

EDITOR'S PROFILE of this issue

from a historical perspective ...

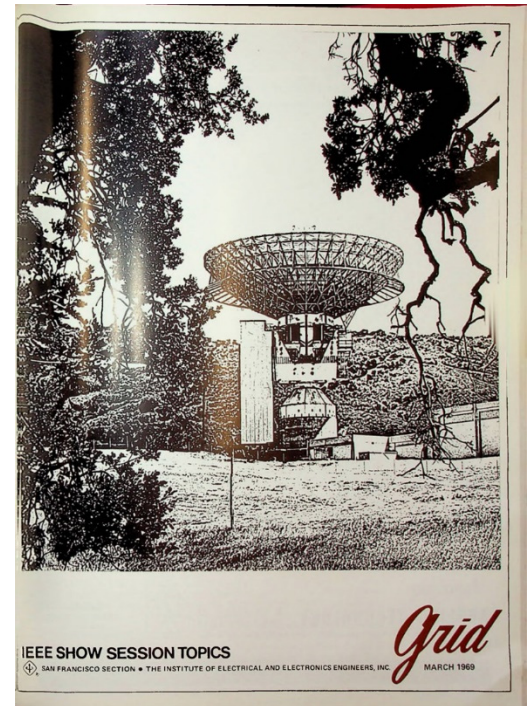
with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)

March, 1969:

Cover: Shown is the new 97' Cassegrain antenna used for satellite TV relay, installed in the Carmel Valley. A field trip is planned. More on page 12.

Page 6: the Computer Chapter hosts a follow-up to Doug Engelbart's "Mother of All Demos" at the FJCC in December. It includes a tour of his Augmented Human Intellect research center at SRI. The steak dinner costs \$4.15 (includes tax and tip).

Page 8: The chief engineer at Wintronix is hosting a discussion on radio control of model airplanes, and high school sons of engineers are invited (doesn't mention daughters). They'll then go to an RC control demonstration at a local park.



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

https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

At time of scanning, the bound volumes are held by Paul Wesling.

April, 2025

Contact p.wesling@ieee.org



IEEE SHOW SESSION TOPICS



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

Grid

MARCH 1969



A Page From The History of Surveillance



Vikings located enemy shores and fortifications on the fog-shrouded European coast by shouts or horn-blasts from their raiding long-ships, judging distance and size by echo return.

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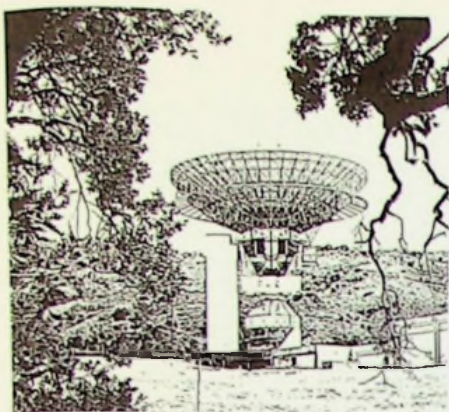
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COVER STORY

This 97' Cassegrain antenna was made by Philco-Ford for the Communication Satellite Corp. It is located at Jamesburg, Carmel Valley, California, and serves the Pacific area. It has been in service since December 1968.

It has carried the Olympic Games, the Inaugural Address and a major Golf Tournament to viewers in distant areas. Design and Development of COMSAT Earth Terminal Antennas is the topic for the Antennas & Propagation Chapter meeting on March 13, featuring Dr. Allan Smoll of Philco-Ford Corp. The Santa Clara Valley Subsection will sponsor a field trip to this Antenna Station in April.

Grid

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number 7

MARCH 1969

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Meeting

**AEROSPACE &
ELECTRONIC
SYSTEMS**
MAR. 27

Story on
page 4

**TOUR OF NASA/AMES RESEARCH CENTER.
LIMITED TO 80 PERSONS.**

MARCH 27, Thursday, 7:30 PM, Bldg. N-210, Ames Research Center. Enter Moffett Field off Bayshore, follow signs to NASA building N-210. Attendance will be limited to 80 persons. No dinner. Reservations for tour: Judy Blair, 742-6773 or 742-1865 by 3/21.

**ANTENNAS &
PROPAGATION**
MAR. 13

Story on
page 4

**DESIGN AND DEVELOPMENT ON COMSAT
EARTH TERMINAL ANTENNAS.** Dr. Allan Smoll, Philco-Ford Corp.

March 13, Thursday, 8:00 PM, SRI Bldg. 44, Room 267. Enter Laurel Street, Menlo Park. Dinner: 6:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No Reservations.

