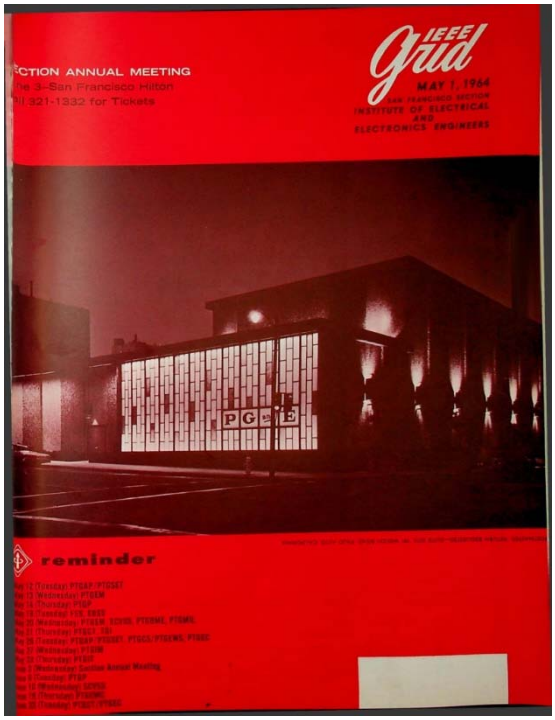
EDITOR'S PROFILE of this issue

from a historical perspective …

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



May, 1964:

Cover: PG&E hosts a tour of its new indoor substation at Larkin and Eddy Streets, SF, which transforms 3-phase 115kV down to 12 kV for further distribution. It has a capacity of 110 MVA, and will eventually be expanded to 330 MVA. Issues of design, corona suppression, lightning protection, switching surges and more were then discussed at the technical meeting. More on page 4.

Page 3: Jean Helmke appears for the first time in the GRID, as editorial assistant. Many of us grew to know and interact with Jean over the many years she served as the Section's (then Council's) office manager in Palo Alto, eventually turning duties over to her daughter-in-law Gerry Helmke. I can recall many trips to 701 Welch Road to fold flyers for handout or mailing during the years when I was putting on multi-week short courses for my CHMT (now EPS) chapter; for an overview of this series and how it was developed, see the article in the December 1980 issue of the GRID.

Page 4: The tour of the new GM plant in Fremont was so successful (and over-booked) that it is being repeated.

Page 8: The Santa Clara Valley Subsection will have their year-end dinner at the Paul Masson Vineyards ("No wine before its time") in Saratoga, overlooking the Valley. Gail and I attended quite a number of these dinners, where we sampled the wines and watched the lights come on across Sunnyvale and San Jose below. Now the vineyard's amphitheater is the venue for evening musical performances by famous touring groups and stars.

IEEE Grid
MAY 1, 1964
SAN FRANCISCO SECTION
INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

ECTION ANNUAL MEETING
he 3—San Francisco Hilton
ll 321-1332 for Tickets

POSTMASTER: RETURN REQUESTED—SUITE 2310 701 WELCH ROAD, PALO ALTO, CALIFORNIA

reminder

May 12 (Tuesday) PTGAP/PTGSET
May 13 (Wednesday) PTGEM
May 14 (Thursday) PTGP
May 19 (Tuesday) FSS, EBSS
May 20 (Wednesday) PTGEM, SCVSS, PTGBME, PTGMIL
May 21 (Thursday) PTGCT, EBI
May 26 (Tuesday) PTGAP/PTGSET, PTGCS/PTGEWS, PTGEC
May 27 (Wednesday) PTGIM
May 28 (Thursday) PTGIT
June 3 (Wednesday) Section Annual Meeting
June 9 (Tuesday) PTGP
June 10 (Wednesday) SCVSS
June 18 (Thursday) PTGEMC
June 23 (Tuesday) PTGCT/PTGEC

new compact Tektronix oscilloscope

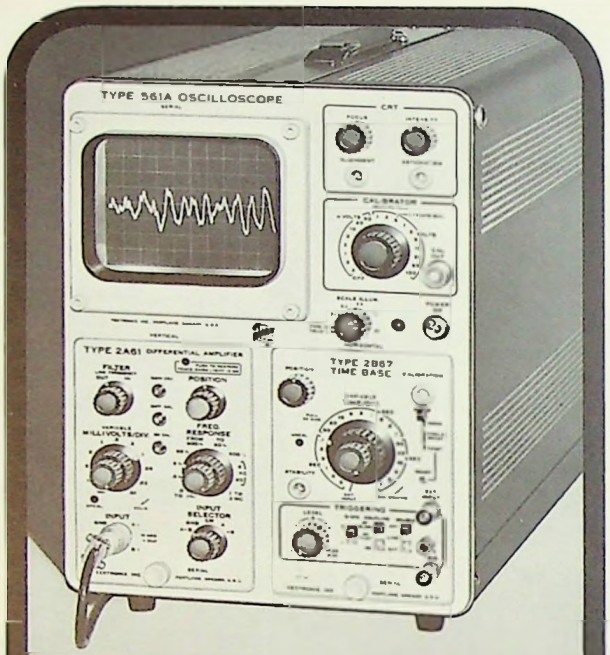
easily adapted to particular needs

Here's a high-performance oscilloscope featuring operational simplicity and versatility through a new series of plug-in units. Presently, you can select from 10 amplifier units and 4 time-base units.

