

# EDITOR'S PROFILE of this issue

*from a historical perspective ...*

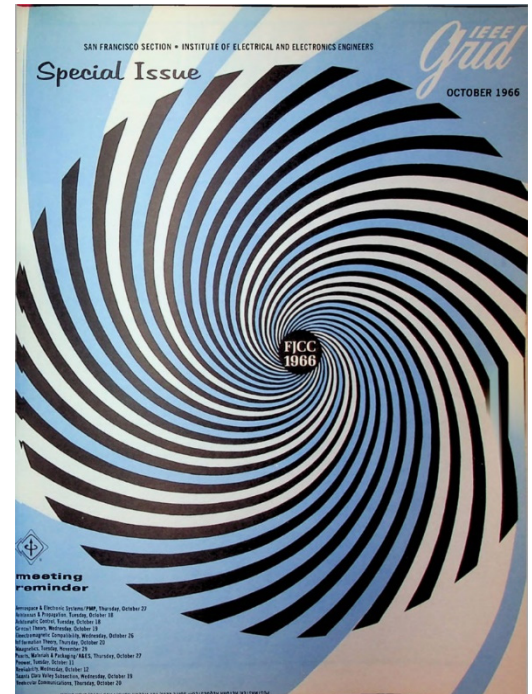
with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)

October, 1966:

Cover: Excitement builds for the IEEE's Fall Joint Computer Conference. Details begin on page 4.

Page 4: Bill Davidow chairs the FJCC technical committee. He goes on to found a venture capital firm, Mohr-Davidow. Gene Amdahl gives a talk on time-sharing processors, and Prof. James Angell of Stanford talks on ICs for computers. Richard Hamming talks about numerical analysis; he is the inventor of the Hamming Code (working with Claude Shannon), used for error correction. He became an adjunct professor at Stanford. After retirement, he taught at the Naval Postgraduate School in Monterey. IEEE created the Hamming Medal in his honor.

Page 6: Dr. Presper Eckert and Dr. John Mauchley are honored at FJCC for their development of the ENIAC and UNIVAC computers.



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

SAN FRANCISCO SECTION • INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

IEEE  
*Grid*  
OCTOBER 1966

# Special Issue

FJCC  
1966



## meeting reminder

- Aerospace & Electronic Systems/PMP, Thursday, October 27
- Antennas & Propagation, Tuesday, October 18
- Automatic Control, Tuesday, October 18
- Circuit Theory, Wednesday, October 19
- Electromagnetic Compatibility, Wednesday, October 26
- Information Theory, Thursday, October 20
- Magnetics, Tuesday, November 29
- Parts, Materials & Packaging/A&ES, Thursday, October 27
- Power, Tuesday, October 11
- Reliability, Wednesday, October 12
- San Jose Valley Subsection, Wednesday, October 19
- Vehicle Communications, Thursday, October 20



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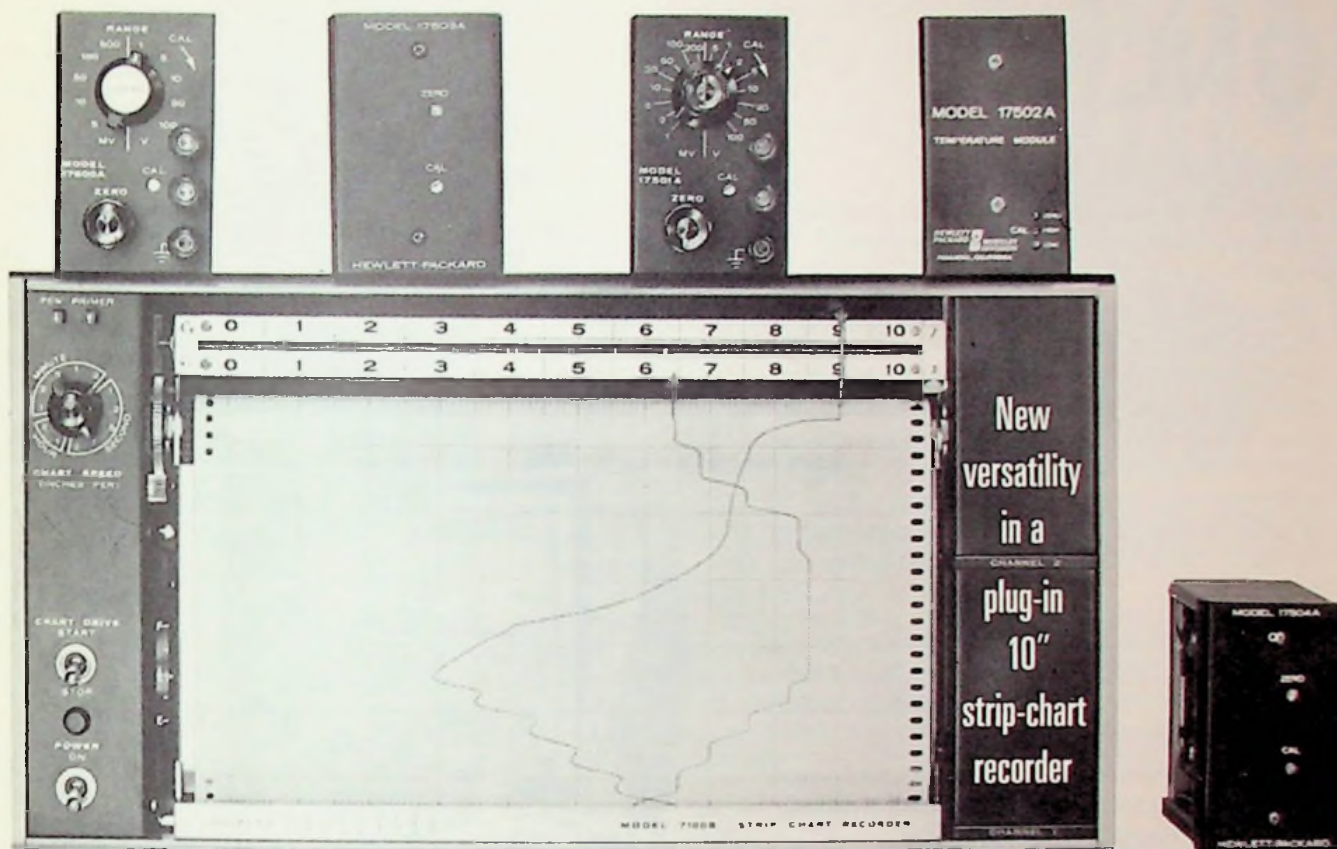
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scale. Variable span and full scale zero controls are provided. Model 17502A, a temperature input module with automatically compensated reference junction, linearizes recorder presentation with standard paper. Additional low-cost single range input modules (Model 17503A, 1 mv input with filter; Model 17504A, 5 mv-100 v with plug-in range cards) are also available:

