

# EDITOR'S PROFILE of this issue

*from a historical perspective ...*

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

November, 1964:

Cover: A Motorola-developed control console for programming of gas flows for growth of epitaxial films in semiconductor substrates.

Page 4: summary of Les Hogan's background for his talk on the future of electronics engineering in American Technology, given at Stanford.

Page 6: Gordon Moore (then at Fairchild) speaks on microelectronics for military applications. He had been a member of the "Traitorous Eight" who left Bill Shockley's company and formed Fairchild, with the Valley's first real venture capital. He goes on to found Intel Corporation ("INTegrated ELEctronics") with Bob Noyce.



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.

July, 2021

Contact [p.wesling@ieee.org](mailto:p.wesling@ieee.org)

# IEEE Grid

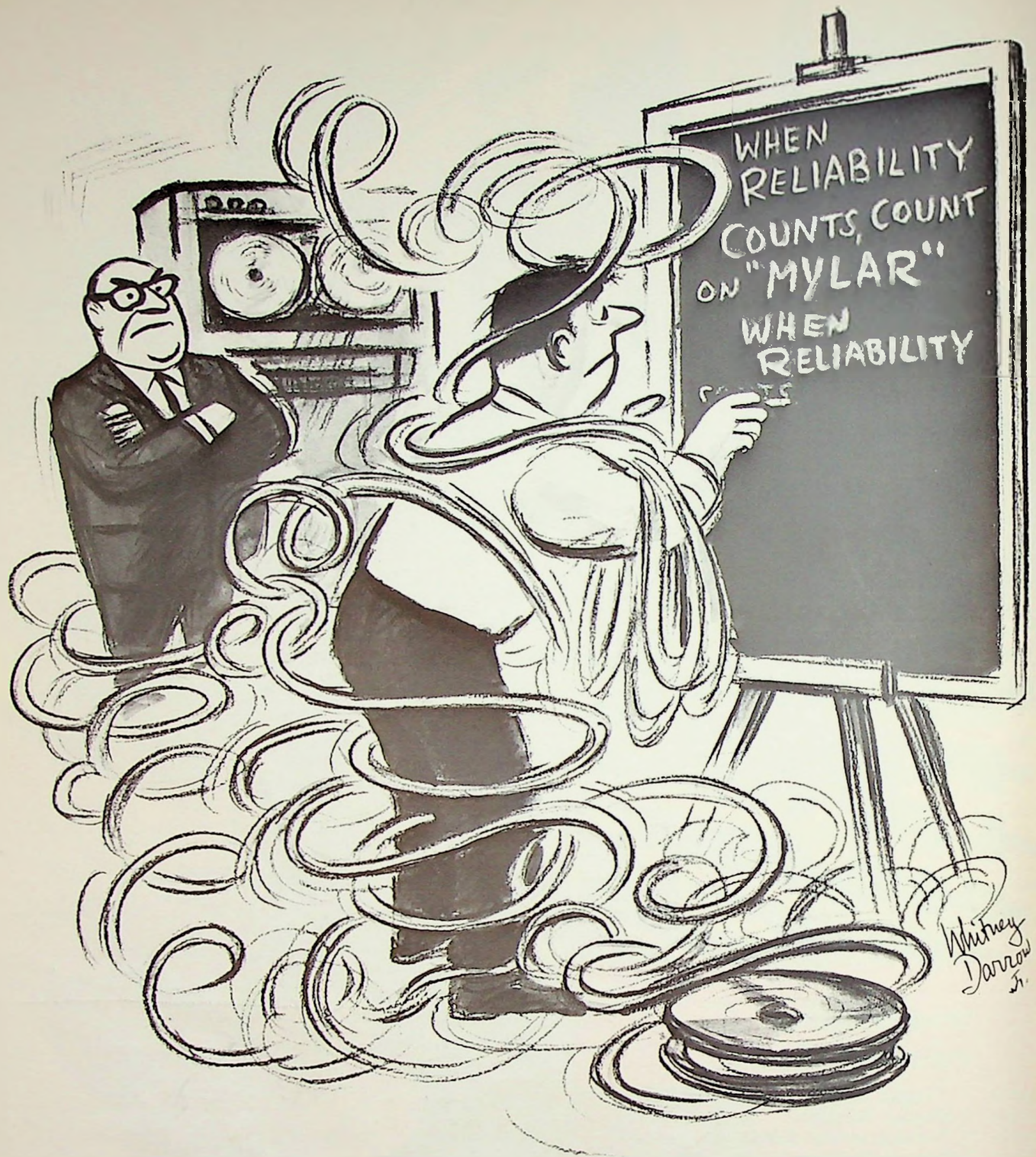
NOV. 1964

SAN FRANCISCO SECTION  
INSTITUTE OF ELECTRICAL  
AND  
ELECTRONICS ENGINEERS



## meeting reminder

- November 10 (Tuesday) Antennas and Propagation
- November 16 (Monday) Reliability
- November 17 (Tuesday) Fresno Subsection, Automatic Control, Engineering Management/Engineering Writing and Speech, Industrial
- November 18 (Wednesday) Santa Clara Valley Subsection/Aerospace, Military Electronics
- November 19 (Thursday) Audio, Circuit Theory, Information Theory, Microwave Theory and Techniques
- November 23 (Monday) East Bay Subsection
- November 24 (Tuesday) San Francisco Section, Electromagnetic Compatibility, Space Electronics & Telemetry
- December 1 (Tuesday) Power/Industrial
- December 9 (Wednesday) Instrumentation and Measurement, Microwave Theory and Techniques
- December 10 (Thursday) Circuit Theory



It would be difficult to conceive of anyone but the rawest novice not knowing the advantages of tapes of "Mylar"\*. After all, for ten years "Mylar" has been far and away the first choice for EDP work. Good reasons, too. "Mylar" is strong (a tensile strength

of 20,000 psi), stable (unaffected by temperature or humidity changes) and durable (can't dry out or become brittle with age.) There's no need to write it 50 times . . . just once: When reliability counts, count on "Mylar!" \*Du Pont's registered trademark for its polyester film.