Knowing your application area, you select those units that fit your needs. Some of the general-purpose plug-in unit combinations available include those for low-level applications, differential applications, multi-trace applications, wide-band applications, sweep-delay applications, among other presentations. A special-purpose plug-in combination equips the oscilloscope for sampling applications, in which the instrument becomes a low-drift sampling system as easy to operate as a conventional oscilloscope, but with sensitivity and bandwidth possible only through sampling.

With any combination of plug-in units in the oscilloscope—including the same type amplifier units in both channels for X-Y displays—this new value package provides you with "no-parallax" displays and sharp trace photography.

For more information on either model of this new Oscilloscope and any combination of Plug-in Units, please call your Tektronix Field Engineer.



The 2A61/2B67 Plug-In Unit combination—illustrated with Type 561A—equips the oscilloscope for *low-level differential applications.*

features

NEW CRT . . . with an internal graticule and controllable edge lighting . . . regulated power supplies . . . regulated dc heater supply . . . Z-axis input . . . 3.5-kv accelerating potential . . . amplitude calibrator . . . and operation from 105v to 125v or 210v to 250v. (The Type 561A operates from 50-400 cps and the Type RM561A operates from 50-60 cps.)

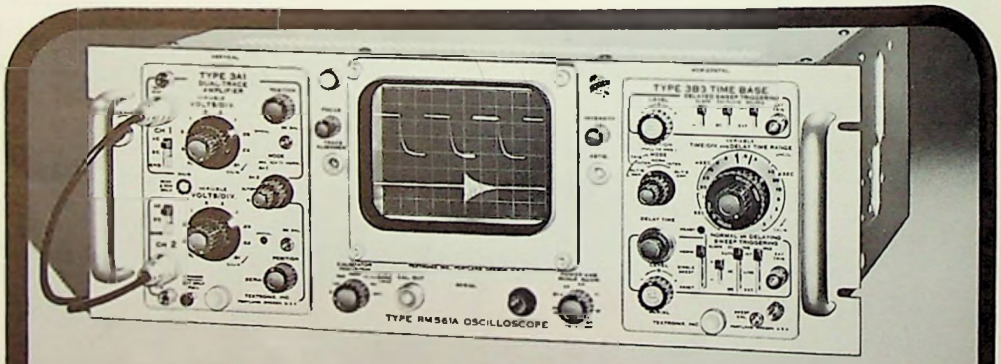
Type 561A (shown in low level application) $470

Type RM561A (shown in sweep delay application) 525

Oscilloscope prices without plug-in units.

Plug-In Units:
Prices as low as $105 for vertical amplifier and $175 for time-base generator.

U.S. Sales Prices, f.o.b. Beaverton, Oregon



The 3A1/3B3 Plug-In Unit combination—illustrated with the rack-mount model, Type RM561A—equips the oscilloscope for *high-sensitivity, wide-band, dual-trace operation and sweep-delay applications.*

The rack-mount model occupies only 7 inches of standard rack height.

Tektronix, Inc. *SAN FRANCISCO FIELD OFFICES*

3944 FABIAN WAY · PALO ALTO, CALIF. · Phone: 326-8500
1709 MT. DIABLO BLVD. · WALNUT CREEK, CALIF. · Phone: 935-6101
From Oakland, Berkeley, Richmond, Albany and San Leandro: 254-5353

Put one to work for you

Two new amplifiers from Hewlett-Packard Whether you're interested in amplifying pulses or other signals from audio to vhf, one of these new amplifiers from Hewlett-Packard will suit your purpose. The 461A is a general purpose amplifier with an essentially flat frequency response from 1 kc to 150 mc; the 462A is a pulse amplifier with less than 4 nanosecond rise and fall times. Both amplifiers have 20 and 40 db gain, are completely solid state and have exceptional stability. Check the specs; then call your nearest hp field sales office for a demonstration.