**Model 7100B** 2-pen Recorder, \$1300

**Model 7101B** 1-pen Recorder, \$1000

**Model 17500A** Input Module, \$250

**Model 17501A** Input Module, \$350

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### the section

#### MEMBERSHIP

Following are the names of individuals who have been elected to current membership:

F. F. Arnoldy	H. Korb
S. Auer	J. Krugers
P. Barfoot	G. B. Kurtz
H. Brechna	J. McCarthy
D. C. Conrad	J. B. Pirie
E. A. Crosetti	D. M. Pittle
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J. R. Johnson	B. W. Ullman
J. A. Karp	J. J. Weisenburger
J. M. Keenan	P. J. Wymann

### section news

#### EXCOM MEETINGS

The Section Executive Committee meets regularly on the last Wednesday of the month at 7:30 p.m. in the Section office. Standing committee chairmen, delegates, chapter chairmen or members at large wishing to place an item on the agenda and/or attend the meeting should call the office not later than the Friday preceding the last Wednesday of the month.

### section news

#### EDUCATION CHAIRMAN NAMED

J. E. Barkle, Bechtel Corp., San Francisco, has been appointed chairman of professional education for the section by E. H. Hulse, chairman. Barkle, who also serves as secretary of the section, plans to form a committee to assess professional or continuing (as distinguished from degree-oriented) education needs and opportunities for section members, including existing extension programs and courses within companies, to determine what courses the section should organize or encourage.

### professional notes

#### REGISTRATION EXAMS

Deadlines announced by California Board of Registration for Civil and Professional Engineers, 1021 O Street, Rm. A-102, Sacramento, Calif. 95814:

December 1, 1966, final filing date for engineer-in-training examination to be held April 8, 1967 (required before taking professional examination).

May 1, 1967, final filing date for professional examination to be held August 19, 1967.

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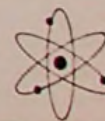
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TECHNICAL PROGRAM TO COVER CURRENT, FUTURE DEVELOPMENTS AT FJCC

The technical program for the 1966 Fall Joint Computer Conference includes 24 sessions for the technical program running November 8-10 at San Francisco's Civic Center.

Dr. William H. Davidow, chairman of the technical program, has announced the following sessions, with chairmen shown:

"Time-Sharing Processors and Executive Systems," Dr. Gene M. Amdahl of IBM Corp., San Jose; "Integrated Electronics and the Future of Computers," Prof. James B. Angell of Stanford University; "Computer-Oriented Data Analysis," Dr. Geoffrey H. Ball of Stanford Research Institute.

"Some Communications Aspects of Time-Sharing Systems," Paul Baran of The RAND Corp.; "Hybrid Applications and Techniques," Walter Brunner of Electronics Associates, Inc., Princeton, N. J.; "The Man-Machine Interface," Dr. Sidney Fernbach of Lawrence Radiation Laboratory; "Selected

Applications Using Numerical Analysis," R.W. Hamming of Bell Telephone Laboratories, Murray Hill, N. J.

"For and Against Time-Sharing," Prof. Harry D. Huskey, University of California at Berkeley; "Technologies and Systems for Ultra-High Capacity Storage," J. D. Kuchler of IBM Corp., San Jose; "Advances in Programming Languages," William C. McGee of IBM Corp., Palo Alto.

"Engineering Design by Man/Computer Interaction," Thurber J. Moffett of Lockheed-California Co., Burbank, Calif.; "Computers and Publishing," William R. Nugent of Inforonics Corp., Maynard, Mass.; "Computer Memories," Dr. J. A. Rajchman of RCA Laboratories, Princeton, N. J.

"Monte Carlo Methods Using Analog and Hybrid Computers," Prof. A. C. Soudack of the University of California at Berkeley; "Error Analysis in Analog and Hybrid Computers," Dr. Robert Vichnevetsky of Electronic Associates,

Inc., Princeton, N. J.; and "Computers in Music," Dr. Heinz Von Foerster of the University of Illinois.

A workshop session is planned on "The Complements of Man/Computer Interaction," with Thurber J. Moffett as chairman.

Also proposed are the following sessions, according to Dr. Davidow: "Natural Language," H. R. J. Grosch of General Electric Co., Santa Barbara, Calif.; "Scientific Applications," L. H. Amaya of Lockheed Missiles & Space Co., Sunnyvale, Calif.; "Management of Time-Sharing Centers," Prof. Richard Mills of Massachusetts Institute of Technology.

"Impact of Computers on Government," Norman Ream of the Center of Services and Technology, U.S. Bureau of Standards; and "High Quality Papers of General Interest," Rex Rice of Fairchild Research Laboratory, Palo Alto. See following condensed program for days and times.



Glaser

Lauler

Mathews

Spring

Davidow

Porter

Wicks

Smith

computer conference

FJCC COMMITTEE, ALL FROM BAY AREA, WORKING SINCE DECEMBER

The general committee to plan and execute details for the 1966 Fall Joint Computer Conference in San Francisco, November 8-10 is headed by R. George Glaser, general chairman. The steering group has been meeting since early in the winter.

Glaser, an associate in the San Francisco office of McKinsey & Company, Inc., an international firm of management consultants, is a veteran of committee planning for the two most recent Joint Computer Conferences held in San Francisco (1962 and 1964). He was named chief organizer of the 1966 FJCC by the American Federation of Information Processing Societies, sponsor of the event.

Other principal members of the steering committee are the conference officers and heads of the various committees, announced by Glaser as follows:

Vice chairman, Louis J. Lauler of Lockheed Missiles & Space Co.; Secretary, John F. Mathews II of IBM Corp., San Francisco; treasurer, John B. Spring of Price Waterhouse & Co., San Francisco.

Technical program: Dr. William H.

Davidow of the Dymec Division of Hewlett-Packard Co., Palo Alto, chairman; Dr. Glenn C. Bacon of IBM Corp., San Jose, vice chairman.