**AUTOMATIC
CONTROL**
MAR. 18

Story on
page 12

**ADVANCES IN ABSOLUTE STABILITY OF
NONLINEAR SYSTEMS.** Dr. Dragoslav D. Stijak, Associate Professor, EE Dept., University of Santa Clara.

MARCH 18, Tuesday, 8:00 PM., University of Santa Clara Engineer Center, Room 551. Dinner: 6:15 PM, Angelo's Restaurant, Race St. at Alameda, Santa Clara. No reservations required.

**CIRCUIT
THEORY**
MAR. 19

Story on
page 16

**DESIGN CONSIDERATIONS FOR MONOLITHIC
OPERATIONAL AMPLIFIERS.** David Fullagar, Fairchild Semiconductor, Mountain View.

MARCH 19, Wednesday, 8:00 PM, 134 McCullough Bldg., Stanford. Dinner: 6:00 PM, Red Cottage Restaurant, El Camino Real, Menlo Park. Reservations: Mrs. Janet Delaney, 642-3705 by March 18.

COMPUTER
MAR. 25

Story on
page 6

FIELD TRIP TO STANFORD RESEARCH INSTITUTE. Short meeting followed by open house at SRI Research Center For Augmenting Human Intellect

MARCH 25, Tuesday, 8:00 PM, SRI, Bldg. 44. Enter on Laurel Street, Menlo Park. Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Tom Whitney, 326-7000, ext. 3112 or 2707 by 3/24.

**EAST BAY
SUBSECTION**
MAR. 31

Story on
page 4

NEW ARTS IN COMMUNICATIONS. William Fleckenstein, Western Electric Co., formerly with Bell Telephone Labs, Murray Hill, N.J.

MARCH 31, Monday, 7:30 PM, PG&E Service Center, 4801 Oakport Road, Oakland. Cocktails: 5:30 PM; Dinner 6:00 PM, Venetian Restaurant, 6701 Foothill Blvd., Oakland. Reservations: Oakland: Florence Wanser, 835-8500, ext. 53; San Francisco: Mary Vilter, 399-4974; San Jose: Linda Jarrett (408) 291-4567 by 3/28.

**ELECTRON
DEVICES**
MAR. 12

Story on
page 6

**PANEL: THE CHOICE BETWEEN MICROWAVE
TUBES AND SOLID STATE DEVICES.** Dr. John Putz, Varian; Dr. John Mendel, Hughes Electron Dynamics; Dr. Berin Fank, Varian; Dr. Lawrence Thielen, AvanteK. Moderator: Allan Scott, Varian

MARCH 12, Wednesday, 8:00 PM, Physics Lecture Hall, PH 101, Stanford. Meet at 6:00 PM and dinner: 6:30 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Glenna Morris, 327-700, ext. 360 by 3/11.

Calendar

INFORMATION THEORY

Story on page 8

SEQUENTIAL DECODING FOR INFANTS. Professor Frederick Jelinek, Cornell University.

MAR. 6

MARCH 6, Thursday, 8:30 PM, SRI Building 1, Conference Room B, 333 Ravenswood Avenue, Menlo Park, Dinner 6:15 PM, Ming's, 1700 Embarcadero Road, East Palo Alto. Reservations: Mrs. Mary Rodimon, 966-3217 by March 6th.

INSTRUMENTATION MEASUREMENT

Story on page 13

PANEL: LSI TESTING. Robert Broughton, E-H Research Labs; Gordon Padwick, Fairchild Instrumentation; Hal Grutchfield, Signetics Corp.; Owen Williams, Fairchild Semiconductor.

MARCH 12, Wednesday, 8:00 PM, Hewlett-Packard Conference Room 5M, 1501 Page Mill Road, Palo Alto. Dinner: 5:45 PM, Chez Yvonne, 1854 El Camino, Mt. View. Reservations: Shirley Quinn, 735-5444 by 3/11.

MAGNETICS

Story on page 8

SOME ASPECTS OF LOW FIELD MAGNETOMETRY. E. J. Iufer, Ames Research Center.

MARCH 11, Tuesday, 8:00 PM, Ampex Cafeteria, 401 Broadway, Redwood City. Dinner: 6:30 PM, Scotty Campbell's, 2907 El Camino, Redwood City. Reservations: Mrs. Strassner, 36-3112 by 3/10.