Specifications

461A

Frequency Range:
1 kc to 150 mc

Frequency Response:
±1 db from 500 kc reference

Gain at 500 kc:
20 or 40 db ±0.5 db selected by front panel switch

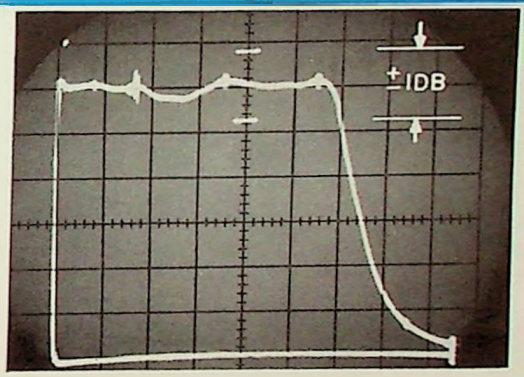
Input Impedance:
Nominal 50 ohms

Output:
½ v rms into 50 ohm resistive load

Noise:
Less than 40 μv referred to input

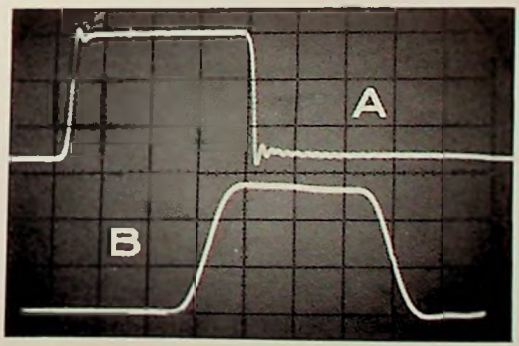
Distortion:
Less than 5% at maximum output and rated load

Price:
$325



461A Frequency response curve: markers at 50, 100, 150 and 200 mc; 40 db gain.

462A a) Input pulse (5 mv p-p); b) Output pulse (500 mv p-p) 40 db gain; sweep speed 5 ns/cm



462A

Pulse Response:
Rise and fall times for both leading and trailing edges, less than 4 ns; overshoot less than 5%

Pulse Overload Recovery:
Less than 1 μsec for 10 times overload

Pulse Duration:
30 μsec for 10% droop

Noise:
Less than 40 μv referred to input

Input Impedance:
Nominal 50 ohms

Gain:
20 or 40 db selected by front panel switch

Output:
1 v p-p into 50 ohm resistive load

Price:
$325

GENERAL

Size:
3-14/32" x 5-1/8" x 11"

Weight:
4 lbs.

Power Supply:
115 or 230 v ±10%, 50 to 1000 cycles

Data subject to change without notice.
Prices f.o.b. factory.

An extra measure of quality

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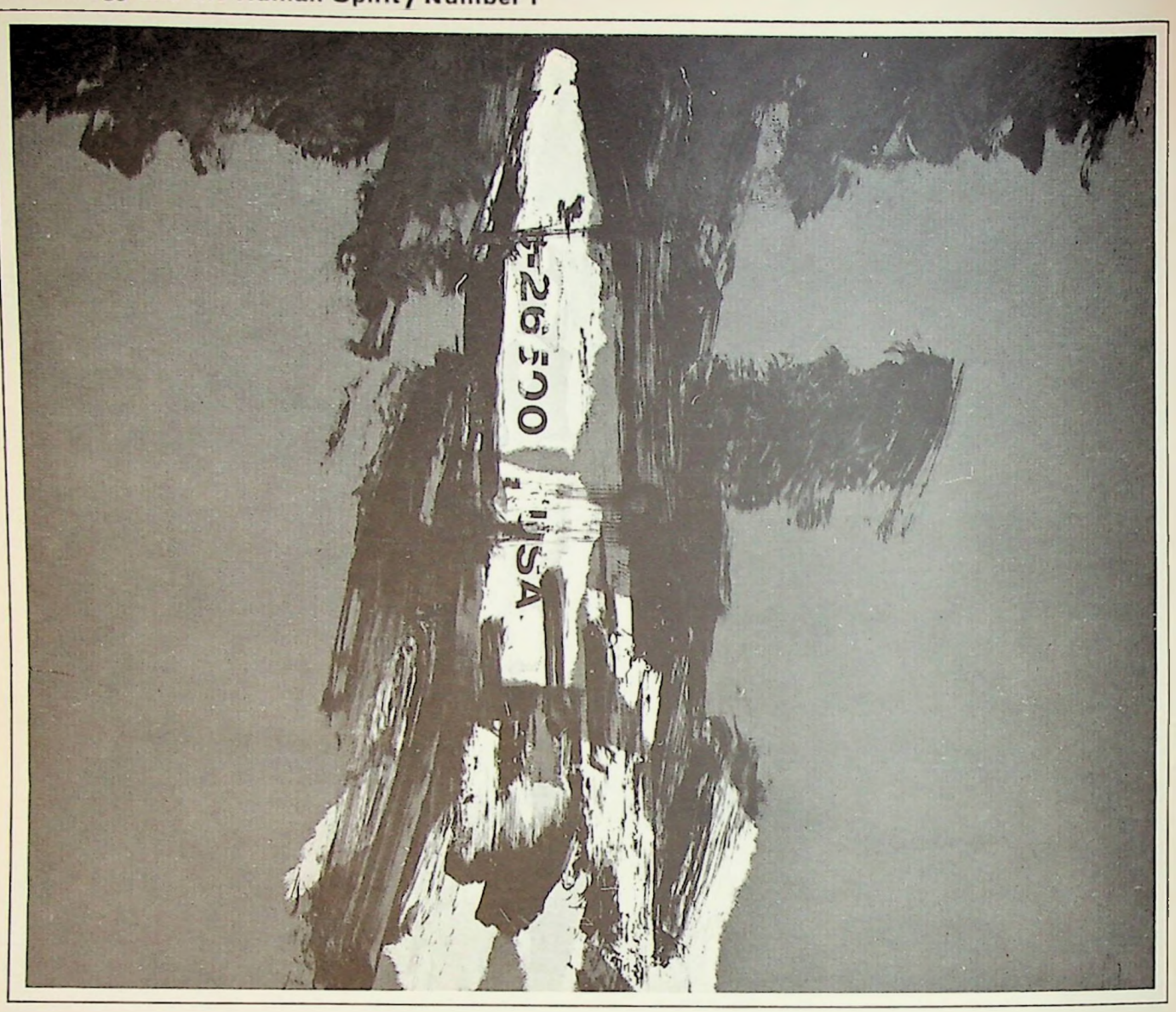
Tucson	(602) 623-2564
Albuquerque	(505) 255-5586
Las Cruces	(505) 526-2486