Publications: Albert C. Porter of the California Public Utilities Commission, San Francisco, chairman; Dr. Robert L. Barringer of Arthur D. Little, San Francisco, vice chairman.

Printing and mailing: A. A. Wicks of Control Data Corp., Palo Alto, chairman; John M. Gowan of Control Data Corp., vice chairman.

Exhibits: Raymond D. Smith of SCM Corp., Oakland, chairman; Richard T. Dorrance of the California Systems Division, URS Corp., Burlingame, vice chairman.

Local arrangements: Thomas C. Bieg of IBM Corp., San Francisco, chairman; Ralph R. Wheeler of Lockheed Missiles & Space Co., Palo Alto, vice chairman.

Registration: Thomas R. Dines of Control Data Corp., Oakland, chairman; Don Lytle of Control Data Corp., Palo Alto, vice chairman.

Education program: Robert Andrews of the Data Processing Division of IBM Corp., Los Gatos, Calif., chairman;

N. O. Salberg of IBM-Los Gatos, vice chairman.

Ladies program: Mrs. Marilyn DeC. Richardson of Data Processing Division of IBM Corp., Los Gatos, chairman; Miss Mary Stewart of IBM, San Francisco, vice chairman.

Public relations: Michael McCluskey of IBM Corp., San Jose, chairman; Jerry M. Kelly of Memorex Corp., Santa Clara, vice chairman.

Science theater: Thomas Borrelli of LMSC, Sunnyvale.

Glaser also reported that the various professional societies and industry associations supporting the conference have appointed representatives to serve as advisors, as follows:

Dr. Morton M. Astrahan of IBM Corp. at Los Gatos, representing the American Federation of Information Processing Societies' Committee on Conferences.

Dr. Richard I. Tanaka of California Computer Products, Inc., Anaheim, Calif., representing the Institute of Electrical and Electronics Engineers.

Donn B. Parker of Control Data Corp., Palo Alto, representing ACM.

# Conference at a Glance

October, 1966

TIME	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8				
9				
10	<b>KEYNOTE SESSION</b> Impact of Computers on a Technical Society  Main Auditorium  (Registration not required.)	10. Management of Multi-Access Systems  Main Auditorium ▲	11. Computer Memories  Polk	12. Natural Language Processing  Larkin
11			13. Error Analysis in Analog and Hybrid Computation  Jack Tar El Dorado Room ▲	17. The Man/Machine Interface  Main Auditorium
12		<b>CONFERENCE LUNCHEON</b> INTERNATIONAL ROOM JACK TAR HOTEL		
1				
2	2. Time Sharing Processors & Executive Systems  Main Auditorium			
3	3. Integrated Electronics & the Future of Computers  Polk			
4	4. Computers & Publishing  Larkin			
5	5. Hybrid Computers and Random Variables  Jack Tar International Room			
6				
7				
8				
9				
10				

**REGISTRATION**  
 Advance registration will take place on Monday afternoon, November 7, at the Jack Tar and Hilton Hotels. A no-host Pre-Conference Cocktail Party will be held in the Gas Buggy Room at the Jack Tar Hotel beginning 5:00 PM on Monday.

Jack Tar and Hilton Hotel  
 Monday, 7 November 2:00 PM to 9:00 PM  
 San Francisco Civic Auditorium

Tuesday, 8 November 8:30 AM to 5:00 PM  
 Wednesday, 9 November 8:30 AM to 5:00 PM  
 Thursday, 10 November 8:30 AM to 5:00 PM

It will not be necessary to register before attending the keynote session on Tuesday morning.

▲ Discussion Sessions (Summaries Available in Advance)



Brieg

Dines

Andrews

Richardson

McCluskey

Borelli

Tanaka

Asirrahan

BRID-5



**FJCC EXHIBIT PLANS**

Planners for the exhibit to be held in connection with the 1966 Fall Joint Computer Conference have allocated 282 booth spaces to occupy the major part of Brooks Hall in Civic Center.

More than 130 exhibitors are expected to participate, according to Raymond D. Smith of SCM Corp., Oakland, chairman of the exhibits committee.

He said emphasis will be placed on "live hardware" and, according to early indications, there will be a number of operating time share systems demonstrated.

Exhibits will also include sub-assemblies and components as well as the latest information processing systems.

**FJCC HONORS**

Dr. J. Presper Eckert and Dr. John W. Mauchly are to be honored for "pioneering contributions to automatic computing" with the presentation of the annual Harry Goode Memorial Award at the 1966 Fall Joint Computer Conference.

Announced from the New York headquarters of the American Federation of Information Processing Societies, the Harry Goode Award to Drs. Eckert and Mauchly is largely based on their participation in the design and construction of the ENIAC, the world's first all-electronic computer, and of the BINAC and the UNIVAC I.

Dr. Eckert is vice-president of the UNIVAC/AC Division of Sperry Rand Corp. and Dr. Mauchly is founder and board chairman of Mauchly Associates, Inc., which he organized in the spring of 1959.

Dr. Eckert is also being honored for his continued contributions in electronic computer design and Dr. Mauchly is being cited for pioneering efforts involving computers to solve scientific and business problems.

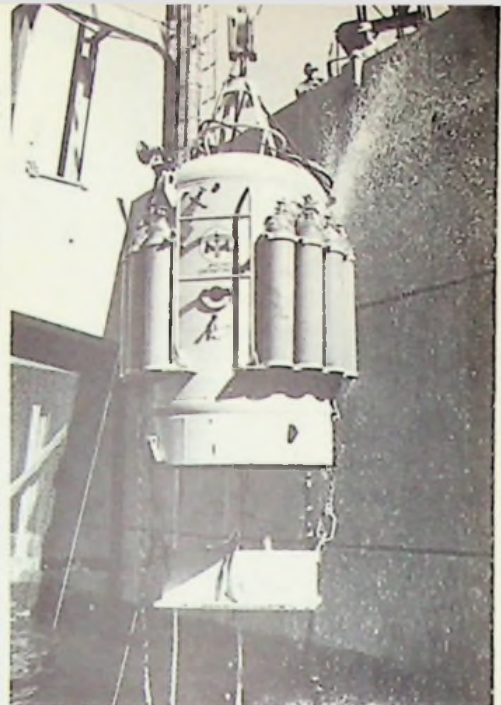
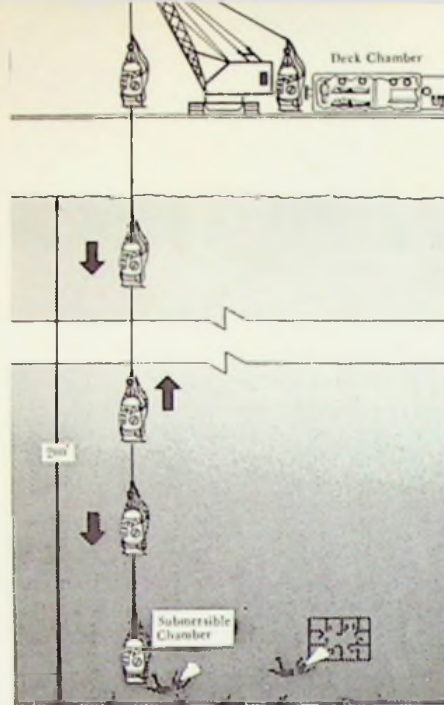
The award, named after the late Dr. Harry H. Goode, early chairman of the National Joint Computer Conference, consists of a medal and a certificate. It was established by AFIPS to encourage and recognize outstanding contributions to the information processing arts.