POWER

Story on page 12

FIELD TRIP AND TOUR OF UNITED AIRLINES MAINTENANCE AND ENGINEERING BASE.

MARCH 20, Thursday, 6:15 PM, private dining room, UAL Maintenance Center, San Bruno. \$2.00 per person. Reservations: Ivan Landes, 434-2211 or J. A. Michelsen, 764-6171 by 3/10.

RELIABILITY

Story on page 10

JOINT WITH BAY AREA MAINTAINABILITY ASSOCIATION. RELIABILITY/MAINTAINABILITY/SAFETY INTERFACE. Major Philip J. Stack, USAF; S. W. Malasky, Aerospace Corp.; J. J. Decker, Sylvania, Mt. View.

MARCH 20, Thursday, 8:00 PM, Bold Knight, 769 N. Mathilda, Sunnyvale (Squire Room). 6:00 — meet the speakers — no-host cocktail hour. Dinner 7:00 PM. Reservations: Fran Hamada, 743-1577 by 3/18.

SANTA CLARA VALLEY SUBSECTION/USNPG SCHOOL STUDENT BRANCH

Story on page 12

VISIT TO COMSAT EARTH STATION. Busses will leave from USNPG School in Monterey at 1:00 PM sharp. Wives and guests are invited.

APRIL 26, Saturday, 1:00 PM, COMSAT's Antenna installation at Jamesburg, Carmel Valley. Social hour 5:00 PM, followed by dinner in the El Prado Room of the Naval Officer's Club. \$4.75 each. Reservations required for trip and/or dinner: Mrs. Chris Montez, (408) 291-4014 before 4:15 PM April 23. Monterey: Lt. P. F. Grasser, USNPGS (408) 646-2231.

SYSTEMS SCIENCE & CYBERNETICS

Story on page 10

EYES AND EARS FOR COMPUTERS. Prof. D. Raj Reddy, Stanford.

MARCH 13, Thursday, 8:00 PM, SRI Conference Room B, 333 Ravenswood Ave., Menlo Park. Dinner: 6:00 PM, Dinah's Shack, 4269 El Camino Real, Palo Alto. Smorgasbord \$3.45 including tax & tip. Reservations: Marge Hensley, 246-4642 by 3/12.

VEHICULAR TECHNOLOGY

Story on page 13

CHARACTERISTICS OF PT&T CONTROL AND PROGRAM CHANNELS. Gene Henderson, Manager Program Services; Walter G. Carlson, Administrative Supervisor and William P. Fisher, Chief, Engineer staff, all of PT&T, San Francisco.

MARCH 17, Monday, 8:00 PM, Continental Motel, 2550 Van Ness Ave., San Francisco. Cocktails 6:00 PM, dinner 7:00 PM. Reservations: Bill Nye 328-1200 or 433-3800 by 3/17.

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Antennas for Comsat Earth Stations Described

Approximately twenty-five (25) large earth station antennas have been established around the world for commercial communication via the INTELSAT Communications Satellites. Around forty (40) stations are expected to be operational by the end of 1969. Supporting this progress in worldwide communication has been the development and design of a high performance antenna and feeder system.

The most crucial requirement is that the G/T, i.e. the gain over system noise temperature (degrees Kelvin) ratio. The G/T must be optimum over the two widely separated frequency bands, 3.7 to 4.2 and 5.925 to 6.425 GHz. Economy demands that the maximum efficiency be obtained from the antenna. Even then the main reflector diameter must be as great as 85 - 97 feet.

One technical approach has been to employ reflector shaping to maximize the G/T ratio. Use of a corrugated feed horn serves to minimize the frequency sensitivity. This feature and others will be described along with the background development details by Dr. Allan E. Smoll at the Antennas and Propagation



Dr. Smoll

Chapter meeting March 13.

Dr. Smoll is Senior Staff Engineer at Philco-Ford Western Development Laboratories in Palo Alto. For the past six years he has been engaged in the development and design of antenna systems for satellite tracking, telemetry, communication and control. Prior to that, he worked in the Aeronutronic Division on missile and command control. Dr. Smoll received his Doctorate from M.I.T. in 1960.

The meeting is scheduled for 8:00 PM at SRI, Bldg. 44, Room 267. Dinner 6:00 PM, Rick's Swiss Chalet. No reservations necessary.