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1752B High Gain Amplifier	5 mv/cm to 20 v/cm; dc to 30 mc at 5 mv/cm; 40 mc at 50 mv/cm; differential input on all ranges	\$285
1754A Four-Channel Amplifier*	40 mc bandwidth, sensitivity 50 mv/cm to 20 v/cm; triggering possible from any of the 4 channels; 9 nsec rise time, ideal for computer logic applications	\$595
1755A Dual-Channel High-Performance Amplifier*	1 mv/cm sensitivity with 20 mc bandwidth, 50 mc bandwidth at 10 mv/cm and above, dc coupled; B channel available for trigger	\$575
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1782A Display Scanner*	Permits recordings on external x-y recorder of waveforms displayed on crt	\$425
1783A Time Mark Generator*	Provides synchronized intensity-modulated markers, 10, 1 and 0.1 $\mu$ sec, $\pm$ 0.5% accuracy, for simplifying rise time and pulse duration measurement	\$130
1784A Recorder*	Pushbutton strip-chart recording of repetitive traces on crt, complete with graticule marks; 1/20th the price of a photograph; recording paper 5 cm (6 graticule divisions) approximately same size as photo	\$775

\*Features available only with the hp 175A, regardless of cost

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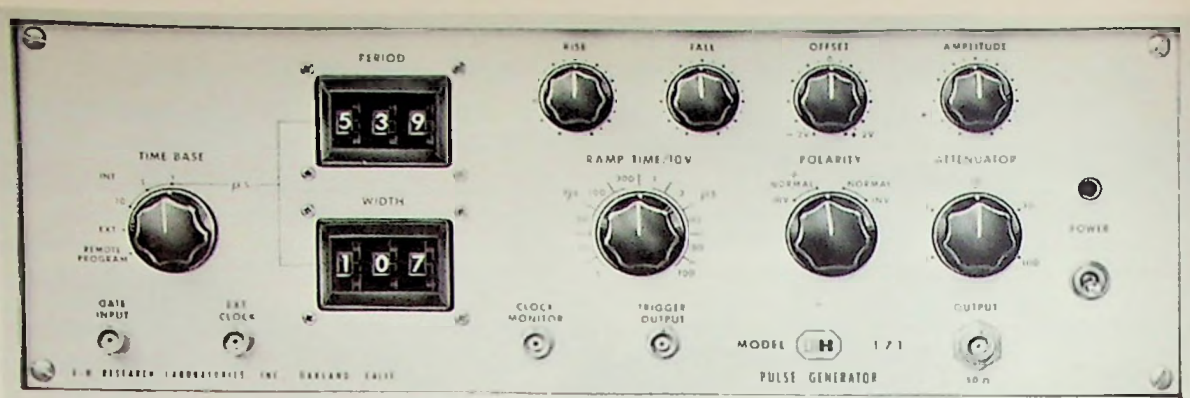
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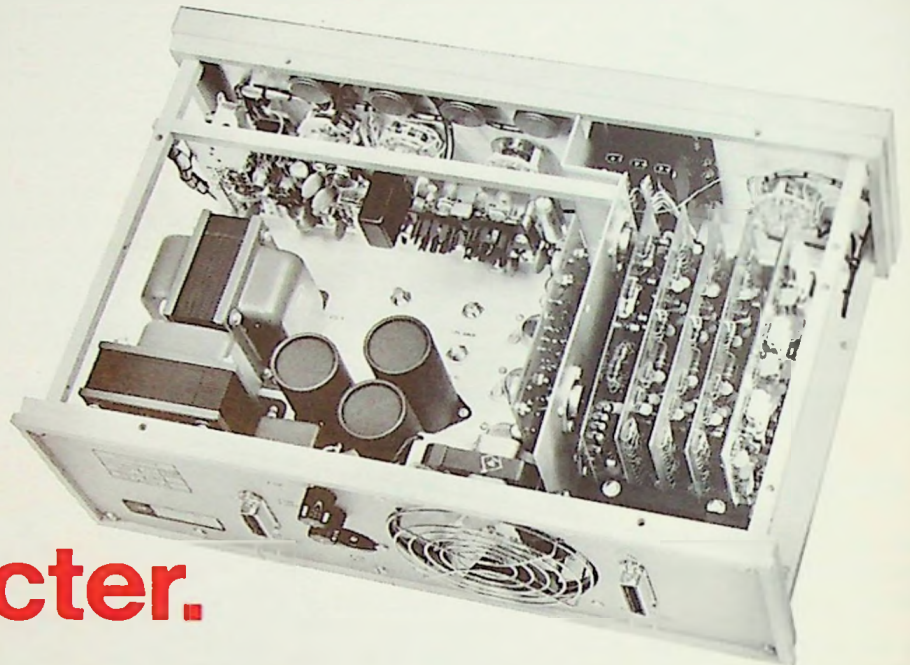


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from the chairs

**WESCON 1964**

This year's Wescon in Los Angeles exceeded most of the attendance expectations, if not the hopes, of the Wescon board of directors and the committees who worked so hard on its success. Total attendance was about 42,000, which is the second largest ever for a Wescon meeting. For the first time, attendance records were officially audited and, also for the first time, a behavioral study was made of the information-seeking characteristics of the technical-session attendees.



Ed Herold

Some very interesting data were gathered; just over a third of the overall attendance was classified as "management, owners, and executives" and about a third of the attendance classified themselves as connected with users but not manufacturers in the electronics field. Such data show that the educational objectives of the exhibits were met both by the large numbers of people and by the many who are clearly involved in electronics and yet have no other direct way of obtaining information on the output of this industry.

About 15 percent of the over-all attendance participated in the technical sessions, a number which corresponds with the number of attendees whose interests are more research-and-development oriented. However, when duplicate attendance is eliminated, it would appear that only about half of the attendees who might be expected

(Continued on page 16)

*cover*

The growth of epitaxial films atop semiconductor substrates is a vital process in the manufacture of transistors and integrated circuits. This Motorola-developed, semi-automatic control console permits automatic programming of gas flow to assure uniform film growth. Dr. C. L. Hogan, responsible for much of the remarkable development of the semiconductor products division, will address the section on November 24. See story and calendar.

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**FUTURE OF ELECTRONICS**

The future of electronics engineering in the American technology will be the subject of Dr. C. Lester Hogan, vice president of Motorola, Inc., and general manager of the semiconductor products division, Phoenix, at the November 24 meeting of the San Francisco Section.

Under Dr. Hogan's direction, the semiconductor division has grown from a small company producing a single line of power transistors to one of the major semiconductor manufacturers in the country.

A graduate of Montana State College and Lehigh University, Dr. Hogan did his undergraduate work in chemical engineering and his graduate work in solid-state and electromagnetic theory. A former educator at Harvard and member of the technical staff of Bell Telephone Laboratories, he performed experiments at Bell which demonstrated nonreciprocity at microwave frequencies and also carried out a theoretical analysis substantiating the experiments. The work was published in 1952 and has become a classical reference.

Long active in AIEE and IRE, Dr. Hogan has held important positions in most major professional organizations. He will be presented by Dr. Jack L. Melchor, vice chairman of the section.



Hogan

Nielsen

meeting ahead

**SPECIAL APPLICATIONS**

Unique communications facilities for special applications will be discussed by George A. Nielsen, toll equipment engineer of Pacific Telephone, at the November 23 meeting of the East Bay Subsection.

