proposals

Group Officers and individuals are reminded that the time for submitting suggestions for Fellow award consideration for 1970 is February 17th, with a summary of the outstanding accomplishments of the individual, a sponsor's name and a preliminary biographical summary to guide the Fellow committee of the Section, which will be screening and completing proposals for the April 30th deadline. Victor Siegfried, chairman, and his screening committee are already working on a few submissions, but depend on the personal knowledge of Section members to identify members with the requisite "unusual professional distinction" which will weigh heavily in the national evaluation. Professional Group leaders are especially urged to scan their membership for potential nominees for both Section and National Group proposals, since endorsements from both areas of personal knowledge are valuable. Proposal forms may be obtained at the Section office, (327-6622).

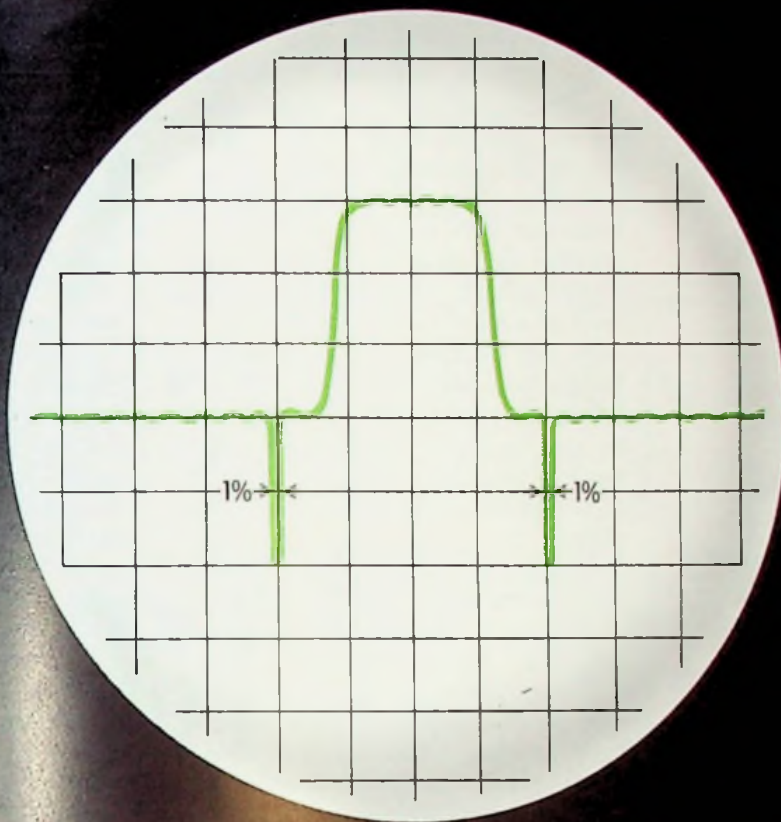
## Electronics in Law Enforcement



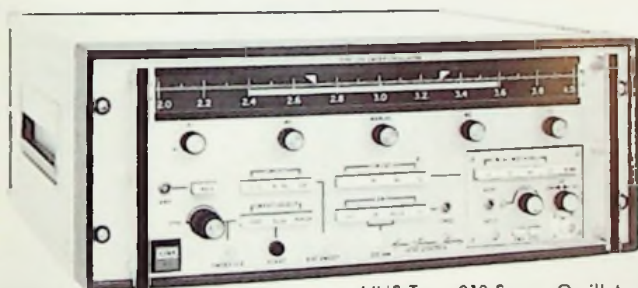
Ralph Franks

The Aerospace and Electronic Systems group will feature a lecture on the ever-increasing role of electronics in advancing the state-of-the-art in law enforcement. The speaker will be Mr. Ralph W. Franks, President of Law Enforcement Technology Inc. of Los Altos and well-known Bay Area Aerospace Electronics manager. He is the author of numerous papers covering missile electronics developments and electronics in law enforcement. The meeting will be held February 27th in the Lockheed Auditorium, Building 202, 3251 Hanover Street, Palo Alto, at 8:00 P.M. No dinner. For more information contact Al Hastings on 742-0372. Members are urged to attend. The general public is invited.





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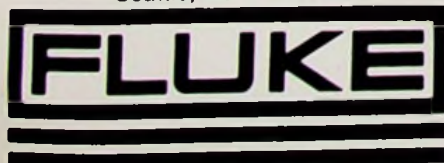
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## WESCON Announces Electronics at the Golden Gate

The Western Electronic Show and Convention this week announced plans for the 1969 WESCON, to be held in San Francisco August 19-22.

General Manager Don Larson indicated that both show and convention activities will again return to the Cow Palace complex of buildings on the southern outskirts of San Francisco.

He said the huge arena complex has been laid out to accommodate 1150 exhibit units, specially constructed technical meeting rooms, a science film theater, industrial design display, and WESCON's special exhibit of student science projects.

In presenting the 1969 version of the big industrial show and convention under the theme, "Electronics at the Golden Gate," WESCON will again divide displays of new electronic products into eight interest categories. They are Instruments and Instrumentation, Electronic Circuit Packaging, Production and Processing Equipment, Solid State Fabrication Equipment, Circuit Components and Microelectronics, Computers and EDP, Science Systems and Communication Equipment, and Microwave Equipment and Laser Systems.