Destination: The Eighth Continent. Of all man's forces working for the betterment of his kind, none offers more promise than technology. For wherever technology has been allowed to flourish under freedom, there have emerged higher living standards, better educational opportunities, and increased dignity for the individual. Now, technology is taking us to the moon—and beyond. Yet there is heard in the land a rising voice which asks, "Why go out there when there-is-still-so-much-to-do-here-on-earth?" The thoughtful scientist and engineer might well answer: "Show me where earth ends and outthere begins."

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As technical sales representatives, we are part of this great venture and hold that aiming for the stars raises man's purposes here on earth. Costello & Company is ten competent sales engineers serving the aerospace and digital computer industries and representing the following manufacturers in California, Arizona, New Mexico and Nevada: BARNES* / BRYANT / COLLECTRON / COMMUNICATION ELECTRONICS / CORNING ELECTRONICS / DECKER* / DIGITAL DEVICES / FABRI-TEK / INLAND MOTOR / MAC PANEL* / RIXON / ROYAL-McBEE / THERMAL SYSTEMS.

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contents

san francisco section officers

advertising

meeting ahead

ANNUAL MEETING

Bay Area IEEE members turn "first weekers" June 3 when they hold the 1964 annual section meeting at the San Francisco Hilton.

The annual meeting's theme will be sounded by E. Finley Carter, president emeritus of Stanford Research Institute, as he enters the controversial debate which is pitting esthetics against "inexorable progress" in the growing West.

Finley Carter

Carter's "Looking Beyond the Expedient to the Esthetic" will hammer at the "ticky-tacky" trend so noticeable in the California countryside today. He will concentrate, of course, on the sector of the controversy of main concern to electrical engineers. Yet the locale of the annual meeting seems appropriate, since the new hotel's appearance has been discussed hotly by advocates of an increased esthetic awareness.

More to the point for EE's is an example in the public limelight today—the Stanford Linear Accelerator power line. Finley Carter notes that this line, whatever the merits of the pro and con arguments, has served to focus attention on the growing public concern with unsightly transmission, distribution, and communication circuit construction. "The depth of the emotional wrangle being stirred up is serving notice of the intensity of public concern—concern that California not sell its birthright for a mess of progress," says Carter.

On the other hand, Carter believes that over-zealous emotion can be a

(Continued on page 10)

cover

Subject of an inspection trip by the PTG chapter on Power on May 14, PG&E's completely indoor substation at Larkin and Eddy Sts., San Francisco, transforms from 115 to 12 kv. Its initial rated capacity is 110 mva, and the ultimate design capacity will be 330 mva. Three-phase transformers, 12-kv metalclad switchgear of high interrupting capacity, and current-limiting reactors as well as the modern control room are features.

meeting ahead

POWER GROUP PLANS

Plans for May and June meetings of the PTG chapter on Power have been announced by Jack Barkle, chairman.

On May 14 an inspection trip of the recently completed PG&E Larkin substation, Larkin and Eddy Streets, San Francisco (shown on the cover), will begin at 7:30 p.m.

On June 9 EHV in the West will be the subject of a symposium and round-table discussion following the social hour and dinner at the Engineers Club. Taking part will be E. G. Lambert, supervising electrical engineer, department of electric generation and transmission engineering, PG&E; E. W. Morris, Pacific Coast zone electric utility engineer, Westinghouse Electric Corp.; and J. B. Tice, manager application engineering, western region, electric utility sales division, General Electric Co.

