EDITOR'S PROFILE of this issue

from a historical perspective …

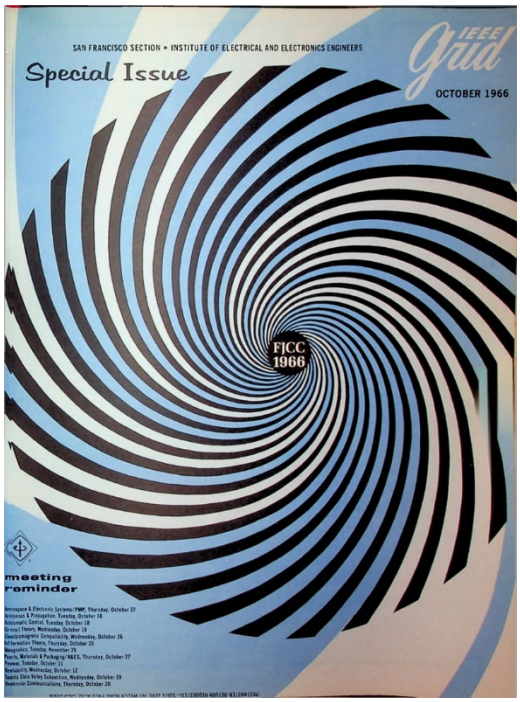
with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)

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.



SAN FRANCISCO SECTION • INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS

Special Issue

IEEE Grid

OCTOBER 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
Santa Clara Valley Subsection, Wednesday, October 19
Vehicular Communications, Thursday, October 20

The growth of world-wide demand for Varian products in commercial, military, and industrial markets is providing new career opportunities for engineers. The following positions are among those now available:

PROJECT ADMINISTRATOR

BS degree required. Background should include a combination of engineering and administration and the ability to work effectively with engineers and scientists. Responsibilities include: programming scientific and engineering projects, establishing and maintaining objectives, and performing analyses on short and long range program planning.

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ELECTRICAL ENGINEER OR PHYSICIST

Electrical Engineer or Physicist for product development in the field of Electron Paramagnetic Resonance. Requirements include MS and 3 years experience including instrument development or PhD. A specific knowledge of EPR and microwave and transistor circuits is desirable.

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B.S. Degree, 1 to 5 years' work experience, and a strong desire to sell in a scientifically oriented market. Positions are located in New York and St. Louis areas, to represent the leader in research, design and manufacture of NMR and EPR Spectrometers, Superconducting and Electromagnets.

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Experience in design, development, or manufacture of klystrons, BWOs, or TWTs. Should be familiar with microwave techniques and vacuum tube engineering. Experience in systems and evaluation helpful.

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Many other technical and professional openings also exist and all inquiries will be welcomed. Successful candidates for these positions will work with technical staff members noted in the industry. Varian is one of the leading employers in Northern California, noted for its unique living, cultural, and educational environment.