From the bottom of the ocean to the outer limits of space, progress is being made in the telephone industry. Communications via satellites, amplifiers designed to rest on the bottom of the ocean for 20 years without maintenance to make transoceanic telephone cable economical, and computers that talk to each other and to

(Continued on page 10)

**MEETING CALENDAR****SAN FRANCISCO SECTION**

8:00 P.M. • Tuesday, November 24

The future of electronics engineering in American technology  
*Dr. C. Lester Hogan, vice president and general manager of Motorola, Inc., semiconductor products division, Phoenix*  
 Place: Physics 101, Stanford University

**EAST BAY SUBSECTION**

7:30 P.M. • Monday, November 23

Unique communications facilities for special applications  
*George A. Nielsen, toll equipment engineer, Pacific Telephone*  
 Place: PG&E meeting room, 4801 Oakport, Oakland (parallel Nimitz Freeway)  
 No dinner

**FRESNO SUBSECTION**

8:00 P.M. • Tuesday, November 17

(With Professional and Student Groups)  
 High power vacuum tube manufacturing techniques  
*G. G. Carne, technical representative, Electronics Components and Devices Div., RCA*  
 Place: 10th floor, PG&E Building, 1401 Fulton St., Fresno  
 Dinner: 6:00 P.M., Tower House Restaurant, 831 Fern St., Fresno  
 Reservations: H. Mikkelsen, 268-0441, Ext. 244, or BA 7-7263, by Nov. 16

**SANTA CLARA VALLEY SUBSECTION**

8:00 P.M. • Wednesday, November 18

(Joint with Aerospace, see below)  
 Gravity gradient satellites, a discussion of infra-low frequency techniques  
*David Sonnabend, senior engineering specialist, Philco Corp.*  
 Place: Physics 100, Stanford University  
 No dinner

**GROUP CHAPTERS****Aerospace**

8:00 P.M. • Wednesday, November 18

(Joint with Santa Clara Valley Subsection, see above)

**Antennas and Propagation**

8:15 P.M. • Tuesday, November 10

The Mariner II space probe to Venus; final results from the microwave radiometer experiment  
*Dr. Douglas Jones, Brigham Young University and Jet Propulsion Laboratory*  
 Place: Lockheed Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto  
 Dinner: Ricketts Hyatt House, 4219 El Camino Real, Palo Alto, 6:30 P.M.  
 Reservations: 321-4175, Ext. 357, by October 18

**Audio**

8:15 P.M. • Thursday, November 19

New Hewlett-Packard tape transport  
*Walter Selsted, manager magnetic tape engineering at Hewlett-Packard*  
 Place: Stanford Research Institute, Little Theatre, basement wing D  
 Cocktails: 6:00 P.M., Ramor Oaks, 3435 El Camino, Atherton  
 Dinner: 6:30 P.M., same place  
 Reservations: 248-3344, Ext. 260, by November 18

**Automatic Control**

8:00 P.M. • Tuesday, November 17

Practical application of time optimal servo theory  
*George J. Thaler, professor of electrical engineering, U.S. Naval Postgraduate School, Monterey*  
 Place: 551 Engineering Center, University of Santa Clara  
 Dinner: 6:30 P.M., Faculty Club  
 Reservations: Mrs. McKenna, 296-3360, Ext. 226, by November 16

## Circuit Theory

8:00 P.M. • Thursday, November 19

Recent progress on filter design in Japan

*Dr. Hitoshi Watanabe*

Place: Main conference room, Stanford Research Institute, 333 Ravenswood Ave., Menlo Park

Dinner: 6:00 P.M., Stone Cellar Restaurant, 1906 El Camino Real, Menlo Park

Reservations: Mrs. Kelley, 326-6200, Ext. 3285, by November 18

## Circuit Theory

8:00 P.M. • Thursday, December 10

(Joint with Electron Devices, see below)

Measurements on integrated circuits using a scanning electron beam

*Prof. T. E. Everhart, University of California, Berkeley*

Place: Ampex Cafeteria, 401 Broadway, Redwood City

Dinner: 6:00 P.M., Stone Cellar Restaurant, 1906 El Camino, Menlo Park

Reservations: Mrs. Kelley, 326-6200, Ext. 3285, by December 9

## Electromagnetic Compatibility

8:00 P.M. • Tuesday, November 24

Technical talk and tour of IBM manufacturing facilities: high voltage, nano-second duration, power line transients

*William D. Hayter, staff engineer, IBM*

Place: Education building, IBM plant, Monterey and Cottle roads, San Jose

No dinner

## Engineering Management

8:00 P.M. • Tuesday, November 17

(Joint with Engineering Writing and Speech, see below)

## Engineering Writing and Speech

8:00 P.M. • Tuesday, November 17

(Joint with Engineering Management, see above)

## Business communications

*Richard C. Smith, president, The Smith Co., San Francisco*

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

No dinner

## Industrial

7:30 P.M. • Tuesday, November 17

Latest development and installation of the Stanford Linear Accelerator Center.

First showing of a new film on SLAC

*Douglas W. Dupen, technical information center*

Place: Engineers' Club of San Francisco, 206 Sansome St., San Francisco

Cocktails: 5:30 P.M.; Dinner: 6:30 P.M.

Reservations: Engineers' Club, GA 1-3184, by November 16

## Industrial

7:30 P.M. • Tuesday, December 1

(Joint with Power, see below)

## Information Theory

8:00 P.M. • Thursday, November 19

Signal design for sequential detection systems

*Prof. G. L. Twinn, University of California, Berkeley*

Place: Philco Auditorium, 3875 Fabian Way, Palo Alto

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

Reservations: Mrs. D. Saltzman, 326-4350, Ext. 4101, by November 18

## Instrumentation and Measurement

8:15 P.M. • Wednesday, December 9

Precision measurement of low-intensity magnetic fields

*Lee Langan, manager of field engineering, Varian Associates*

Place: Varian Cafeteria, Bldg. 4B, 611 Hansen Way, Palo Alto

Dinner: 6:15 P.M., L'Omelette, El Camino Real, Palo Alto

Reservations: none required

## Microwave Theory and Techniques

8:00 P.M. • Thursday, November 19

Zeeman and coherence effects in gaseous lasers

*Dr. William Culshaw, Research Lab, Lockheed Missiles & Space Co.*

Place: Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto

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

Reservations: Mrs. Gail Saxon, 326-7000, Ext. 2703, by November 16

(Continued on page 6)

meeting ahead

## GRAVITY STABILIZATION

Gravity gradient satellites, with a discussion of infralow frequency techniques, will be the subject of David Sonnabend, senior engineering specialist, Philco, at the joint meeting of the Aerospace chapter and the Santa Clara Valley Subsection on November 18.