Mauchly



Eckert



Combined use of deck chamber and submersible chamber (right above) permits deep water work for as long as week of four-hour days, eventually will allow 1500 ft. work, 8 hr. days.



Blachman

Horton

**OUTPUT SIGNAL & NOISE**

Nelson M. Blachman will address the Information Theory Group chapter on "The Output Signal, Noise, and Intermodulation of a Nonlinearity" at the October 20 meeting. These output components, surprisingly, seem never to have been fully defined. In his talk Dr. Blachman will define them in a manner agreeing with intuition and will show that the output-autocorrelation-function terms usually identified more or less arbitrarily as associated with the output signal, noise, and intermodulation are in fact the autocorrelation functions of these now clearly defined output components. He will illustrate the new approach, which is applicable to detectors and bandpass nonlinearities as well as to memoryless transformations, by considering the case of a limiter.

Dr. Blachman is a senior scientist at the electronic defense laboratories of Sylvania Electronic Systems' western operation in Mountain View. McGraw-Hill has just published his book "Noise and Its Effect on Communication."

The meeting will be preceded by a dinner at L'Auberge in Redwood City.

**CACHALOT SYSTEM**

The Power chapter will learn about underwater life support systems on October 11.

Thomas F. Horton, marketing manager for Westinghouse Deepstar and life support systems, will discuss the engineering, design and application of the Cachalot sustained deep diving system now in service recovering an offshore oil drilling platform in the Gulf of Mexico. The talk will include a 15-minute color film showing the system in operation during the replacement of outlet gates in the Appalachian Power Company's Smith Mountain Dam.

The system consists of two pressure chambers that enable divers to live for periods as long as a week under deep water conditions and to work at depths of 200 to 450 feet for four hours a day or more. Ultimately the system can be built for safe use at depths of 1500 feet, and it may enable divers to put in almost an eight-hour working day in the depths. Mr. Horton will discuss some of the potential applications of the system in the rapidly growing field of oceanography.

Divers live for a week at a time in the larger chamber of the diving system, under atmospheric conditions simulating the pressure they must endure while diving. This chamber is kept at the surface. The smaller submersible chamber is lowered by crane to the depth where the work is to be done, with the divers working out of the chamber on Hookah lines. The submersible chamber locks to the surface chamber so divers can enter and leave without being exposed to surface pressure.

# Computer Programmers Scientific Programmers to program the 7094 and 360 Computers

Primary goals of the programming group are to develop and organize individual computer programs into integrated analytical systems and to fully exploit the capabilities of third generation computer, in particular the use of graphical I/O devices for engineering design and analysis.

Immediate openings exist for programmers at most levels of experience and education with good opportunities for advancement and professional growth.

Minimum requirements are a degree in mathematics, physics, or engineering, or some college and two years of scientific programming experience.

# Business and Systems Programmers to program Large Scale IBM Computers

- Immediate career openings exist for programmers with experience in Business Application or Systems Software.
- Primary assignments will involve programming the above systems in COBOL and assembly languages.
- Successful applicants will have two to four years applicable experience. A bachelor's degree is desirable.

Interested applicants in the San Francisco Bay Area may call Mr. Gene Goodban at 836-3743 from November 6 through November 12 for an interview. Or direct your resumés in confidence to: Mr. P. S. Williamson, Professional Employment Supervisor, Dept. 143-M-51,

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meeting ahead

## APPROXIMATION TECHNIQUES

H. J. Orchard, Lenkurt Electric Co., and G. C. Temes, Ampex, will discuss maximally flat approximation techniques at the October 19 meeting of the Circuit Theory chapter.

Practical design procedures will be given for the approximation of prescribed network characteristics in the neighborhood of an arbitrary frequency. The desired characteristic may be the modulus of a transfer function, loss, phase or delay, or a weighted combination of several of these. The approximation criterion is a maximally flat error.

The procedure leads to simultaneous linear equations in the unknowns. If one or more derivatives of the network characteristics are arbitrary, the linear equations are supplemented by one or more generalized eigenvalue equations.

Using these design techniques, solutions may be found for some novel problems. Also, new formulations were found for the solution of such well known problems as maximally flat delay lowpass approximation.

meeting ahead

## VEHICULAR COMMUNICATIONS

The Vehicular Communications chapter will hear a presentation on selective signaling at the October 20 meeting.

Barry M. Kaufman indicates that a few short years ago selective calling was limited to common carrier, radio-telephone systems.

In Kaufman's talk, mention is made that today selective calling is commonplace in all radio services. Tone coded squelch (continuous tone) has become a way of life. We even superimpose them. In addition to using selective signaling for selection of mobile units or base stations, in some services tones may be used on mobile channels for automatic, unattended, remote indication of equipment outages or malfunctions. The next logical step is the use of tone to correct such malfunctions. This is popularly known as "poor man's telemetry."

Following the formal presentation, the speaker will lead an informal discussion on VHF signaling.

Kaufman is president of Mu-Western Electronics, Inc., San Carlos, a company specializing in the manufacture of tone signaling equipment. He has been with K.F. Development Co., and Secode Corp. In all cases, he worked with design, development and application of digital and tone selective devices.