AES Tours Space Simulation Facilities

The meeting will cover a description and tour of the manned aerospace simulation facilities of NASA/Ames. These facilities are used to provide, on the ground, the various cues associated with the flight of aircraft and space vehicles. Included are large machinery servo systems to impose the force or acceleration cues, the analog and digital computing equipment for mathematical modeling of the vehicle and its control system for data-taking and reduction, servo-driven color closed-circuit television systems for producing outside world visual cues, bio-instrumentation equipment and various other devices.

The meeting will be held on Thursday, March 27, at 7:30 PM in Building N-210 of the Ames Research Center. Enter Moffett Field via the Moffett Blvd. overpass off Bayshore and follow signs to NASA Building N-210.

The meeting will not be classified, but it is required that the names and citizenship of all attendees be submitted. It will therefore be necessary for those attending to make reservations with Judy Blair, 742-6773, or 742-1865 by Friday, March 21. No dinner.

Fleckenstein talks on New Arts in Communications

Mr. William O. Fleckenstein will be the speaker at the East Bay Subsection meeting Monday, March 31. Mr. Fleckenstein will discuss New Arts in Communications and will include Electronic Switching System (ESS), Communications Satellites and Data Communications. In addition, he will discuss some of the trends in manufacturing process technology and will use as examples some of the projects being carried on at Western Electric's Engineering Research Center. Such items as high pressure metal forming, use of laser techniques in manufacturing and application of data process in the factory will be included. The meeting is scheduled for 7:30 PM at the PG&E Service Center, Oakland. Cocktails at 5:30 PM with dinner following at 6:00 PM at The Venetian Restaurant. See calendar for details.

William O. Fleckenstein is general manager-research and development (administrative officer) in Western Electric Company's Engineering Division. In this capacity, since 1968 he has been in charge of the Engineering Research Center at Princeton, N.J.

He attended Lehigh University, earn-

ing a Bachelor of Science degree in electrical engineering, with highest honors. In 1959, he was selected by Eta Kappa Nu for honorable mention as an outstanding young American engineer.

In 1949 he joined Bell Telephone Laboratories. He participated in the Communications Development Training Program (CDT) at Bell Labs and did development work on telephone switching systems. Later, he was assigned to exploratory development work on electronic switching systems, advancing to supervisor in 1954. In 1956, he became head of the Special Systems Exploratory Development Department and the following year, assumed responsibility for the Data Systems Development Department.

Appointed director of BTL's Data Communications Laboratory in 1960, he was in charge of the development of data equipment for communication between business machines. He was named associate executive director of the Data and PBX Division in May 1966, advancing to executive director in September 1966, responsible for the development of data communications, private branch



Dr. Fleckenstein

exchange, telegraph, key telephone and private line systems.

During his 19 years with Bell Telephone Laboratories, Mr. Fleckenstein made important contributions to the development of the first data sets and participated in the early development of electronic switching systems. He has been granted a number of patents on electronic switching and communication systems.

Mr. Fleckenstein is a senior member of the IEEE. He has been director of a group editing a four-volume series on "Physical Design of Communication Equipment" (expected to be published by Prentice-Hall).

International Convention and Exhibition



"Unlocking the future in electrical/electronics engineering" is the theme of the 1969 IEEE International Convention and Exhibition that begins on Monday morning, March 24.

You may register at either the New York Hilton or the New York Coliseum. Registration hours at the Hilton are from 2:00 to 8:00 PM on Sunday, March 23, and from 9:00 AM to 5:00 PM daily during the convention except for Tuesday when the registration period is extended to 8:00 PM because the Highlight Session is held that evening. Registration hours at the Coliseum are from 9:00 AM to 8:00 PM, Monday through Thursday.

Registration fees are \$3.00 for all IEEE members and Group Affiliates and members of the military services including civilian employees of Government establishments. Nonmembers may register for \$6.00. Women may register for \$1.00 if accompanied by a registered guest.

All of the 52 regular technical sessions of the convention except one will be held at the Hilton. The one exception is the Monday evening session on "Lunar Exploration in the 1970s" that will be held at the Hayden Planetarium.

Regular session hours are from 10:00 AM to 12:30 PM and from 2:00 to 4:30 PM. The Monday evening session at the Hayden Planetarium is scheduled for 8:00 PM. The Highlight Session on Tuesday evening begins at 8:00 PM.