The talk will discuss some of the history and problems encountered to date in the field of gravity stabilized satellites. This field, in which the dyne-centimeter is a sensible unit for torque and  $10^{-4}$  cps is an ultra-high frequency, has produced many clever inventions and has opened some interesting avenues in materials research. The talk will include the basic theory of gravity gradient, a short history of space projects using this method of stabilization, the problems of damping infra-low frequency oscillations, and the techniques for erecting truly enormous satellites from very little space and weight.

Mr. Sonnabend is a senior engineering specialist in the advanced systems group of Philco space vehicle operations. He has been working in the area of systems analysis for advanced space missions. In this capacity, it is his responsibility to translate mission requirements into a mathematical model and to determine the necessary parameters to achieve the required performance.



Sonnabend

Jones

meeting ahead

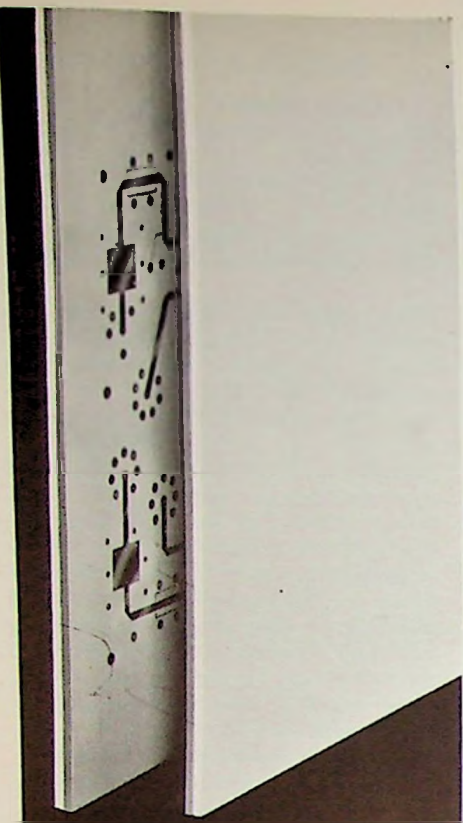
## MARINER II EVALUATION

The Mariner II space probe to Venus and final results from the microwave radiometer experiment will be discussed by Dr. Douglas Jones, Brigham Young University and Jet Propulsion Laboratory of Cal Tech, at the November 10 meeting of the Antennas and Propagation chapter.

Dr. Jones received his B.S., M.S., and Ph.D. degrees in physics in 1957, '59, and '64 from Brigham Young University, Provo, Utah. Since 1959 he has been associated with the Cal Tech Jet Propulsion Laboratory working in

(Continued on page 8)





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## MEETING CALENDAR

### Microwave Theory and Techniques

8:00 P.M. • Wednesday, December 9

The microwave industry

*William Bazy, publisher, MICROWAVE JOURNAL; Theodore Saad, editor-in-chief, MICROWAVE JOURNAL*

Place: Room 1A, Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto  
Dinner: 6:30 P.M., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto  
Reservations: Mrs. Gail Saxon, 326-7000, Ext. 2703, by December 7

### Military Electronics

8:00 P.M. • Wednesday, November 18

Microelectronics for military applications

*Dr. Gordon E. Moore, director of research and development, Fairchild Semiconductor; and Glenn R. Madland, president, Integrated Circuit Engineering Corporation*

Place: Lockheed Auditorium, Bldg. 202, Palo Alto  
Dinner: 6:30 P.M., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto  
Reservations: Ed J. Stather, 742-7072, by November 17

### Power

7:30 P.M. • Tuesday, December 1

(Joint with Industrial, see above)

Electrical accidents and what we have learned from them

*E. E. Carlton, supervising engineer, California Division of Industrial Safety*

Place: Engineers' Club of San Francisco, 206 Sansome St., San Francisco  
Cocktails: 5:30 P.M.; Dinner: 6:30 P.M., \$4.00  
Reservations: Engineers' Club, GA 1-3184, by November 30

### Reliability

8:00 P.M. • Monday, November 16

The Stanford Linear Accelerator

*Douglas W. Dupen, technical information center, and Kurt E. Brey Mayer, technical staff*

Place: Stanford Linear Accelerator Center, Sand Hill Road, between Stanford Campus and Woodside  
Dinner: 6:30 P.M., Ed's Chuck Wagon, El Camino Real, Mountain View  
Reservations: Tom King, 742-7439, by November 16

### Space Electronics and Telemetry

8:15 P.M. • Tuesday, November 24

Analysis of M-ary modulated subcarrier systems

*Paul D. Shaft, senior engineer, Philco Corporation WDL*

Place: Lockheed Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto  
Dinner: 6:15 P.M., El Camino Bowl, 2025 El Camino Real, Mountain View  
Reservations: Charles Jamgotchian, 697-7774, by noon, November 24

*meeting ahead*

### MICROELECTRONICS

Microelectronics for military applications will be discussed by Dr. Gordon E. Moore, director of research and development, Fairchild Semiconductor, and Glenn R. Madland, president and technical director of Integrated Circuit Engineering Corp., at the November 18 meeting of the Military Electronics chapter.

One of the founders of Fairchild Semiconductor, Dr. Moore first was head of engineering at Fairchild and, in 1958, was named to his present position. He has written 14 technical papers for trade publications and society journals, and is co-author of the book, "Microelectronics," published recently by McGraw-Hill.