### OCTOBER 11, TUESDAY, 7:30 PM — Power The Cachalot sustained deep diving system

*Thomas F. Horton, marketing manager, Deepstar and life support systems, Baltimore underseas div. Westinghouse Electric Co.*

Place: Engineers' Club of SF, 160 Sansome St., San Francisco (new location)

Cocktails: 5:30 PM

Dinner: 6:30 PM

Reservations: Engineers' Club, GA 1-3184

### OCTOBER 12, WEDNESDAY, 7:00 PM — Reliability Reliability engineering for integrated circuit production, plus tour

*Floyd Kvamme, marketing manager for integrated circuits, Fairchild Semiconductor*

Place: Conference room, Fairchild Semiconductor, 313 Fairchild Road, Mt. View

(Note: take Ellis St. off ramp from Bayshore Freeway; enter main lobby)

No dinner: donuts and coffee will be served following the tour

### OCTOBER 18, TUESDAY, 8:15 PM — Antennas & Propagation The dispersion of sinusoidal tapes

*Dr. John W. Greiser, Granger Associates*

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

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

Reservations: Claes Elfving, 966-3551 by Oct. 17

### OCTOBER 19, WEDNESDAY, 7:30 PM — Santa Clara Valley Subsection Tour of Ford Motor plant, Milpitas

Place: Corner of Old Oakland Road & Capitol Ave., Milpitas

No dinner

### OCTOBER 19, WEDNESDAY, 8:00 PM — Circuit Theory Maximally flat approximation techniques

*H. J. Orchard, Lenkurt Electric Co. and G. C. Temes, Ampex Corp.*

Place: Stanford Research Institute, conference room B

Dinner: 6:00 PM, Red Cottage, El Camino, Menlo Park

Reservations: Molly Stanley, 739-7700 by Oct. 18

### OCTOBER 20, THURSDAY, 8:30 PM — Information Theory The output signal, noise and intermodulation of a nonlinearity

*Dr. Nelson Blachman, Sylvania Electronic Systems, Mt. View*

Place: Stanford Research Institute, bldg. 1, conf. room B

Dinner: 6:30 PM, L'Auberge, 2826 El Camino Real, Redwood City

Reservations: Mrs. Deane Saltzman, 326-4350, ext. 4101 by October 19

### OCTOBER 20, THURSDAY, 7:30 PM — Vehicular Communications Selective signaling

*Barry M. Kaufman, Mu-Western Electric, Inc., San Carlos*

Place: College of San Mateo, student council room, 2nd floor of activities bldg.

Dinner: 6:30 PM at college cafeteria

No reservations

### OCTOBER 26, WEDNESDAY, 8:00 PM — Electromagnetic Compatibility

#### EMI—what are we measuring?

*Andy Gish, president, EMC Instrumentation Inc., North Hollywood*

Place: Hewlett-Packard, 1501 Page Mill Road, Palo Alto (meet at main entrance lobby)

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

Reservations: Victor M. Turesin, 742-3921 by Oct. 24

### OCTOBER 27, THURSDAY, 8:00 PM — Aerospace & Electronic Systems/Parts, Materials & Packaging Surveyor

*De Loyce Alcorn, JPL, Pasadena*

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

No dinner

# program your Tektronix Type 561A or 564 oscilloscope for DC-to-15 MHz applications



Here's new convenience for many Type 561A or 564 applications.

You can program the Tektronix oscilloscope for  $\delta$  measurement setups—using the new Type 263 Programmer and the Types 3A5 and 3B5 Automatic/Programmable Plug-In Units.

## PUSHBUTTON PROGRAMMING

In this mode, both plug-ins can be programmed using the Type 263 Programmer, which accepts up to 6 plug-in type program cards. Each program card, after initial set-up, establishes the plug-in control functions required for a particular test or measurement . . . with actual measurements made conveniently from the CRT display, as usual. Any number of programmers can be cascaded for applications requiring pushbutton control of more than six measurement set-ups. In REMOTE PROGRAMMING mode, the deflection factor is 10 mV/div to 50 V/div and sweep range is 5 s/div to 10 ns/div.

Programmable Functions: **from Type 3A5**—V/div, 10X probe indication, and AC, AC Trace Stabilized, or DC coupling, by program card jumper connection . . . vertical positioning by program card potentiometer setting; **from Type 3B5**—Time/div, X10 or X100 magnifier, trigger mode with coupling, and trigger slope, by program card jumper connection . . . horizontal positioning, trigger level, and magnifier delay, by program card potentiometer setting.

## AUTOMATIC SEEKING

In this mode upon SEEK command from the probe or the plug-ins, the oscilloscope automatically presents an optimum display. The SEEK command to the plug-in units automatically adjusts the time and amplitude settings and automatically checks the trigger logic—switching to auto trigger mode, if not correctly triggered, to present a stable display whenever possible. Indicators on the plug-ins light automatically to show the time and amplitude settings. Measurements can then be made quickly and accurately from the CRT display. In AUTOMATIC SEEKING mode, the deflection factor is 10 mV/div to 50 V/div and sweep range is 5 s/div to 0.1  $\mu$ s/div.

## MANUAL OPERATION

In this mode, both plug-ins are controlled conventionally. Indicators on the plug-ins show the time and amplitude settings. In MANUAL OPERATION mode, deflection factor is 1 mV/div to 50 V/div (5 MHz bandwidth at 1, 2 or 5 mV/div and 15 MHz at 10 mV/div to 50V/div) and sweep range is 5 s/div to 10 ns/div.

Type 263 Programmer (complete with 6 program cards) . . . . . \$325  
Type 3A5 Automatic/Programmable Amplifier Unit . . . . . \$760  
Type 3B5 Automatic/Programmable Time-Base Unit . . . . . \$890

Oscilloscopes which accept both Automatic/Programmable Plug-Ins:  
Type 561A Oscilloscope . . . . . \$500  
Type RM561A Oscilloscope . . . . . \$550  
Type 564 Storage Oscilloscope . . . . . \$875  
Type RM564 Storage Oscilloscope . . . . . \$960

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



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meeting ahead

## SUBSECTION TOUR

The Santa Clara Valley Subsection will learn about the "Mighty Mustang" on October 19. The meeting will consist of a tour of the production plant of Mustang automobiles at Ford Motor car plants in Milpitas. The plant is scheduled to be in operation during the visit.

computer conference

## EDUCATION PROGRAMS

More than 1200 junior college and high school students from the Bay Area will take part in special education programs planned in connection with the 1966 Fall Joint Computer Conference.