The speakers will discuss the present status of design philosophy regarding corona, radio influence, switching surges, lightning, and other subjects related to EHV, including recent studies of the effect of contamination on insulation levels. Practical designs of EHV transmission lines, including series and shunt compensation and transient and steady-rate stability, will be covered.

meeting ahead

SLAC STATUS REPORT

Douglas William Dupen, technical information officer, Stanford Linear Accelerator, will give the Santa Clara Valley Subsection a progress report on the mammoth project at the May 20 meeting in Room 320, Geology Corner, Stanford University.

Mr. Dupen is a member of IEEE, the Society of Technical Writers and Publishers, and the AEC technical information panel. He holds an A.B. in physics, and A.A. and A.B. degrees in speech and English.

meeting ahead

REPEAT OF GM TOUR

To accommodate many IEEE members who could not attend the March 25 tour of the General Motors plant because of space limitations, the Technical Group, Industrial, has arranged for the tour to be repeated on May 21 in cooperation with the Electrical Maintenance Engineers' Assn. Reservations must be made by calling JU 6-4074, and will be limited to 150. Meeting in the main administration building at 6 p.m., the group will dine in the cafeteria and the tour will follow.

MEETING CALENDAR

SAN FRANCISCO SECTION

6:00 P.M. • Wednesday, June 3

Looking beyond the expedient to the esthetic

Principal Speaker: E. Finley Carter, senior management counselor, and president emeritus, Stanford Research Institute

Annual meeting honoring 1964 Fellows; installation of 1964-65 Section Officers; adoption of Section Bylaws

Social Hour: 6:00 P.M. Dinner: 7:00 P.M.

Place: Ballroom No. 4, San Francisco Hilton, Mason & O'Farrell, San Francisco

Reservations: Order tickets from Section Office, 321-1332. $6.50, inc. tax & tip

Tables for 10 may be reserved for Subsections, PTG's, Committees, and Companies

EAST BAY SUBSECTION

8:00 P.M. • Tuesday, May 19

Tour of the Massachusetts Institute of Technology's Lincoln Laboratory Space Communications Station at Camp Parks, near Pleasanton

Tour conducted by Richard P. Locke, site manager

Dinner and cocktails: 6:00 P.M., Danville Hotel Restaurant in Danville on Highway 21

Reservations: East Bay: Winnie Veeder, 843-2740, ext. 5434
Livermore: Carole Marino, 447-1100, ext. 8064, by May 15

FRESNO SUBSECTION

8:00 P.M. • Tuesday, May 19

Joint meeting with FSC student branch

Student engineering paper contest

Engineering students at FSC

Place: Room E-10, Engineering Bldg., Fresno State College campus

No dinner

SANTA CLARA VALLEY SUBSECTION

8:00 P.M. • Wednesday, May 20

The new Stanford two-mile-long accelerator

Douglas W. Dupen, technical information officer, Stanford Linear Accelerator Center

Place: Stanford, Room 320, Geology corner

No dinner

SANTA CLARA VALLEY SUBSECTION

6:00 P.M. • Wednesday, June 10

Plant tour and social meeting

Place: Paul Masson Vineyards, off Pierce Rd., Saratoga

Dinner: At the plant, about $3.50 per person, ladies welcome

Reservations: Mrs. Jenny George, 735-2226 by June 5

TECHNICAL GROUP
Industrial

6:00 P.M. • Thursday, May 21

(Joint with Electrical Maintenance Engineers Association)

Inspection trip of General Motors Buick, Oldsmobile, and Pontiac assembly plant, main administration building, Nimitz Freeway and Landing Road/Cushing Road interchange in Fremont

(Repeated for those who were turned down March 25 because of large turnout)

Dinner: 6:00 P.M., General Motors cafeteria

Reservations: Limited to first 150 calling; reservations must be made. Call Art Wells, JU 6-4074

PROFESSIONAL TECHNICAL GROUP CHAPTERS
Antennas and Propagation

8:15 P.M. • Tuesday, May 12

Lecture No. 3: D.S.I.F.

Dr. N. A. Renzetti, manager, deep space instrumentation facility, Jet Propulsion Lab at Cal Tech

Place: Lockheed Auditorium, Bldg. 202, Palo Alto

Dinner: 6:15 P.M., El Camino Bowl, 2025 El Camino Real, Mountain View

Reservations: Robert H. Light, 739-4880, Ext. 3318, 3319, by noon May 11

PLAN NOW FOR WESCON

MEETING CALENDAR

Antennas and Propagation
8:15 P.M. • Tuesday, May 26
Lecture No. 4 of Tutorial Lecture Series
Richard P. Locke, site manager, MIT Lincoln Laboratory Space Communications, Camp Parks Project Westford terminal equipment
Place: Lockheed Auditorium, Bldg. 202, Palo Alto
Dinner: 6:15 P.M., El Camino Bowl, 2025 El Camino Real, Mountain View
Reservations: Robert H. Light, 739-4880, ext. 3318, 3319, by noon May 26