Prior to his association with I.C.E.,

*meeting ahead*

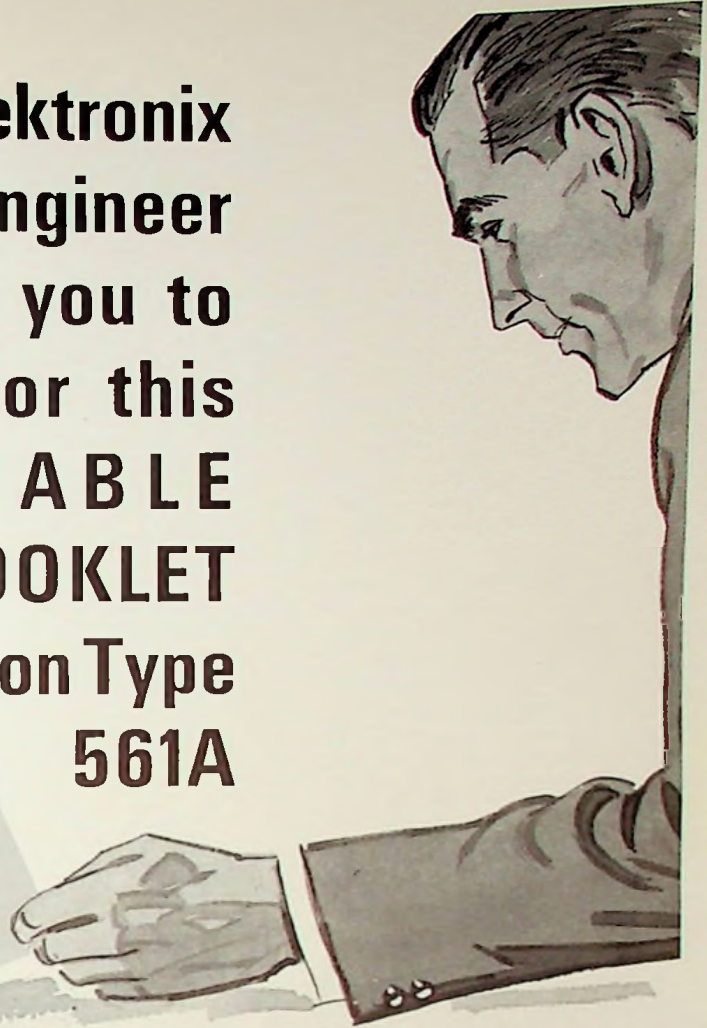
### INTEGRATED CIRCUIT MEASUREMENT

Measurements on integrated circuits using a scanning electron beam will be the subject of Prof. T. E. Everhart, University of California, at the December 10 joint meeting of the Circuit Theory and Electron Devices chapters.

Mr. Madland held a number of responsible positions with Motorola, Inc., including section leader, group leader, and electronic engineer for subminiature communication equipment and power supply design for two-way mobile and fixed station radio. He holds six patents and has several pending.

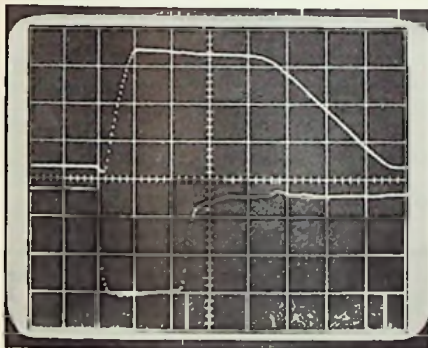


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## GAS LASERS

Zeeman and coherence effects in gaseous lasers will be discussed by Dr. William Culshaw, research laboratory, Lockheed Missiles and Space Co., at the November 19 meeting of the Microwave Theory and Techniques chapter.

The talk will discuss the effects of small magnetic fields on the polarization and frequency of the radiation from a planar, or internal optics type, gas laser. Such a resonator ideally places no polarization constraint on the radiation, and will accept any specific polarization which may be emitted by the atoms when they are in a magnetic field. At values of magnetic field such that the atomic transitions do not overlap the specific polarizations of the Zeeman effect, such as circular for an axial magnetic field, are observed. For low values, between zero and one gauss, the atomic transitions overlap, and coherence properties of phase relationships between the right- and left-handed circular polarized radiations then appear. This results in a linearly polarized output in which the electric vector rotates as the magnetic field increases. Rotations of  $\pm 45^\circ$  are observed for magnetic fields of a few tenths of a gauss. The effect depends on the laser intensity and also on the difference between the Q



Culshaw

Shaft

values of the laser cavity for orthogonal directions. The application of the phenomena to studies of the atomic transitions involved in the laser and to modulation using atomic processes will also be discussed.

Dr. Culshaw, a senior member of the LMSC research labs in charge of research on gaseous and solid-state lasers, is a graduate of the University of Sheffield and the University of London.

## MORE MARINER

the fields of microwave absorption and emission in planetary atmospheres and planetary and interplanetary magnetic fields. In addition to being an assistant professor of physics at BYU, he is on part-time status with JPL as acting supervisor of the radio astronomy group. Dr. Jones was one of the Mariner R II Venus microwave radiometer experimenters, and will describe the experiment and discuss some of its results.

## M-ARY MODULATION

Analysis of M-ary modulated sub-carrier systems will be the subject of Paul D. Shaft, senior engineer, Philco WDL, at the November 24 meeting of the Space Electronics and Telemetry chapter.

The probability of error performance of telemetry systems in which the phase, frequency, or amplitude of the carrier can take on one of M different discrete values, has been well explored in the literature. Following a review of the results obtained for these systems, attention will be focused on systems in which this M-ary modulated waveform is used as a subcarrier, which, in turn, phase or frequency modulates the final carrier. The probability of error performance will be obtained for both matched filter detection and product demodulation.

It will be shown that, for matched filter detection, all of these systems give similar results, which do not differ greatly from optimum M-ary systems. When product demodulation is used, it is found that the results are slightly poorer than the equivalent non-sub-carrier case.

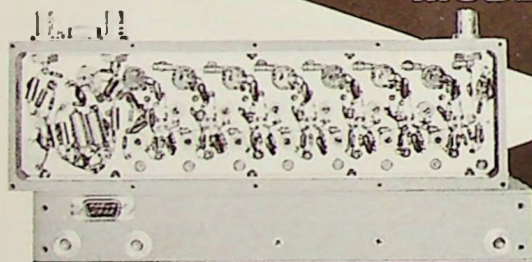
Mr. Shaft is a graduate of Rensselaer Polytechnic Institute and Polytechnic Institute of Brooklyn. He has been with Philco since 1961 and has been primarily engaged in modulation studies.