According to R. J. Andrews of IBM Corp., San Jose, chairman of the education program, there will be three programs which last all day, two for high school students and one for junior college students.

All three sessions, entitled "Computers in Your Vocation," include an introduction to computers by R. S. Waller of UNIVAC, San Francisco; a demonstration by R. H. Mattern, Jr. of IBM Corp., Los Gatos, of a computer in New York connected to a control center in San Francisco to show how such a linking can be used in classroom teaching; and

meeting ahead

## SWITCHING FUNCTION DESIGN

Gene F. Franklin, professor of electrical engineering, Stanford University, will discuss design of piecewise linear switching functions for relay control systems at the October 18 meeting of the Automatic Control chapter.

This talk will describe a technique for the complete design of piecewise linear switching surfaces for single-input systems with linear dynamics. The techniques to be described are heuristic rather than analytic and the final design parameters are selected by a computer-aided surface search. The sub optimal solution obtained will be compared at specific initial conditions with optimal control designs. The aim of the design method is to give an effective, simple procedure for the selection of piecewise linear functions which can be realized with resistors and diodes. The performance function is minimum time response for a complete volume of initial conditions in the state space. Simulation results for third and fourth order systems will be described.

a tour of the exhibit area where the students will see over 100 exhibits of the latest equipment.

(Continued on page 17)

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Control Systems Consultant,

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Pacing the rapid expansion of computer control projects in the process, computer, and instrumentation industries, here are the highlights in concepts, equipment, techniques, and applications of this new technology. Covers all aspects . . . from basic terminology and a discussion of time responses . . . through descriptions of application functions of control computers . . . to thorough treatment of equipment and programming for computer control.

400 pages, \$16.00

## THE PROGRAMMER'S FORTRAN II AND IV: A Complete Reference

By Charles Philip Lecht, Director,

Advanced Computer Techniques Corporation

When it comes to the FORTRAN II and FORTRAN IV languages, here is the most complete programming guide currently available. Fully detailed. Amazingly clear. A reference must for the practicing computer programmer. Using FORTRAN II as the core of the book, the author achieves an independent yet interrelated definition of the two languages, comparing and contrasting them thoroughly.

162 pages, \$7.95

Coming This Fall

## ON-LINE COMPUTING: Time-Shared Man-Computer Systems

By Walter J. Karplus, Professor of Engineering  
University of California at Los Angeles

An in-depth treatment of on-line computing—the important new concept closely linking the separate operations of the computer and external feeding device—be it man or machine. Basic concepts plus detailed explanations of on-line techniques as applied in five major scientific technical areas show how it is now possible for the programmer to participate actively in the actual operations of the computer.

375 pages, \$14.50

## PROGRAMMING LANGUAGES AND SYSTEMS

By Saul Rosen

Computer Center,

State University of New York at Stony Brook

Aimed at the intermediate and advanced student, this work presents a selection of previously published, and unpublished, papers and reports on computer science. "Rosen has selected all the right material," Edward Feigenbaum, Stanford University.

## THE PL/I CONVERTER

By Eric Weiss

Coordinator of Corporate Computer Planning,  
Sun Oil Company

This introduction has been written for those who already know how to program in FORTRAN. Each feature of PL/I has been tied to its equivalent in FORTRAN, and those aspects of PL/I with no FORTRAN counterparts have been treated in detail so that a programmer may substitute the new language in his present work.

128 pages, \$3.95

Just Published

## PL/I PROGRAMMING PRIMER

By Gerald M. Weinberg, Senior Staff Member  
IBM Systems Research Institute

This introduction to computer programming features IBM's new PL/I programming language. Intended primarily as a text, the book covers all aspects of PL/I needed by a beginner to start writing programs of his own.

288 pages, \$5.95

Coming Soon

## NUMERICAL CALCULATIONS AND ALGORITHMS

By Royce Beckett and James Hurt

Both of the University of Iowa

McGraw-Hill Series in  
Information Processing and Computers

An undergraduate and first-year graduate-level text for engineering and science students, this book presents numerical methods for solving typical problems on a computer. It is not written for a particular computer language, but rather stresses the general techniques of problem solving through the use of flow charts from which a computer program can be written for any of the problem-oriented algebraic languages.



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### REGION 6 NOMINEES FOR DELEGATE/DIRECTOR, 1967-68

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**Myron A. Bostwick** (M '42-SM '48-F '58), Protection Engineer, Portland General Electric Company, Portland, Oregon. Committees: Pacific Coast Relays Sub-committee, 1953-66, Chairman, 1953-60; Pilot Wire Sub-committee, 1953-60; Power System Relaying, 1964-66; Relays, 1953-63. REGIONS: Region 6 Committee, 1963-64. SECTIONS: Portland: Secretary-Treasurer, 1961-62, Vice Chairman, 1962-63, Chairman, 1963-64; Arrangements Committee, Chairman, 1957-58; Education Committee, Chairman, 1958-59; Membership Committee, Chairman, 1960-61; Technical Operations Committee, Chairman, 1959-60.

**Donald F. Folland** (M '44-SM '52), Engineering Department Head for Advanced Systems, Sperry Utah Company, Division Sperry Rand Corp., Salt Lake City, Utah. SECTIONS: Salt Lake: Secretary, 1962-63; Utah: Vice Chairman, 1963-64; Chairman, 1964-65; Nominating Committee Chairman, 1966. REPRESENTATIVE: Utah Engineering Council, 1963-64.

**Stanley F. Kaisel** (S '42-A '45-SM '51-F '64), President, Microwave Electronics, Division of Teledyne, Inc., Palo Alto, Calif. COMMITTEES: Sections, 1963-65; Standardization of Microwave Tubes Subcommittee, 1957-59. REGIONS: Region 7 Committee, 1961-62. SECTIONS: San Francisco: Treasurer, 1958-59, Secretary, 1959-60, Vice Chairman, 1960-61, Chairman, 1961-62; Electron Devices Group Chapter, Treasurer, 1951-52, Secretary, 1952-53, Vice Chairman, 1953-54, Chairman, 1954-55; Fellow and Nominations Committee, 1965-66, Chairman, 1966; Merger Committee, Co-Chairman, 1962; Nominating Committee, 1963-64. CONFERENCES: Conference on Electronic Tube Research, Local Arrangements Chairman, 1953; WESCON, Future Engineers Show Committee, Chairman, 1957. REPRESENTATIVE: San Francisco State College, Joint Engineering Council Advisory Committee, 1964-66; WEEF Board of Trustees, 1964-66.