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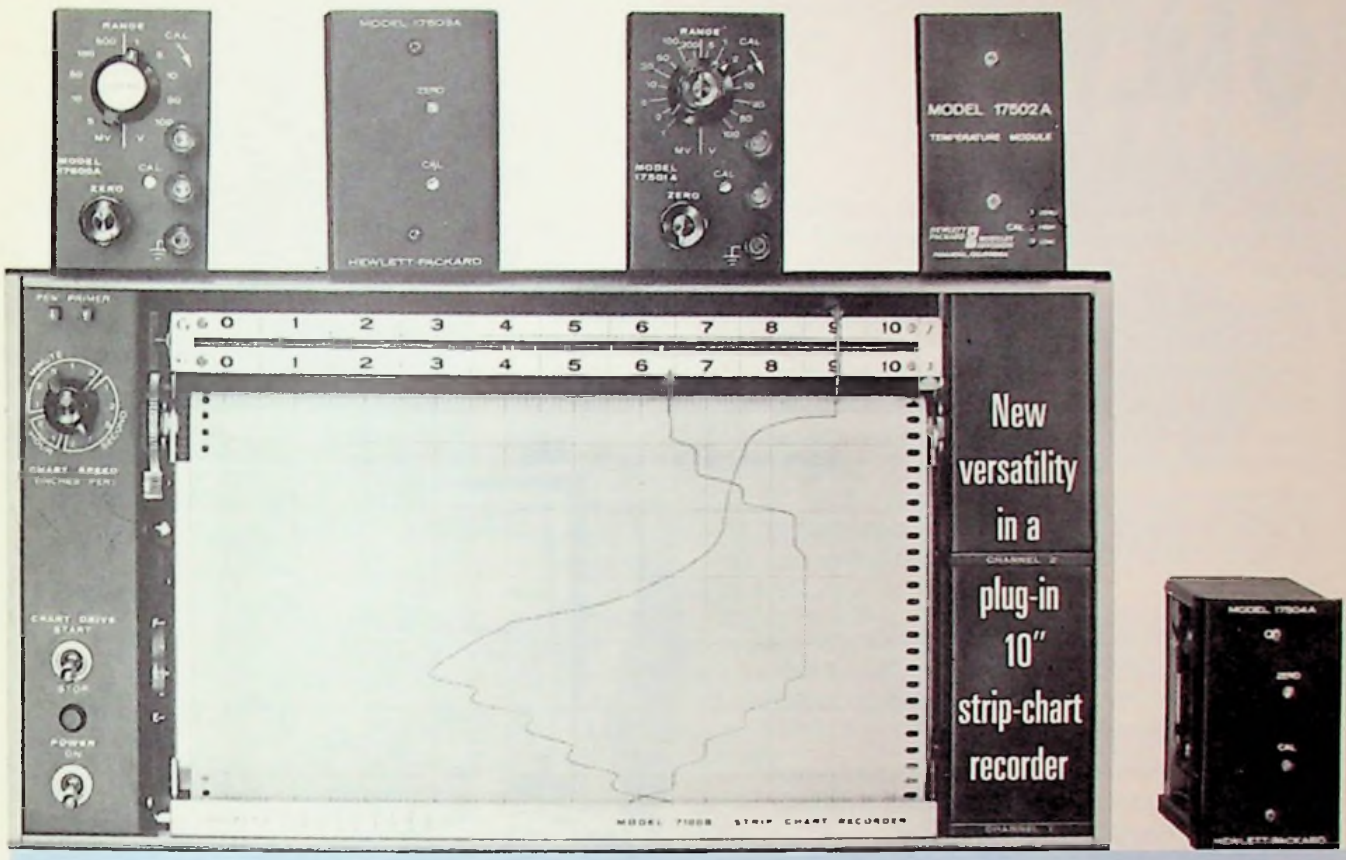
PLUG-IN



- Input modules provide special purpose capabilities
- Mainframe available with one or two pen flexibility
- 12 instantly selected chart speeds, 1 in/hr-2 in/sec
- Half-second response time
- Chart tilts in three positions for easy viewing and notation
- Easy chart loading, tear off or storage, paper supply indicator
- All solid-state circuitry
- Rack-mount, metric models available

The basic mainframe of the 7100B (two pens) and 7101B (one pen) provides 10" strip-chart recording capabilities. Each channel accepts any of the wide variety of input modules which determine the electrical span or special-purpose recording capability.

Features offered, in addition to those above, include event markers, electric pen-lift and chart drive start-stop—all remotely controlled. Retransmitting potentiometers, adjustable high-low limit switches on both channels and remote 10-1 speed changers are also available.

Standard input modules (more to come) offer multiple span ranges, high input resistance (1 meg at null), high cmr and floating inputs to 500 v above ground. Model 17500A has 10 calibrated spans 5 mv-100 v full scale; Model 17501A has 16 calibrated spans 1 mv-100 v full 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
Model 17502A Input Module, $250
Model 17503A Input Module, $250
Model 17504A Input Module, $200

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

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Call (415) 434-2410. Visit or write 111 Pine Street, San Francisco, or 100 S. Wacker Drive in Chicago. You'll like our approach . . . it's people-oriented. It's confidential.

source edp

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contents

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the section

MEMBERSHIP

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

F. F. Arnoldy
S. Auer
P. Barfoot
H. Brechna
D. C. Conrad
E. A. Crosetti
P. D. Doeram
P. A. Ekstrand
J. M. Engel
W. L. Fairchild
W. R. Forbes
J. A. Gmelin
J. Gonzales-Rivas
J. R. Johnson
J. A. Karp
J. M. Keenan
H. Korb
J. Krugers
G. B. Kurtz
J. McCarthy
J. B. Pirie
D. M. Pittle
L. Reed
K. Rosenberg
Y. H. Shih
A. Shipow
D. E. Silva
J. E. Skowronski
D. A. Thompson
B. W. Ullman
J. J. Weisenburger
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 0 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.