Long-range forecast for attendance by industry executives and technologists for the four-day activity is 45,000 persons or more. In 1967, last WESCON year in San Francisco, attendance was almost exactly 45,000.

A predicted 650 manufacturers and representative organizations will con-

tract for exhibit space in the exhibit arenas. They will require the main Cow Palace Arena, North and South Halls, and East Hall — About 250,000 square feet gross. An industry-wide mailing of exhibit information will be made early in January, Larson said.

WESCON technical program planning is well under way, and is being directed by a volunteer committee headed by Dalton W. Martin, vice president for engineering, Vidar Corp., Mountain View, California, and Richard Towle, president of Towlelectronics Laboratory, Los Altos Hills. They are working toward a program schedule of about 20 technical sessions, all organized under the WESCON "session unit" format.

To a large degree, programming planning is being guided by results of a major study of engineering information processes completed last month by Dr. Peter N. Sherrill.

On August 20 and 21, WESCON will present the International Electronic Circuit Packaging Symposium in the San Francisco Hilton Hotel. Planning for this two-day program is also in advanced stages by a Papers Selection Committee, headed by Henry J. Scagnelli.

WESCON is a non-profit activity jointly sponsored by the Western Electronic Manufacturers Association, and Los Angeles and San Francisco elements of the Institute of Electrical and Electronics Engineers, representing IEEE Region 6.

## Conference in Sacramento

The Sacramento Section of IEEE is sponsoring an all-day Conference on February 15, 1969, to be held at the Sacramento Inn from 9:00 a.m. to 4:30 p.m. There will be four subjects.

- (1) Computers in Modern Hospitals, by M. D. Schwartz, TRW.
- (2) SIM-ONE-Anesthesiological Trainer, by C. L. Hampton, Aerojet.
- (3) Systems Approach to Community Problems, by J. W. LaPatra, U.C., Davis
- (4) Problems of the Building Technology in Connection with Housing Development, by J. Gilcrest, Kaiser Engineers

Registration fee, including lunch is \$4.00 (\$1.75 for full-time students). Pay at the door, but reservations must be in by Feb. 8th to: M. G. Jerome, 4056 Esperanza Drive, Sacramento.

## SCVSS Hosts Student Branches

"Engineering Education of the future: Content and Methods" is the topic of the February 19th joint meeting of the Santa Clara Valley Subsection and the Student Branches. The meeting is scheduled for 8:00 PM in the Political Science Room 206, Engineering School, University of Santa Clara. No dinner.

Professor Timothy Healy, of the University of Santa Clara Electrical Engineering department, and Dr. Glenn Keitel, chairman of the Electrical Engineering Department at San Jose State College, will discuss the direction which the academic world feels the engineering education of the future will take, will the systems approach prevail in the future and what are the special educational facilities which will be used to aid the professor. The talks will include some demonstrations.



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# Call for Papers

THE BIENNIAL JOINT MATERIALS HANDLING CONFERENCE will be held October 26-29, 1969, Sheraton Motor Inn, Portland, Oregon, sponsored by the American Society of Mechanical Engineers and the IEEE Industry and General Applications Group.

The General Theme of the Conference is "The Fast Changing World and Material Handling." The tentative program for the sessions is as follows: "Materials Handling - Space Age Style: Space & Saltwater, Handling nuclear products, and Handling military equipment; "The Population Explosion" and "Material Handling": Cranes for construction, Elevators, tramways and railroads, Automation of supermarkets, What's new on the farm?, Log and lumber handling, Truck and railroad car handling, Car-parking - future, Food handling, and Bulk material handling; "Thar She Goes" - Push Button Control Systems: Crane controls, Loader control system, Look Ma - no hands!, Stackers cranes, Remote control of pallet moving, Fluidics and control, and Tele-

metering; "Which Controls Who and Vice Versa" - "The Computer and Material Handling": Automated material handling, Economics from automation, Data processing applied to material handling, Systems control, and Cybernetics and material handling.

Authors should send a 25-word abstract to Max Frey, Conference Program Chairman, Project Engineer, Cascade Corp., P.O. Box 7587, Portland, Oregon 97220, as soon as possible. Completed manuscripts of papers are due (to Mr. Frey) by May 1, 1969.

The INTERNATIONAL SYMPOSIUM ON MAN-MACHINE SYSTEMS organized jointly by the Group on Man-Machine Systems of IEEE and the Ergonomics Research Society will be held at St. John's College, Cambridge, England, September 8-12, 1969.

The symposium will comprise presentations on research and development activities related to the design of man-machine systems. The Symposium Committee will invite papers from specialists

in selected topics, and contributed papers will also be welcome. The symposium proceedings will be in English.

For further information on the Symposium and a call for contributed papers, write: Robert C. McLane, G-MMS Meetings Chairman, Honeywell, Inc., 2345 Walnut Street, St. Paul, Minn. 55113, or David Whitfield, ERS Meetings Secretary, Applied Psychology Department, University of Aston, Birmingham 4.