The IEEE Exhibition at the New York Coliseum will be open from 10:00 AM to 8:00 PM daily, Monday through Thursday. All four floors of the Coliseum will be used for the multimillion-dollar exhibition. The first floor has been set aside for production equipment and service organizations such as publishers and consultants. The second floor will be restricted to systems and instruments. The third and fourth floors will be devoted to components with microwave components included in the third floor exhibits.

There will be a free shuttle bus service between the Coliseum and the Hilton.

SESSION TOPICS AT A GLANCE

ACOUSTICS, AUDIO

Acoustical and Optical Interactions ((Mon. AM)

Evolutionary Advancements in Audio ((Thurs. PM)

Surface Waves - The Acoustic Signal Processing Technique of the Future ((Mon. PM).

AEROSPACE AND ELECTRONIC SYSTEMS

Air Traffic in the 1980s: Order, Chaos or Catastrophe? (Tues. PM)

Expanding Systems Applications Using Satellites (Wed. AM).

Living and Working in Space (Mon. PM)

Lunar Exploration in the 1970s (Mon. Evening).

ASTRONOMY

Radio Astronomy - Science and Engineering (Mon. AM)

Lunar Exploration in the 1970s (Mon. Evening)

BIOMEDICAL ENGINEERING

Automation for Health (Mon. AM)

Sensory Aids for the Handicapped (Mon. PM)

System Technologies in Politics and Economics (Tues. AM)

Visualization of Biological Tissue (Tues. AM)

COMMUNICATIONS

Broadcasting Tomorrow (Tues. PM)

Communications and the Computer (Thurs. AM)

Communications Systems - Management and Control (Wed. PM)

Electrical Printing and Future Communication - 1984 (Wed. AM)

Expanding Systems Applications Using Satellites (Wed. AM)

Low Noise Receivers (Wed. AM)

Modern Technology for Signal Handling (Tues. AM)

System Technologies in Politics and Economics (Tues. AM)

COMPUTERS

Communications and the Computer (Thurs. AM)

Computer Languages for Process Control (Tues. PM)

Computer Peripherals (Wed. PM)

Computer Programming for Electrical Engineers (Thurs., Fri., AM, PM)

Computers Can Help Solve Your Microwave Problems (Tues. AM)

Graphics and Computer-Aided Design (Thurs. PM)

Problem Solving for Electrical Engineers Using Time Shared Computers (Thurs., Fri. AM, PM)

Semiconductor Memory (Wed. AM)

Structuring Tomorrow's Computer

Systems (Mon. PM)

Today's Choice of Digital Computers - What's the Difference? (Tues. AM)

Trends in Instrument-Computer Systems (Wed. AM)

CONTROLS

Computer Languages for Process Control (Tues. PM)

Static Converters - World Wide (Tues. AM)

EDUCATION

System Technologies in Politics and Economics (Tues. AM)

What Edge Does Formal Engineering Management Training Offer? (Tues. PM)

ELECTRON DEVICES

Filters for the Nonspecialist (Thurs. AM)

High Power Microwave Tubes (Wed. PM)

Industrial Semiconductor Devices (Tues. PM)

Radiation Damage and Hardened Device Development (Thurs. AM)

Static Converters - World Wide (Tues. AM)

Surface Waves - The Acoustic Signal Processing Technique of the Future (Mon. PM)

ENGINEERING MANAGEMENT

System Technologies in Politics and Economics (Tues. AM)

The Interdisciplinary Nature of Design (Thurs. PM)

The Tale Is Told on the Bottom Line - Elements of Corporate Financial Success (Wed. AM)

What Edge Does Formal Engineering Management Training Offer? (Tues. PM)

ENGINEERING WRITING AND SPEECH

Effective Engineering Writing and Speech (Mon.-Thurs. AM)

How to Write a Technical Paper (Mon., Tues. AM)

INFORMATION THEORY

Twenty Years of Information Theory (Mon. PM)

INSTRUMENTATION AND MEASUREMENT

Engineering for Oceanography (Wed. PM)

Microwave Reflectometry (Tues. PM)

Trends in Instrument-Computer Systems (Wed. AM)

INTEGRATED CIRCUITS

Fundamentals of Integrated Circuits (Mon.-Thurs. AM)

Graphics and Computer-Aided Design (Thurs. PM)

Industrial Semiconductor Devices (Tues. PM)

Integrated Microwave Circuits (Mon. AM)

LSI in Use (Wed. PM)

Manufacturing Technology for Microelectronics (Thurs. AM)

Thin Films or Thick? (Tues. AM)

LASERS

Glasses in Electronics - New Frontiers and New Uses (Wed. PM)

(Continued on page 14)

Microwave Tubes Versus Solid State Devices

Which are better, tubes or solid state devices for microwave applications from 100 MHz to 100 GHz? This popular and controversial question will be the topic of a panel discussion at the March 12 meeting of the Electron Devices Chapter.