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. Kuehler 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. Matthews 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

TIME	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8				
9		10. Management of Multi-Access Systems — Main Auditorium ▲	17. The Man/Machine Interface — Main Auditorium	
10	KEYNOTE SESSION Impact of Computers on a Technical Society Main Auditorium (Registration not required.)	11. Computer Memories — Polk 12. Natural Language Processing — Larkin 13. Error Analysis in Analog and Hybrid Computation — Jack Tar El Dorado Room ▲	18. Selected Applications Using Numerical Analysis — Polk 19. High Quality Papers of General Interest — Larkin	SPONSOR SOCIETIES TECHNICAL SESSIONS
11				
12		CONFERENCE LUNCHEON INTERNATIONAL ROOM JACK TAR HOTEL		
1	2. Time Sharing Processors & Executive Systems — Main Auditorium 3. Integrated Electronics & the Future of Computers — Polk 4. Computers & Publishing — Larkin 5. Hybrid Computers and Random Variables — Jack Tar International Room			
2			20. Advances in Programming Languages — Main Auditorium 21. Computer Oriented Data Analysis — Polk ▲ 22. Technologies & Systems for Ultra High Capacity Storage — Larkin 23. Hybrid Application and Techniques — Jack Tar International Room	
3		14. Some Communications Aspects of Time Sharing Systems — Main Auditorium 15. Scientific Application On Line Systems — Polk 16. Impact of Computers on Government — Larkin		
4	6. Engineering Design by Man/Computer Interaction — Main Auditorium 7. Computers in Music — Polk 8. For & Against Time Sharing — Larkin			
5				
6		CONFERENCE RECEPTION INTERNATIONAL ROOM JACK TAR HOTEL		
7				
8	9. The Complements of Man/Computer Interaction (Workshop) — Main Auditorium	SPONSOR SOCIETIES TECHNICAL SESSIONS		
9				
10				

SCIENCE THEATER — EXHIBITS

▲ Discussion Sessions
(Summaries Available in Advance)

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.


Bitzer


Dines


Andrews


Richardson


McCluskey


Borelli


Tanaka


Astrahan

computer conference

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.

computer conference

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.

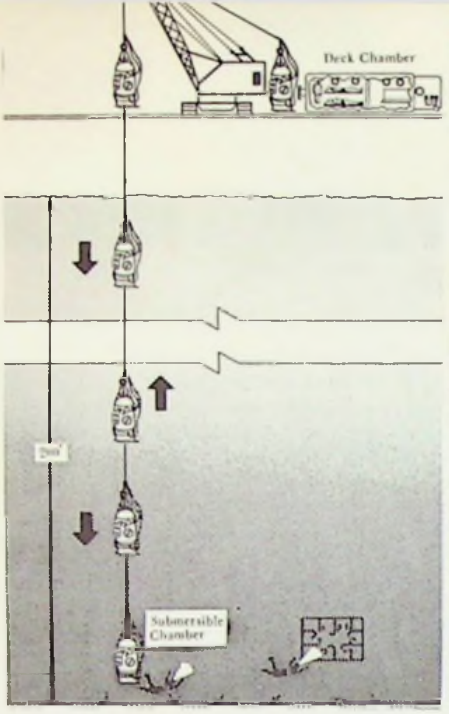
Dr. Eckert is vice-president of the UNIVAC/AC Division of Sperry Rand Corp. and Dr. Mauchly is founder and board chairman of Mauchly Associates, Inc., which he organized in the spring of 1959.

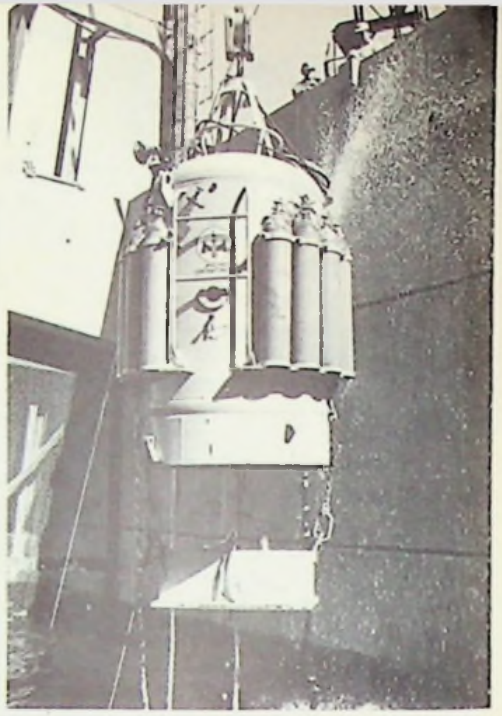
Dr. Eckert is also being honored for his continued contributions in electronic computer design and Dr. Mauchly is being cited for pioneering efforts involving computers to solve scientific and business problems.

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 ourstanding 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

meeting ahead

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.

meeting ahead

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, radiotelephone 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 6 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 μs/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
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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 a tour of the exhibit area where the students will see over 100 exhibits of the latest equipment.

(Continued on page 17)

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.