Bio-Medical Engineering
8:00 P.M. • Wednesday, May 20
Nervous control of insect flight
Dr. Don Wilson, assistant professor of zoology, University of California, Berkeley
Place: Room 160 Kroeber (College and Bancroft Streets), University of California
Dinner: 6:30 P.M., Spenger's Restaurant, Freeway and University Ave., Berkeley
Reservations: Call Con Rader, 326-1970, ext. 327, by May 19

Circuit Theory
8:30 P.M. • Thursday, May 21
Using a computer to design filters—a summary of various approaches; some good, some bad
John Orchard, Lenkurt Electric Co.
Place: Ampex Cafeteria, 401 Broadway, Redwood City
Dinner: 6 P.M., Red Cottage, 1706 El Camino, Menlo Park
Reservations: Mrs. Kelley, DA 6-6200, ext. 3285

Circuit Theory
8:00 P.M. • Tuesday, June 23
(Joint with PTGEC—see below)
Cellular logic with applications to integrated circuits
Robert Minnick, senior research engineer, SRI
Place: G.E. Computer Lab, 310 De Guigne Ave., Sunnyvale
Dinner: 6:30 P.M., Old Plantation, El Camino and Bernardo, Sunnyvale
No reservations required

Communication Systems
8:00 P.M. • Tuesday, May 26
(Joint with PTGEWS—see below)
System aspects of an electronic switching system
Dr. C. Y. Lee of the Bell Telephone Laboratories
Place: Building 6 at Lenkurt Electric Co., 1105 County Road, San Carlos
Dinner: 6:00 P.M. at Villa Chartier, 4060 So. El Camino Real, San Mateo
Reservations: P. J. Ahern, 399-4974, by May 25

Electromagnetic Compatibility
8:00 P.M. • Thursday, June 18
Instrumentation for wide-band spectrum analysis
Presented by H. L. Halverson and A. Fong, Microwave R&D Labs, Hewlett-Packard Co.
Place: Hewlett-Packard Auditorium, 1501 Page Mill Road, Palo Alto
Tour of Hewlett-Packard plant to follow; reservations are necessary
Dinner: 6:00 P.M., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto
Reservations: Glenn Gillett, RE 9-4321, ext. 24834 or 23268, by June 16

Electronic Computers
8:00 P.M. • Tuesday, May 26
Programming systems: their meaning for machine designers
Mark Halpern, research scientist, Lockheed Missiles and Space Co.
Place: General Electric Computer Laboratory, 310 De Guigne Drive, Sunnyvale
Dinner: 6:30 P.M., Old Plantation, El Camino and Bernardo, Sunnyvale
No reservations required

Electronic Computers
8:00 P.M. • Tuesday, June 23
(Joint with PTGCT—see above)

Engineering Management
6:00 P.M. (approx.) • Wednesday, May 13 and 20
Use of computer to play a management simulation game
Place: Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto
Dinner: Box lunch, about $1.50

(Continued on page 6)

LOS ANGELES, AUGUST 25-28

MEETING CALENDAR

Engineering Writing and Speech
8:00 P.M. • Tuesday, May 26
(Joint with PTGCS—see above)

Information Theory
8:00 P.M. • Thursday, May 28
Self-synchronization in the presence of noise
Peter G. Neumann, Bell Telephone Laboratories, Murray Hill, N.J.—visiting lecturer at Stanford University
Place: Stanford Research Institute, Bldg. 1, conference room
Dinner: Peking Duck Restaurant, 702 Villa St., Mountain View
Reservations: Mrs. Kelly, 326-6200, ext. 2945, by May 25

Instrumentation and Measurement
8:15 P.M. • Wednesday, May 27
The new HP 3400A RMS-responding voltmeter
Gregory Justice of Hewlett-Packard's advanced R&D laboratory
Place: Hewlett-Packard Auditorium
Dinner: 6:00 P.M., L'Omelette, Palo Alto
Reservations not required

Military Electronics
8:00 P.M. • Wednesday, May 20
What the Air Force does for the civilian scientific community
Major Billy R. Shanahan, chief, Air Force system command
Place: Lockheed Auditorium, Bldg. 202, Palo Alto
Dinner: 6:30 P.M., Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto
Reservations: Victor Conrad, 326-4000, ext. 2212, by May 19

Power
7:30 P.M. • Thursday, May 14
Inspection trip: Larkin substation, Pacific Gas & Electric Company
Place: Larkin and Eddy Streets, San Francisco
Dinner: none

Power
7:30 P.M. • Tuesday, June 9
Symposium and round table discussion: EHV in the West
E. G. Lambert, supervising electrical engineer, Pacific Gas & Electric Co.
E. W. Lewis, Pacific Coast zone electric utility engineer, Westinghouse
J. B. Tice, manager, application engineering, electric utility sales division, GE Co.
Place: Engineers' Club of San Francisco, 206 Sansome St., San Francisco
Dinner: Cocktails 5:30 P.M., Dinner: 6:30 P.M., $3.75
Reservations: GA 1-3184 by Friday, June 5

Space Electronics and Telemetry
8:15 P.M. • Tuesday, May 12, 26
(Joint with PTGAP, see above)

meeting ahead

SWITCHING SYSTEMS

Dr. C. Y. Lee of Bell Telephone Laboratories, Holmdel, N.J., will address the PTG chapters on Communication Systems and Engineering Writing and Speech at their joint meeting on May 26. He will discuss systems aspects of electronic switching systems under development at the laboratories. In order to meet field conditions, these systems are designed to satisfy broad requirements in economy, reliability, and maintainability.