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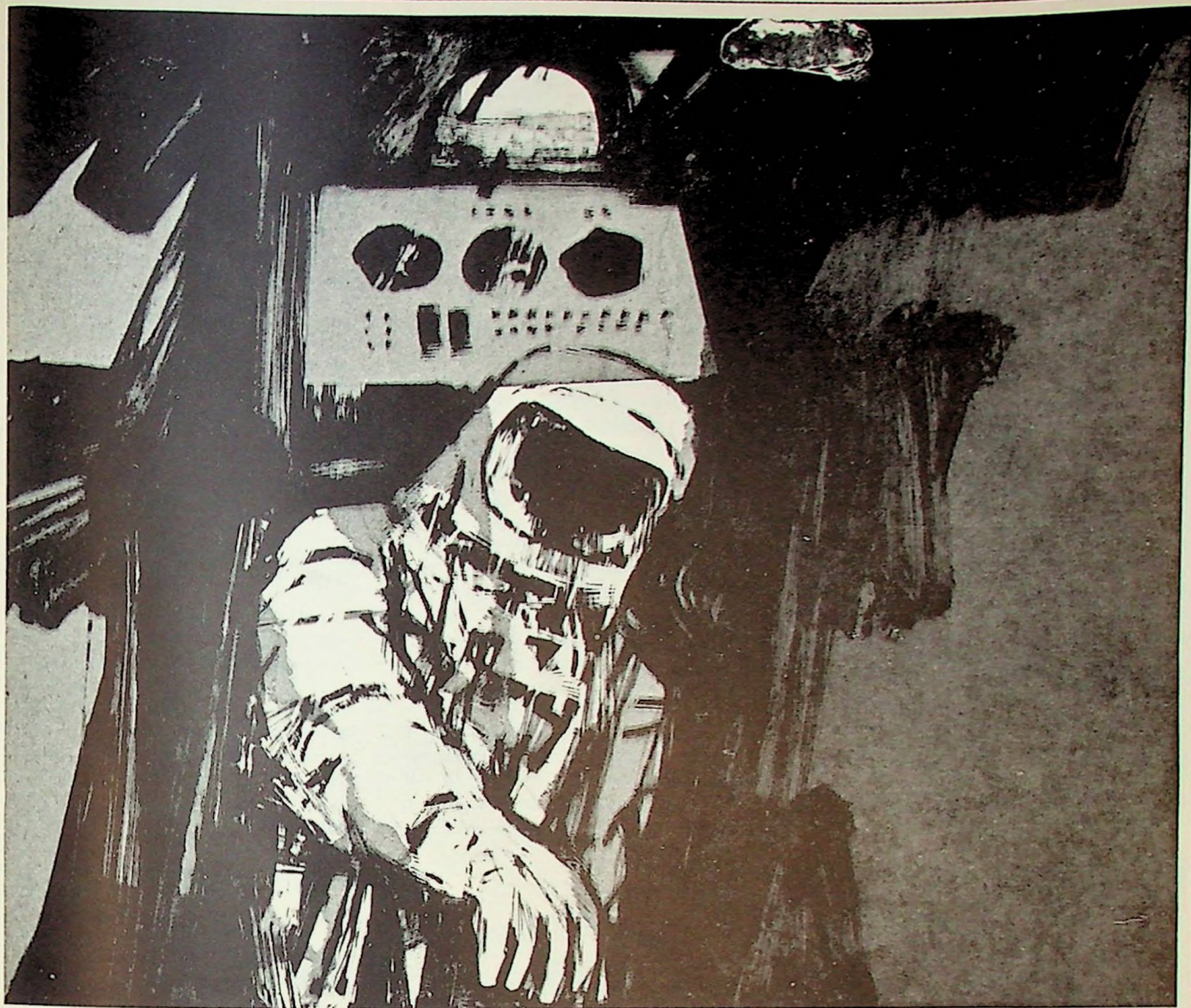


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### SEQUENTIAL DETECTION SYSTEMS

Prof. George L. Turin of the department of electrical engineering at the University of California will discuss signal design for sequential detection systems at the November 19 meeting of the Information Theory chapter.

His abstract follows:

"We consider a coherent, white, gaussian channel through which one of two signals is sent to a receiver which operates as a sequential detector. A noiseless feedback link is assumed, which continuously informs the transmitter of the state of the receiver's uncertainty concerning which signal was sent, and which also synchronizes the transmitter when the receiver has reached a decision. The transmitter, in turn, uses the output of the feedback link to modify its transmission so as to hasten the receiver's decision.

"The following problem is posed: given average- and peak-power constraints on the transmitter and a prescribed probability of error for the receiver, what signal waveforms should the transmitter use in order to minimize the average transmission time, and how should it utilize the feedback value of the receiver's uncertainty to modify these waveforms while transmission is in progress? We give partial



Turin

Thaler

meeting ahead

### TIME OPTIMAL SYSTEMS

At the November 17 meeting of the Automatic Control chapter Prof. George J. Thaler, U.S. Naval Postgraduate School, Monterey, will discuss the practical considerations in the use of maximum effort controllers for time optimal systems. The systems to be considered will in general be higher than third order. Special at-

solutions to these questions. In particular, we have shown that if the peak-to-average power ratio is sufficiently large, significant improvement of performance may be achieved through the use of uncertainty feedback."

Dr. Turin is a graduate of M.I.T. and formerly served that institution's Lincoln Laboratory, and Hughes Aircraft, Culver City and Malibu.

tention will be paid to the process of determining the approximate switching surfaces and specifying the terminal mode.

Dr. Thaler received his Doctor of Electrical Engineering degree from Johns Hopkins in 1947. He taught electrical engineering at the University of Notre Dame from 1947 to 1951. Since that time he has taught at the United States Naval Postgraduate School at Monterey, California, where he is presently serving as professor of electrical engineering. In addition, he has been lecturing at the University of Santa Clara on the subject of nonlinear control systems. He has written four books on control theory along with more than 30 papers on the subject.

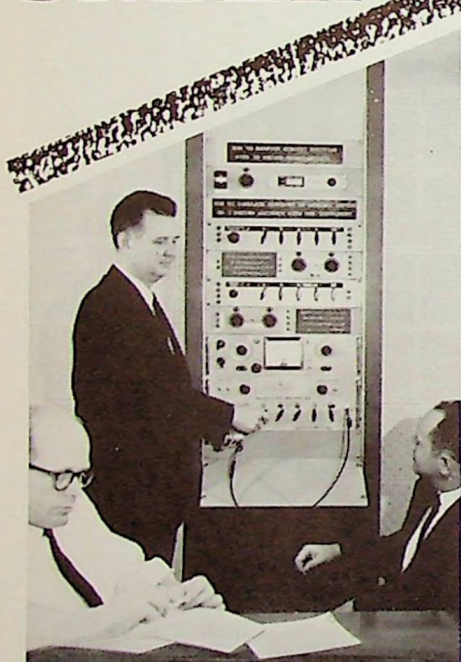
### MORE APPLICATIONS

humans to reserve your plane ticket, design electrical equipment, even to make out your paycheck, are examples.

The speaker, a graduate of the University of California, has just returned from attending a telephone company course in advanced communications and data transmission systems. He is experienced in transmission design, planning and programming communications networks. He will illustrate his presentation with slides.

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Bazy

Saad

meeting ahead

### MTT ROUNDUP

The microwave industry, which has experienced rapid growth over the past decade, will be discussed by two authorities in the field at the December 9 meeting of the Microwave Theory and Technique chapter.

The publisher and the editor-in-chief of "Microwave Journal," William Bazy and Theodore Saad, will review changes in the industry and describe growth areas.

Mr. Bazy is also publisher of "Solid State Design/Communications & Data Equipment" and "The Microwave Engineers' Handbook and Buyers' Guide." He has traveled extensively throughout this country and Western Europe visiting companies active in microwave and solid-state areas.

Mr. Saad is co-founder and president of Sage Laboratories, Natick, Mass., and has served on the national administrative committee of MTT for ten years. He has a broad engineering background with many segments of the industry.

meeting ahead

### ELECTRICAL ACCIDENTS

E. E. Carlton, supervising engineer, Electrical Section, California Division of Industrial Safety, will discuss many of the electrical accidents that have occurred in California, with particular emphasis on what we have learned from them that will help to prevent future accidents, at the December 1 meeting of the Power chapter.

This fast-moving slide presentation of a subject that is of paramount importance to every designer and user of power equipment is scheduled right after the Thanksgiving holiday week.

Mr. Carlton has an EE degree from the University of California, is a registered professional engineer, and has had 22 years of experience in the California Division of Industrial Safety. He is eminently qualified to review recent electrical accidents.