REGION 6 NOMINEES FOR DELEGATE/DIRECTOR, 1967-68

Be sure to vote for your choice; return your ballot to HQ by November 1

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 Subcommittee, 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.

Someone's life will change greatly as a result of reading this ad.

He will be a man who can make a significant contribution to the art of electronic measurement—in either design or production. Chances are he will be working for a large organization where his contribution is not accepted or—if accepted—not widely recognized. He will be looking for the opportunity to show his mettle and get the recognition he deserves. If you are such a man, read on:

For almost a generation, we (The John Fluke Mfg. Co., Inc.) have been one of the world's leaders in metrology. Recently, the demand for our quality instrumentation has created a number of unusually fine professional employment opportunities.

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If the outdoors is your after hours bailiwick, Washington State offers great skiing (with short lift lines), the nation's best boating, outstanding hunting and fishing (sometimes, the other guy on the stream is five miles away), and fine hiking and climbing.

The company offers in addition to your salary (which is as good or better than anywhere else) profit sharing, medical insurance, and retirement benefits. So if all this excites you and you fit one of the job descriptions below, write our Engineering Manager, Mr. Ted Thomsen, in confidence. Interviews will be arranged in Los Angeles, San Francisco, or Seattle at your convenience. Please address Mr. Thomsen at P.O. Box 7428, Seattle, Washington.

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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Senior Production Engineer with four years' experience. Should be a mechanical engineer familiar with electronics or an electronic engineer familiar with mechanical engineering. Applicant must possess a BSME or BSEE. Must be able to carry new product from design to production.

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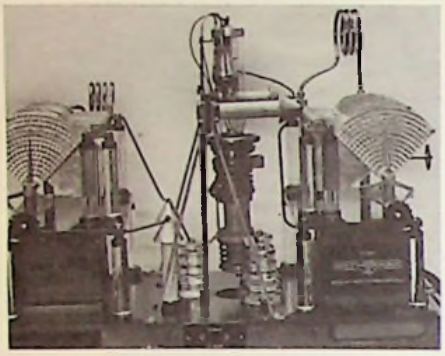
historical notes

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)

chapter news

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 superintendants 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.

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 fluxuating 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.

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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.

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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-Subtracter".

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".

Share the responsibility

FOR THE SECTION AND YOUR GROUP CHAPTER

Take part in the membership pledge program. Bring in at least one new member in '66.

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.

grid swings

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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MMountain View; 961-8760

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Palo Alto; 968-8304

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Epps

Stoddard

the section

MEMBERSHIP

The following members have recently been transferred to the grade of Senior Member:

R. C. Epps D. J. Stoddard, Jr.

publication news

SOLID-STATE JOURNAL

The new IEEE journal on solid-state circuits will be issued this year in September and December and on a bi-monthly schedule thereafter, issues averaging 100 pages and having the page size of group transactions. Cost to members at large is $3 through December and $6 through 1967, only orders through 1966 being now accepted. Special rates for members of Groups sponsoring the journal—Circuit Theory and Electron Devices: free through '66; Computer and Microwave Theory & Techniques: $2 through '66; all to pay $6 for annual subscriptions thereafter. Student rates: $1 through '66; $1 for '67. Send orders and checks to Dr. Richard Emberson, IEEE, 345 E. 47th St., New York 10017.

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Analysts/Programmers. Technical persons with comprehensive knowledge of the capabilities and limitations of various types of data processing equipment. BS degree desirable. 5 years in programming, including 3 years in programming systems software for integrated data processing systems and designing information processing systems.

Cobol Applications Programmers. Technical persons capable of developing and implementing real-time inventory operations with back-to-back utilization of two IBM System/360 units. COBOL experience essential.

Analysts. Persons capable of analyzing a variety of problem areas, reducing them to essential elements, and developing logical and practical solutions. Numerous positions are available in the areas described below.

Operations. Persons with ability in determining capabilities and limitations of systems under given operational environments. BA or BS degree is desirable. 4 years in operations research or operations analysis.

Systems. Technical persons with knowledge of the capabilities and limitations of various types of data processing equipment. BS degree in Math, Science or Engineering is desirable. 4 years in systems analysis.

Staff. Persons with comprehensive knowledge of data processing systems, design techniques and potential application areas for data processing. Advanced degree is desirable. 10 years in analyzing and designing information processing systems and in reviewing and determining the adequacy of design documentation.

These are career positions with outstanding benefits for professional people; included are three weeks' paid vacation, profit-sharing plan, and company-paid medical, life and salary-continuation insurance. U.S. Citizenship required.

If you have such qualifications and are interested in a position offering professional growth and compensation based on your effort, send your inquiry or resume to:

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