THE THIRD INTERNATIONAL CONFERENCE ON PHOTOCONDUCTIVITY, which will be concerned with the fundamental physics of photoconductive phenomena in solids, will be held at Stanford University in Palo Alto, California, from August 12 to 15, 1969.

The conference will be devoted to recent progress both in the understanding of photoconductive mechanisms and in the investigation of the structure and energy levels of solids by photoconductive techniques. Among the topics to be covered are the origin and structure of defect states in solids as revealed by photoconductivity measurements, the mechanisms of generation and recombination of excitons and electron-hole pairs created by exciting radiation and the transport properties of photo-excited carriers. Special emphasis will be given to subjects of recent development such as multi-photon excitation and the effects of phonon interactions. Photoconductive effects in materials such as alloy semiconductors, organic semiconductors, amorphous materials and superconductors will be included in the subject matter of the conference.

In order to provide maximum opportunity for participation and exchange of information among all attendees, the conference will follow the pattern of both invited and contributed papers distributed among three and one-half days of non-parallel sessions which was established in the earlier two conferences at Atlantic City, New Jersey, in 1954 and Cornell University, Ithaca, New York in 1961. Contributions to the conference are invited from interested investigators throughout the world. The deadline for submission of abstracts is March 15, 1969 and notification of inclusion in the program will be made by May 1, 1969.

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# WESCON Issues Technical Program 'Call'

A call for technical session proposals for the 1969 Western Electronic Show and Convention (WESCON) has been issued by Dalton W. Martin, program chairman.

WESCON will be held in San Francisco August 19-22, 1969. Mr. Martin indicated his committee is planning a program of 20 sessions in the four days. The call is for "session" proposals, rather than individual papers. Prospective session organizers are invited to send "letters of intent," describing suggested sessions, to the chairman by March 1. The committee will then direct successful proposers to prepare more detailed proposals.

Mr. Martin said that the 1969 program will emphasize sessions in areas of applied technology.

He noted the following subject and topic areas as typical of those in which the committee is particularly interested:

**INSTRUMENTATION:** Trends in programmed testing; applications of micrologic instrumentation, impact of computers on instrumentation design.

**COMPONENTS AND CIRCUITRY:** Uses for new solid-state microwave devices; communications systems designed with integrated circuits; active filters employing IC'S; beam-lead technology; microelectronic design trade-offs.

**MANUFACTURING TECHNOLOGY:** Automatic handling of microcircuits; techniques in solid-state fabrication.

## Facsimiles Via Phone

Using the pulse technique, along with a new data conversion terminal designed by Bell Telephone Laboratories, engineers have experimentally transmitted full newspaper pages over telephone lines at the rate of six minutes per page. After transmission, the pulses are decoded to produce high-quality facsimiles of the original pages.

In transmitting a newspaper by this system, each whole page is attached to the drum of a revolving facsimile scanner. The signal from the scanner is fed into the data conversion terminal where it is converted to the language of binary pulses (bits). The encoded pulses are then transmitted, using a T-1 carrier telephone line, which transmits 1.5 million bits per second.

Newspaper samples transmitted in the experiment were standard offset and letterpress pages, test charts, and a production proof of the front page of the St. Louis Post-Dispatch.

tion; computer-controlled manufacture.

**COMPUTERS AND EDP:** Impact of minicomputers on engineering design; Training engineers to use computers; The implications of MSI and LSI; Trends in peripheral equipment; New techniques in computer-aided engineering; New data communications hardware; Modems.

**COMMUNICATIONS:** Application of new devices (FET's, micrologic) to communication circuits; Trends in modulation and coding; Communications in remote computer systems.

**ELECTRO-OPTICS:** New applications of lasers in industry and science; New work in 'holography; New optical scanning techniques; New display ideas.

**GEOLOGY AND OCEANOLOGY:** Design criteria for deep-ocean systems; computer-controlled geological surveys; earth-science instrumentation.

**THE ENGINEER'S ROLE IN MANAGEMENT:** How engineers prepare for management; New product planning; Engineer-management interfaces; Career goals for engineers.

**AEROSPACE ENGINEERING:** Design criteria for spaceborne systems; The new generation of avionics systems; Trends in ground support equipment; Problems in reliability.

Letters of intent should be addressed to Dalton W. Martin, WESCON Technical Program Committee, 3600 Wilshire Blvd., Los Angeles, Calif. 90005.

## New Chief Engineer

Mr. W. C. (Bill) Osborn was appointed to the position of Chief Engineer, Solid State Division, at Western Microwave, Los Gatos.

In his new position, Mr. Osborn has responsibility for the management of an engineering group engaged in the research and development of a broad line of solid state devices.

Mr. Osborn received a BS degree in electrical engineering from the University of Denver and has completed graduate work at UCLA. He is a Senior member of the IEEE and is active in several of its professional groups.

## Notice

Carl Hollstein advises us that he has appointed Andrew F. Leon as the Publicity Chairman for the Santa Clara Valley Subsection. Mr. Leon is with IBM Corp. in San Jose. His telephone number is 227-7100, ext. 7582.

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