The meeting is joint with the Industrial chapter.

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*meeting ahead*

### GOOD BUSINESS WRITING

Business communications will be the subject of Richard C. Smith, The Smith Co., San Francisco, at the November 17 joint meeting of the Engineering Writing and Speech and Engineering Management chapters.

Mr. Smith will talk about the problems of communications in industry that are increasingly important challenges to management personnel. Emphasis will be upon the following:

"Today, management information systems involve every business function and individual. Effective business writing must contain these four elements: readability, correctness, appropriateness, and thought."

Richard C. Smith has been president, since 1948, of The Smith Company, 47 Fremont Street, San Francisco—one of the largest corporations in the West specializing in mail advertising and business communications.

He has lectured at the University of California, San Jose State College, and San Francisco Executives' Association.

In addition, he has conducted two courses on "Practical Politics" and one



Smith

Bertolet

*wescon news*

### 1965 SYMPOSIA

Wescon directors have written to heads of all IEEE groups suggesting coordination of some of their national technical symposia with Wescon in 1965.

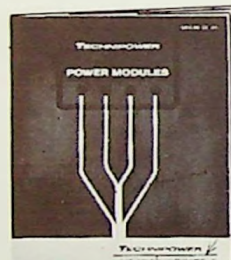
Edward C. Bertolet, chairman of the board, said that Wescon is anxious to serve specialist engineers and scientists who may wish to combine the features of a broad technical exhibit and convention with those of a more private meeting of their peers. "It is our feeling that such a combination would reduce the total number of days spent in meetings and travel and would better serve IEEE members."

on "Communism" for the San Francisco Chamber of Commerce.

Many awards and honors have come to Mr. Smith. To name one, the 1964 "Sales Management" special award for excellence in sales letter writing.

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meeting ahead

**MORE ON SLAC**

Douglas William Dupen, SLAC technical information center, and Kurt E. Breymayer, SLAC technical staff, will make a joint presentation before the Reliability chapter on November 16 at the Stanford Linear Accelerator. Mr. Dupen will present a general description and Mr. Breymayer will report on the considerations given to reliability and maintainability in the planning and design of the accelerator's operation.

Both speakers are members of IEEE. Mr. Dupen is widely known to section members. Mr. Breymayer, a graduate of the Technical University of Dresden, was formerly with Canadian Marconi and Canadian General Electric, Lenkurt Electric Co., and Stanford Microwave Laboratory. He has been a member of the SLAC technical staff since 1961.

meeting ahead

**JAPANESE DESIGN PROGRESS**

Recent progress on filter design in Japan will be the subject of Dr. Hitoshi Watanabe, transmission division, Nippon Electric Co., Ltd., at the November 19 meeting of the Circuit Theory chapter. Dr. Watanabe will be visiting the Bay area for only one week.

The speaker received the B.E. degree in electrical engineering and the Dr. Eng. degree in 1953 and 1961, respectively, from Kyoto University, Japan.

Since 1953, he has been engaged in the design of time-division multiplex communication systems, transmission networks, and electronic automatic digital computers. He is presently concerned with research on network theory and the design of transmission networks in the development section of the transmission industry division.

Dr. Watanabe is a member of the Institute of Electrical Communication Engineering of Japan, the Information Processing Society of Japan, and the Research Association of Applied Geometry.

The talk will be concerned with approximation theory for filter networks, the minimum number of coils in reactance filters, and computer applications to filter design.



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*meeting ahead*

### POWER LINE TRANSIENTS

W. D. Hayter, staff engineer, IBM, San Jose, will discuss high voltage, nanosecond duration, power line transients at the November 24 meeting of the Electromagnetic Compatibility chapter.

It has long been noted that the interruption of power line inductor currents induces large voltage excursions commonly called switching transients. These transients, under the right conditions, cause digital equipment to malfunction. A three-year study of this phenomena produced the following information:

The mechanism is described by which some simple power line device, when switched on and off, produces a limited pulse train. This pulse train has pulse repetition rates as high as 20 megacycles, amplitudes as high as 1000 volts, durations as short as 10 nanoseconds, and a train length as long as 3 milliseconds.

The mechanism is described by which a nanosecond transient transfers from a transient producing device to the internal circuit of a digital device. This transfer includes defining the high frequency properties of a concrete ground plane, coupling coefficients between  $n$  lines over a plane and  $n$  lines in a conduit, power line resonance, and conduit antenna current.

A comprehensive laboratory power line transient simulator and a simpler, hand-portable, transient simulator (for field use) were developed and will be described.

The speaker has been active in the field of transient technology since 1962.

*section notes*

### REGULAR EXCOM

The Section Executive Committee normally meets on the last Wednesday of the month at 7:30 p.m. in the section office. Subsection chairmen and the group coordinator, E. H. Hulse (HI 7-1100, Ext. 8034), are members and attend regularly. Chapter chairmen are urged to keep Mr. Hulse informed of chapter problems which should be brought to the attention of the Executive Committee. Chairmen of chapters and standing committees or members at large may bring business before the EXCOM at any regular meeting by calling the Section Office prior to the closing of the agenda on the Friday preceding a meeting.

*meeting ahead*

### NEW FILM ON SLAC

The first showing of a new 23-minute sound and color film on the development and installation of the Stanford Linear Accelerator will take place at the November 17 meeting of the Industrial chapter at the Engineers' Club, San Francisco.

*meeting ahead*

### LOW INTENSITY FIELDS

Lee Langan, manager of field engineering for the special products activity of Varian Associates, will address the Instrumentation and Measurement chapter on December 9. His subject will be precision measurement of low intensity magnetic fields.

Several examples of modern spin precession high sensitivity magnetometers will be available for inspection by the audience and will be used to illustrate Mr. Langan's description of their operating principles, design challenges, and variety of their many applications. Magnetometers are used in rocket and satellite experiments, oceanography, and other earth science applications.

*section inputs*

### VOLUNTEER SPEAKERS

If section members or their colleagues have a paper or presentation suitable for meetings of the section, subsections, or group chapters, they are invited to consult the September issue of Grid and contact the chairman in question directly or discuss the matter with the section office.

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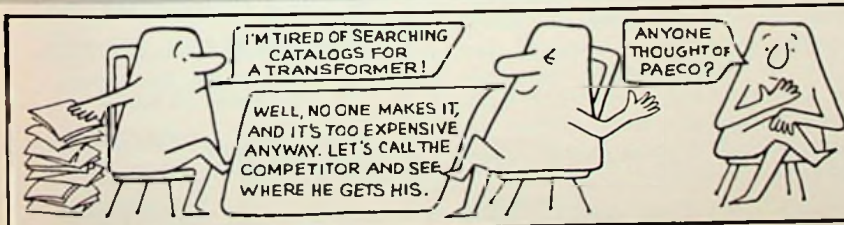
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to benefit, actually do use the technical sessions as an information-seeking medium. This shows the great effectiveness of the working demonstrations of the exhibits and of personal engineer-to-engineer contacts compared with the lecture platform for information dissemination. Future Wescons are expected to benefit from these attendance and behavioral studies, which will strongly influence policy decisions.