A graduate of Cornell University and University of Washington, Dr. Lee has been with Bell since 1952, working on the design of switching networks, on logical design of switching systems, on coding theory, and on computer programming and design. He is head of the programming research department at Bell and is spending two semesters at University of California as a Mackay lecturer.

meeting ahead

NEW H-P VOLTMETER

Gregory Justice of Hewlett-Packard's advanced R&D laboratory will address the PTG chapter on Instrumentation and Measurement at its May 27 meeting. Discussing the new HP 3400A RMS-responding voltmeter, he will give an introductory history of ac measurement, with emphasis on methods of rms measurement.

A particular solution to the problem thus posed takes the form of the new meter; the over-all steps taken to achieve the desired ends will be described with reference to a block diagram. The means of fulfilling the requirements of the blocks (i.e., circuit design) will constitute the majority of the talk: the solution of unusual problems by means of special circuitry will be the theme. The concluding section will concern applications to which rms measurements are well suited.

meeting ahead

MIT STATION TOUR

The East Bay Subsection plans a tour of the MIT Lincoln Laboratory space communications station at Camp Parks near Pleasanton on May 19, conducted by the site manager, Dick Locke. He also will discuss activities there, including participation in Project Westford, the controversial belt of "needles" orbiting the earth, laser communications R&D, and general space communications studies.

Due to space limitations, attendance will be limited to the first 35 making reservations for the tour no later than May 15 by calling Winnie Veedor, 843-2740, ext. 5434, or Carole Marino, 447-1100, ext. 8064.

To reach the communication station, enter the main (West) gate of Camp Parks on Dougherty Road one mile east of Dublin on Highway 50. After entering the gate, go straight ahead for one mile to the first sign marked "MIT Field Site," then follow the signs.

meeting ahead

SELF-SYNCHRONIZATION

Dr. Peter G. Neumann, technical staff member, Bell Telephone Laboratories, Murray Hill, N.J., and visiting lecturer at Stanford University will

(Continued on page 8)

MORE SYNCHRONIZATION

address the PTG chapter on Information Theory on May 28.

Discussing self-synchronization in the presence of noise, Dr. Neumann will consider the effects upon a communication system of transient errors of any kind, simple or catastrophic, anywhere in the system. Techniques by which the decoder is able to resynchronize itself rapidly following arbitrary errors, thereby resuming correct operation after a short delay, will be covered. Various types of codes, including block codes (such as comma-free codes), variable-length codes (especially prefix codes), and sequential codes, will be considered.

The speaker is a graduate of Harvard University and Technische Hochschule, Darmstadt. He joined Bell in 1960, in research in digital systems.

meeting ahead

BUBBLY R&D

The technical aspects of California wine, including compatibility and reliability, will occupy members of the Santa Clara Valley Subsection and their ladies when they attend a dinner and plant tour of Paul Masson Vineyards, off Pierce Rd. in Saratoga, on June 10. Telephone reservations required; call Mrs. Jenny George at 735-2226.

STUDENT PAPER WINNERS

Winners of the 1964 San Francisco Section Student Paper Contest have been announced by E. H. Hulse and Dick Honey, co-chairmen of the education and student relations committee.

Stipends for both the graduate and undergraduate segments of the contest are first prize, $75; second prize, $50; and third prize, $25. In addition, winners received authorization for one year's dues in the IEEE.

Graduate winners were Jerome D. Harr, University of Santa Clara, first prize, "An adaptive digital-to-analog converter"; Lt. Richard G. Camacho, U.S. Naval Postgraduate School, Monterey, second prize, "Power amplification with gate turn-off controlled rectifier"; and V. Leo Rideout, Stanford University, third prize, "Second place in the weather race."

Undergraduate winners were Dan P. Hunt, University of Nevada, first prize, "An introduction to magnetic field suspension"; Bruce McGregor, San Jose State College, second prize, "Design considerations in the air shower experiment"; and Lloyd R. Shipman, Jr., University of Santa Clara, third prize, "Numerical analysis of elliptic loop antennas."

DEVELOPMENTS IN APPLICATION OF COMPUTERS TO NETWORK THEORY

At the March meeting of the PTG on Circuit Theory chapter, Donald A. Calahan, visiting assistant professor at University of California at Berkeley, delivered a talk entitled "Recent Development in the Application of Computers to Network Theory."