## DIGITAL LOGIC DESIGN

### ELECTRICAL DESIGN ENGINEER SENIOR

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### ELECTRICAL DESIGN ENGINEER—JUNIOR

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in terms of college graduates per thousand population. Art, theatre and music flourish in the great new Seattle Center, built for the World's Fair.

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**Design or Senior Engineers** with communication theory background and/or interest in digital circuits. Preferably an MSEE. Minimum experience, two years. Should be familiar with digital circuit design and frequency calibration techniques.

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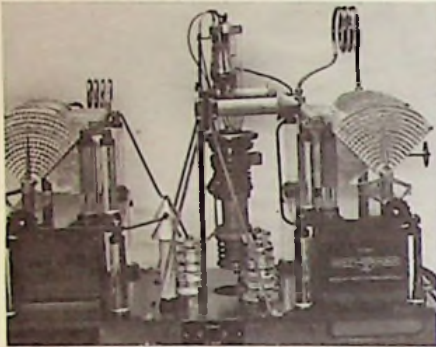


historical notes

SAN FRANCISCO BAY AREA — CRADLE OF ELECTRONICS

The Grid is indebted to Earl Goddard, chairman, historical committee, San Francisco Section, past chairman of the section, and member of the board of directors of the Perham Foundation, for the following pictorial history.

Front page notice from the San Francisco Call announcing first radio telegraph service between Hawaii and the mainland, July, 1912.



Five Kilowatt short wave transmitter built for the US Navy. A water cooled tube was used. The plate supply was 20 KV 500 Hertz to produce modulated CW. Note the calibration markings scribed on the tank capacitor plates and the permanently attached getter tube for degaussing the power amplifier tube.



Radio Shack on board the USS Cleveland, 1917. Photo showing a receiver which utilizes an audion tube similar to the one shown by Dr. de Forest above. Much of the early development of radio was connected with the marine industry both commercial and governmental.

(To be continued in November)

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**SYSTEMS & CYBERNETICS**

A petition for formation of a San Francisco chapter of the Systems Science & Cybernetics Group has been approved by the Section Executive Committee and forwarded to the IEEE Executive Committee for approval. Organization of the new chapter is expected to be completed by November.

section news

**RECORD YEAR**

During the operating year ending June 30, the San Francisco Section, its three subsections and 23 group chapters held 101 meetings, with an average attendance of 59.9. Twenty-two of these were jointly sponsored by one or more components of the section. Total attendance at all meetings was 6613. Attendance at chapter meetings totalled 4848. Although 27 fewer meetings were held than in the previous year, total and average attendance were the highest in the section's history, realizing a long-standing goal of fewer meetings, higher caliber and interest, and better attendance, the section's largest number of chapters within IEEE creating strong competition for meeting nights.

Because of continuing problems in attendance, programming, and support by the membership, the Fresno Subsection was dissolved at the request of its officers. For similar reasons the Broadcasting and Engineering Writing & Speech chapters were also dissolved.

Merger of the Aerospace & Electronic Systems chapter was completed and a new Magnetics chapter was formed.

Two needed low-cost items were produced by the section: a membership poster, based on one printed by IEEE HQ, which can be easily distributed by mail; and a student counseling folder excerpted from "Your Challenge in Electrical Engineering" published by HQ. The poster has been distributed to nearly 875 bulletin boards of firms in the San Francisco Bay Area; a duplicate distribution is planned during the next year. Approximately 7,000 copies of the guidance folder have been distributed through the superintendents of education of the 22 counties covered by the section and two major counseling centers held annually in San Mateo and Santa Clara Counties, at which members manned counseling booths.

education notes

**ENGINEERING EXTENSION**

For catalog of Fall, Winter, and Spring 1966-67 courses, write Engineering Extension, University of California, Berkeley, Calif. 94720.



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## THE CALIFORNIA INVESTOR

By **STANLEY J. WEISS**  
President, Intercontinental Properties.

During the past several months the papers have been filled with stories about higher interest rates, tight mortgage money, etc. The result of this adverse economic publicity has been a fluctuating stock market, and a reticent buying public. I have mentioned the above as a prelude to this month's column:

"Now is the time to buy" is a historic quote and the reason I mention it is because of our famous Real Estate Organization—the "I could have and I should have club".

Many people that I have spoken with have said they never had a good opportunity. I tell them that opportunities are around us all the time. However, to be successful you must be able to recognize an opportunity when it presents itself and then grab it, hold on to it, and derive every benefit it offers.

Such an opportunity is presented to you, right now. Due to the conditions of "tight money", real estate investing is now in the position, for the first time in many a year, of being a true buyers' market. By that I mean, the general public is keeping its money in savings, waiting for the economic scare to pass.

In my opinion, a great deal of money will be made during the next few months by investors who take advantage of the brief opportunity to buy selected acreage at attractive prices and terms.

### WE RECOMMEND

42 Acres below market. East County San Diego on paved county road. Good investment potential. Can be split into four 10 acre parcels. Priced at \$395 per acre. 25% down. Principal balance payable interest only for 3 years then principal payments 1% per month plus interest at 6%.

For additional recommendations see "THIS MONTH'S BEST INVESTMENTS" elsewhere on this page.



BAY AREA INFORMATION: 327-6623

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Sorenson

Yamato

Kaku

Pollock

wescon news

### FUTURE ENGINEERS SHOW WINNER FROM SECTION AREA

Twenty-nine outstanding students from six western states participated in the Future Engineers Program at WESCON, August 23-26, in Los Angeles.

The student engineers competed for \$2800 in scholarship prizes, awarded to winning exhibits and technical paper presentations.

Top prizes were the Lee DeForest award, a \$1000 scholarship based on the exhibit competition, and the Frederick Emmons Terman award, a \$300 prize, for the best technical paper presented by a student.

The students were selected by section committees throughout Region 6 of IEEE. Each participant received, in addition to his travel and expenses, a \$25 U.S. Savings Bond.

Sent to WESCON under the sponsorship of the San Francisco Section were:

Larry Sorenson, 16, of Peterson High

School, Santa Clara, whose display on "Correlating Geoelectrostatic, Geomagnetic and Solar Radiation Fields" won the Lee DeForest \$1000 scholarship.