Of the innovations in this year's Wescon, easily the greatest was the trend to broaden technical interests outside of electronics. There were 6 of the 29 technical sessions which had an electrical power orientation, and they were well attended. Several other sessions also departed from traditional electronic orientation. Although the exhibits do not yet reflect this tendency, it may be only a matter of time; we may be seeing a trend toward the one-ness of engineering science in all its branches.

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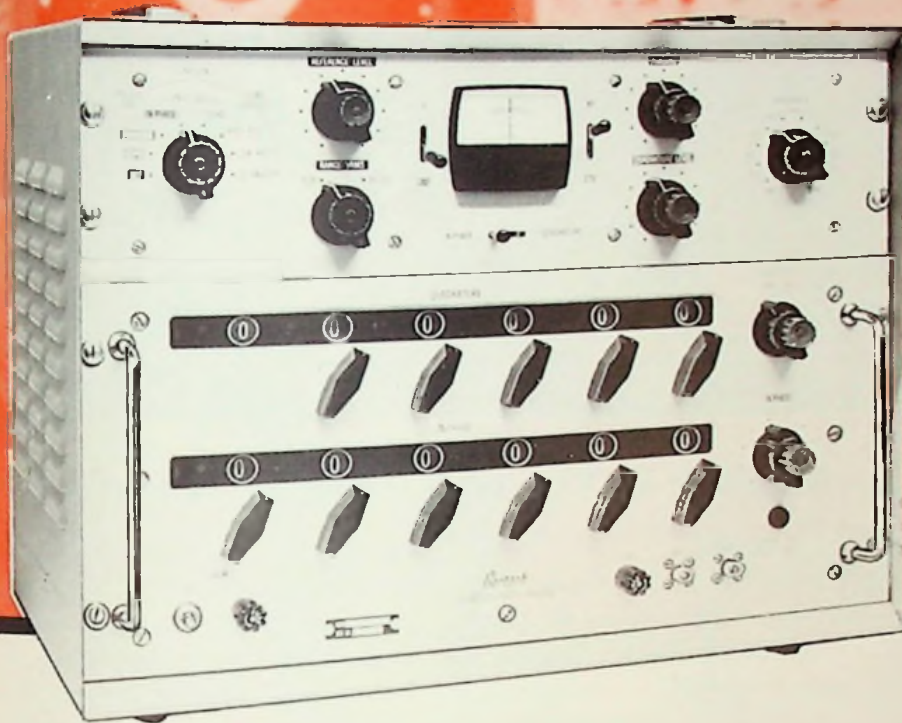
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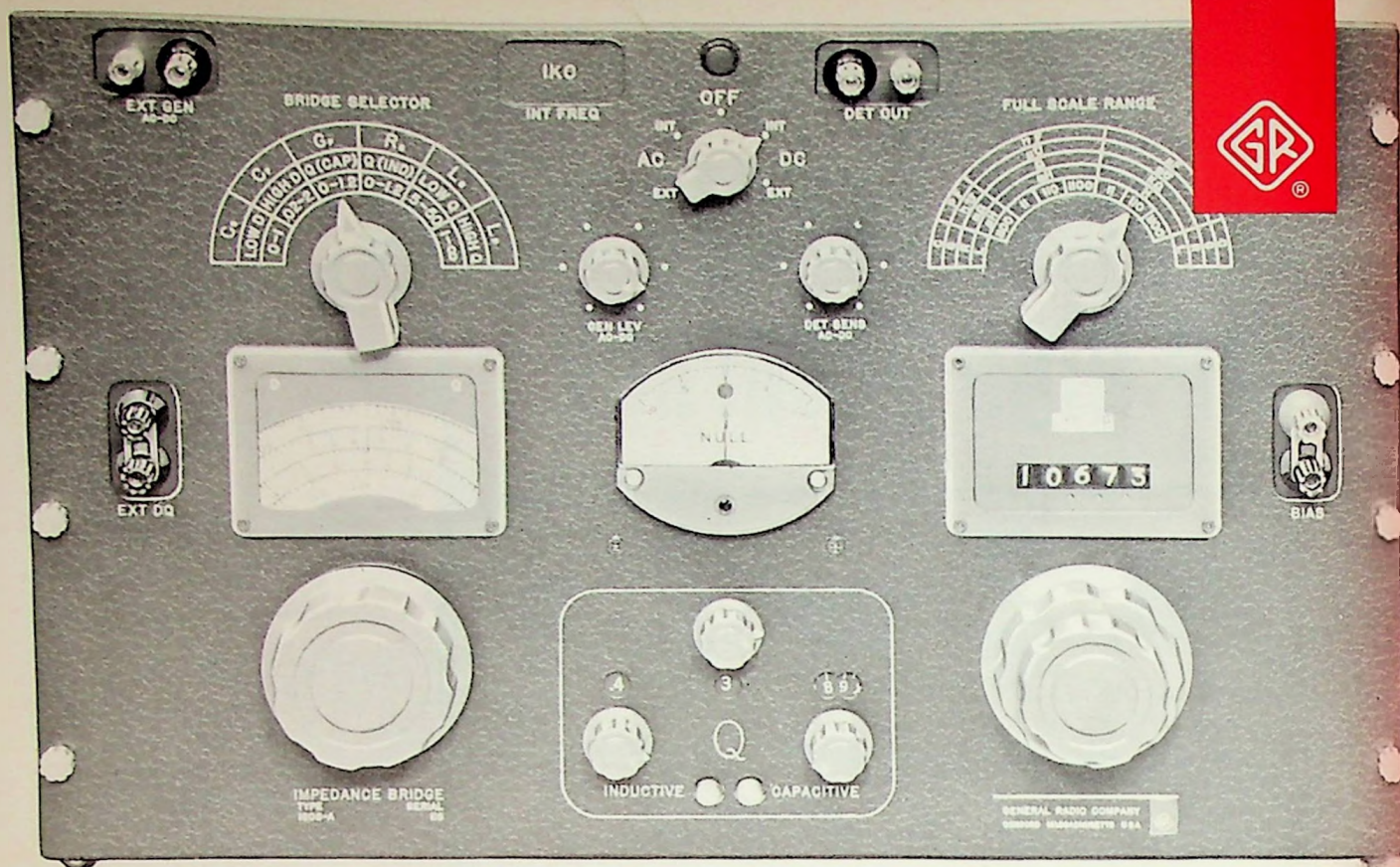
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