Within the past two years differential equations have been derived which describe the variation of parameters of a network under which various driving point and transfer immittances of a network can be held fixed. These equations are highly non-linear and with a present state of knowledge do not appear to be analytically solvable. However, with the use of a computer many interesting and useful new networks can be generated using the differentiation equations. In particular, Professor Calahan has been able to develop filters which consist of non-uniformly distorted ladder networks incorporating wide ranges of losses and element values. He has also been able to apply his techniques to generate tables of active RC filter designs which can accommodate transistors with rather arbitrary betas. From a practical point of view, the problem of immediate interest is to generate exhaustive tables of element values for lossy filters. The most interesting theoretical problem is the detailed study of the differential equations used and the properties of their solutions.

IVAN T. FRISCH

MORE ANNUAL MEETING

great deterrent in the coming years as engineers, architects, government, and corporations meet with the public to hammer out solutions to the conflict between expediency and esthetics.

Finley Carter will hit this point from first-hand experience; he has long been a leader in civic affairs as well as a prime mover in engineering circles. Like many (but not enough) engineers, he has served his own property owners association on committees which must face up to the esthetics versus progress controversy. With this background, Carter does not believe in abdicating the solutions to Washington or Sacramento.

There are plenty of problems for electrical engineers in this area, according to Carter. In addition to power and communications circuit construction, there are forests of receiving antennas, unsightly transmitting antennas, poor lighting, air pollution, and poor acoustics—and these are but a few areas where California EE's have done a functional but not an esthetic job. In Carter's view this is incomplete engineering: it does not "look beyond the expedient to the esthetic."

Rounding out the eventful evening (see Meeting Calendar) will be presentation of Fellow awards, introduction of new officers, and voting on adoption of the new by-laws.

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events of interest

IEEE PAPERS CALLS

May 15—Intn'l Convention on Military Electronics (MIL-E-CON 8), Sept. 14-16, Washington, D.C., PTG-MIL. Dr. H. M. O'Bryan, Bendix Corp., 1730 K St., N.W., Washington, D.C.

June 1—National Power Conference, Sept. 27-Oct. 1, Tulsa, Okla., IEEE/ASME. G. H. McDaniel, American Elec. Power Serv. Corp., 2 Bdwy., N.Y. 8.

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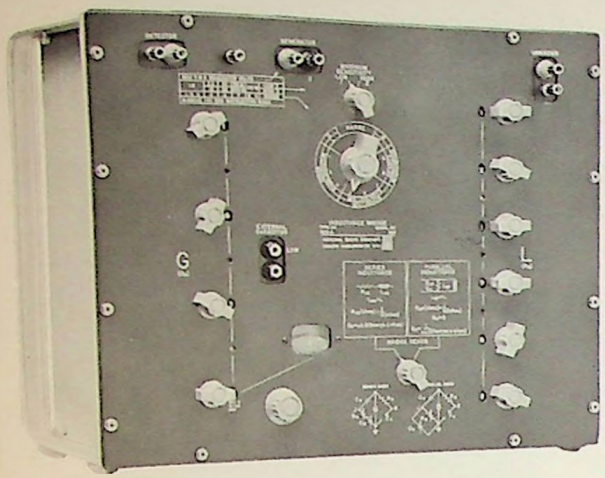

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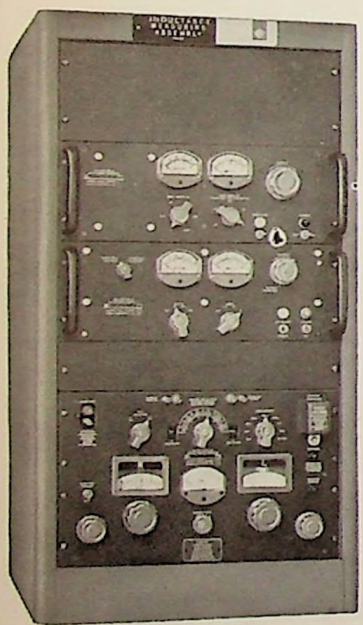

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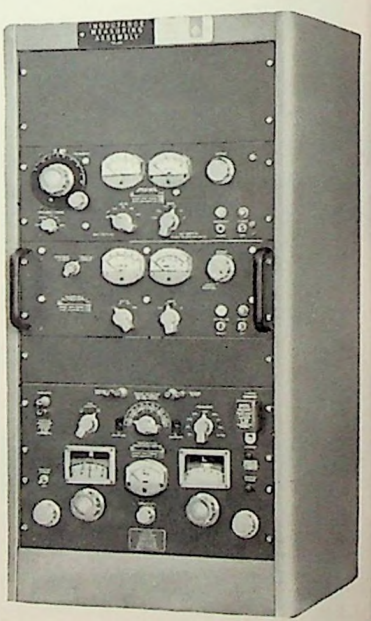

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