Masaaki Yamato, 16, of McChesney Jr. High School, Oakland, "Ion-Propelled Aircraft".

Roy Kaku, 18, of Cubberley High School, Palo Alto, "Investigation of the Doppler Effect".

James R. Pollock, 18, of Saratoga High School, "Electrical Analogy Research of the Mental Process Used in Playing Chess".

Laurence Gagliani, 17, of South San Francisco High School, "A Simultaneous Half Adder-Subtractor".

Terrence Jay O'Neil, 16, of Novato Sr. High School, "OCMOP—A Hypothetical Subsea Research Tool".

Robert Hausman, Jr., of Del Mar High School, San Jose, "The Velocity of Propagation of a Magnetic Field".

### THIS MONTH'S BEST LAND INVESTMENTS

- SD-0222 205 Acres, east of San Diego Rolling Hills Water District. Last of the low priced land. Can be sold in smaller parcels. \$1000 per acre. 15 years terms.
- AV-0221 60 Acres, west of Lancaster. Flat land with excellent valley view. Terms to suit. \$500 per acre.
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- O-0223 325 Acres, Southern Oregon. 125 Acres cleared, balance in young timber. Lots of water. \$200 per acre. Terms.

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**USNPGS, MONTEREY**

Newly-elected officers of the U. S. Naval Postgraduate School Branch of IEEE are LCDR E. C. Ball, chairman; LCDR J. W. Egerton, vice-chairman (membership); LT. L. A. Penny, vice-chairman (program); LT. L. F. Permenter, secretary; and LT. T. F. McDonough, treasurer.

The Branch hopes to sign up as IEEE Student Members most of the 300 students directly involved in electronics and electrical engineering courses. Branch Counselor is Dr. J. M. Bouldry.

**MORE COMPUTER CONFERENCE**

Specifically for students from 12 junior colleges in Northern California, E. F. Wong of Honeywell Electronic Data Processing, Los Angeles, will give a session on the use of computers in space activities. The students will also be treated to a review of the importance of computers and automation to society by R. B. Forest, editor of "Datamation."

J. M. Evans of EAI Analog Computer Educational Users Group, Los Angeles, has prepared for the high school students a demonstration on the role of analog and hybrid computers in education.

Wong has also prepared another session for high school students suggesting how they may prepare themselves.

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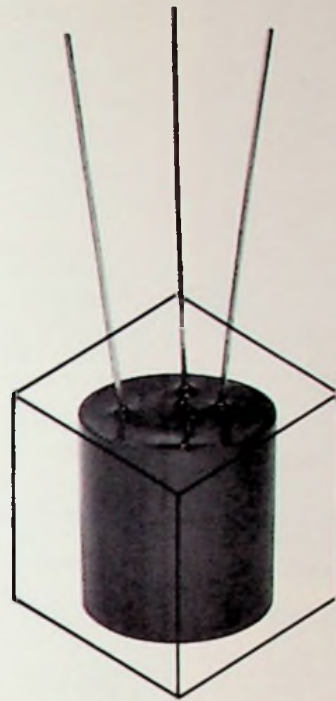
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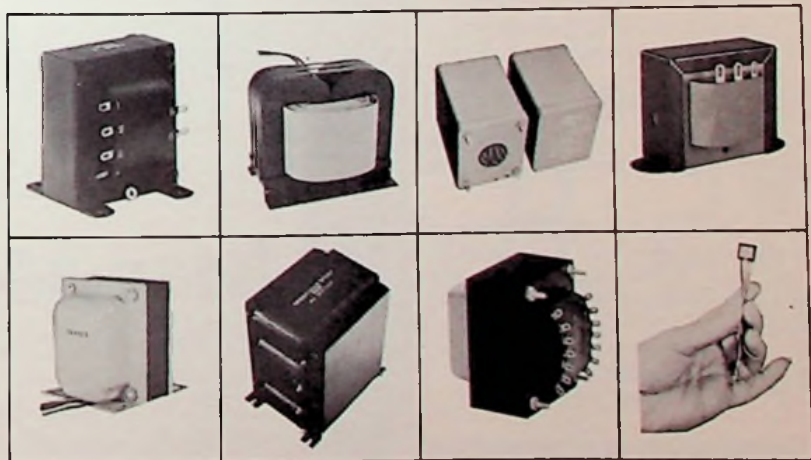


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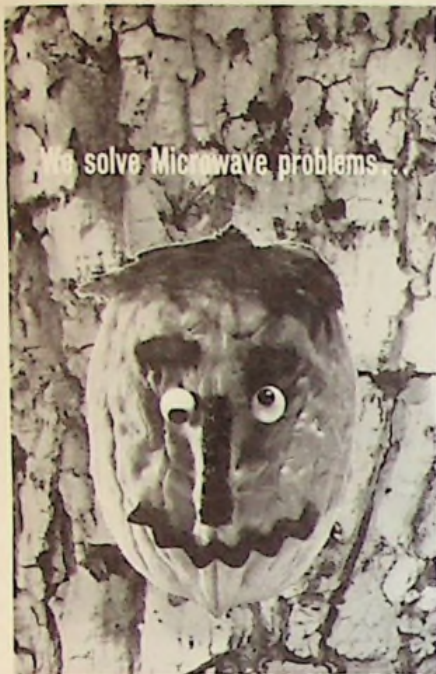
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### IT IS REPORTED:

Cameron H. Burley has been named a project engineer for Applied Technology, Inc., Palo Alto.

Dr. Karl Hinrichs has been appointed director of the newly-formed research department at Zeltex, Inc., Concord.

Stanley R. Olson has been named manager, development engineering, data processing systems division, SCM Corporation, Oakland.

Murray G. Crosby will receive the IEEE Mervin J. Kelly Award for 1966 during the National Electronics Conference in Chicago in recognition of "pioneering work in the circuit technology, propagation characteristics, and noise suppression theory of frequency and phase modulation."

Frank J. Kocsis has been named manager of instrument engineering at Huggins Laboratories, Sunnyvale, and will be responsible for developing new microwave devices for military and commercial communications as well as instruments for measuring temperature by detecting infrared energy.

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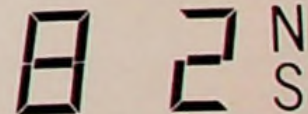
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