Representing the microwave tube viewpoint on the panel will be Dr. John Mendel of the Hughes Electron Dynamics Division and Dr. John Putz of Varian's TWT Division. Representing the solid state device viewpoint will be Dr. Berin Fank of Varian's Solid State Microwave Project and Dr. Lawrence Thielen of AvanteK. Mr. Allan Scott of Varian will serve as moderator.

Most discussions of the "choice between microwave tubes and solid state devices" consider only generalities such as "tubes can provide more power" or "solid state devices operate at lower voltages." In contrast, this panel will discuss specific questions, for example:

At frequencies where both transistor and TWT low noise amplifiers exist, what are the size, weight, and cost of these competing devices?

Why won't LSA diodes completely replace magnetrons for pulse radar and beacon systems at the 500 watt peak power level at X- and Ku-Band?

Even though a great deal of publicity has been given to the achievement of a 5 watt S-Band transistor, what advantages



Dr. Mendel



Dr. Putz



F. Fank



L. R. Thielen

does it really offer over existing TWT amplifier packages?

Will an approach of paralleling solid state devices ever be cost competitive to a 50 watt CW S-band TWT?

What specific electronically tunable solid state devices can compete with BWO's with respect to bandwidth, linear tuning, and cost?

Why won't Gunn diodes replace reflex klystrons for all new local oscillator applications?

The panel will be happy to discuss questions from the audience. Rick's Swiss Chalet in Palo Alto is the scene of the social and dinner hour. The meeting location is PH 101, Stanford. See calendar for time, place and reservation details.

Computer Tours AHI Research Center

The March 25 meeting of the Computer Chapter will be held at Stanford Research Institute. Douglas C. Engelbart will be the host and speaker at the meeting. Dr. Engelbart heads the Augmented Human Intellect Research Center and has been in this capacity since 1959. A short talk and movie will precede the open house and tour of the AHI Research Center. The meeting will begin at 8:00 PM in Building 44 at SRI (on Laurel Street in Menlo Park).



At the Augmented Human Intellect (AHI) Research Center at Stanford Research Institute, a group of researchers are developing an experimental laboratory around an interactive, multi-console computer-display system, and is working to learn the principles by which interactive computer aids can augment their intellectual capability. The AHI Research Center was recently the topic of a session at the 1968 Fall Joint Computer Conference and is the topic of a paper in the 1968 FJCC Proceedings (Douglas C. Engelbart and William K. English, authors).

The steak dinner (\$4.15) preceding the meeting will be at Rick's Swiss Chalet in Palo Alto at 6:15 PM. Phone reservations for dinner should be made with Tom Whitney, 326-7000, ext. 3112 or ext. 2707 by March 24.

Dallas Hosts Power Group Summer Meeting

The summer meeting of the Power Group of the Institute of Electrical and Electronics Engineers will be held in Dallas June 22-27.

According to R. S. Miner, manager of distribution for Dallas Power and Light Company and chairman of the 1969 summer meeting, the theme of the conference will be "Reliability."

Planned social activities for delegates, their wives, and families include trips to the Six Flags Over Texas amusement park, a rodeo, a barbecue, and a visit to the world-famous Neiman-Marcus Department store.

Technical papers will be presented on electrical power system subjects related to reliability and other topics of general interest to electrical engineers.

The meeting will be held in the Sheraton-Dallas, Statler-Hilton, and Holiday Inn Hotels, all near the downtown area of Dallas. More than 1,000 engineers are expected to attend.

Prize Paper Awards Announced by IEEE

IEEE New York Headquarters announces three Prize Paper Awards. In keeping with IEEE's world-wide membership of over 160,000 the awards this year will honor authors in Japan, Australia, and the United States.

The W. R. G. Baker Prize Award goes to Tosi Koga, Professor, Department of Communication Engineering, Kyushu University, Fukuoka, Japan, for his paper entitled "Synthesis of Finite Passive n-Ports with Prescribed Positive Real Matrices of Several Variables" (CIRCUIT THEORY, Vol. CT-15, No. 1, March 1968).

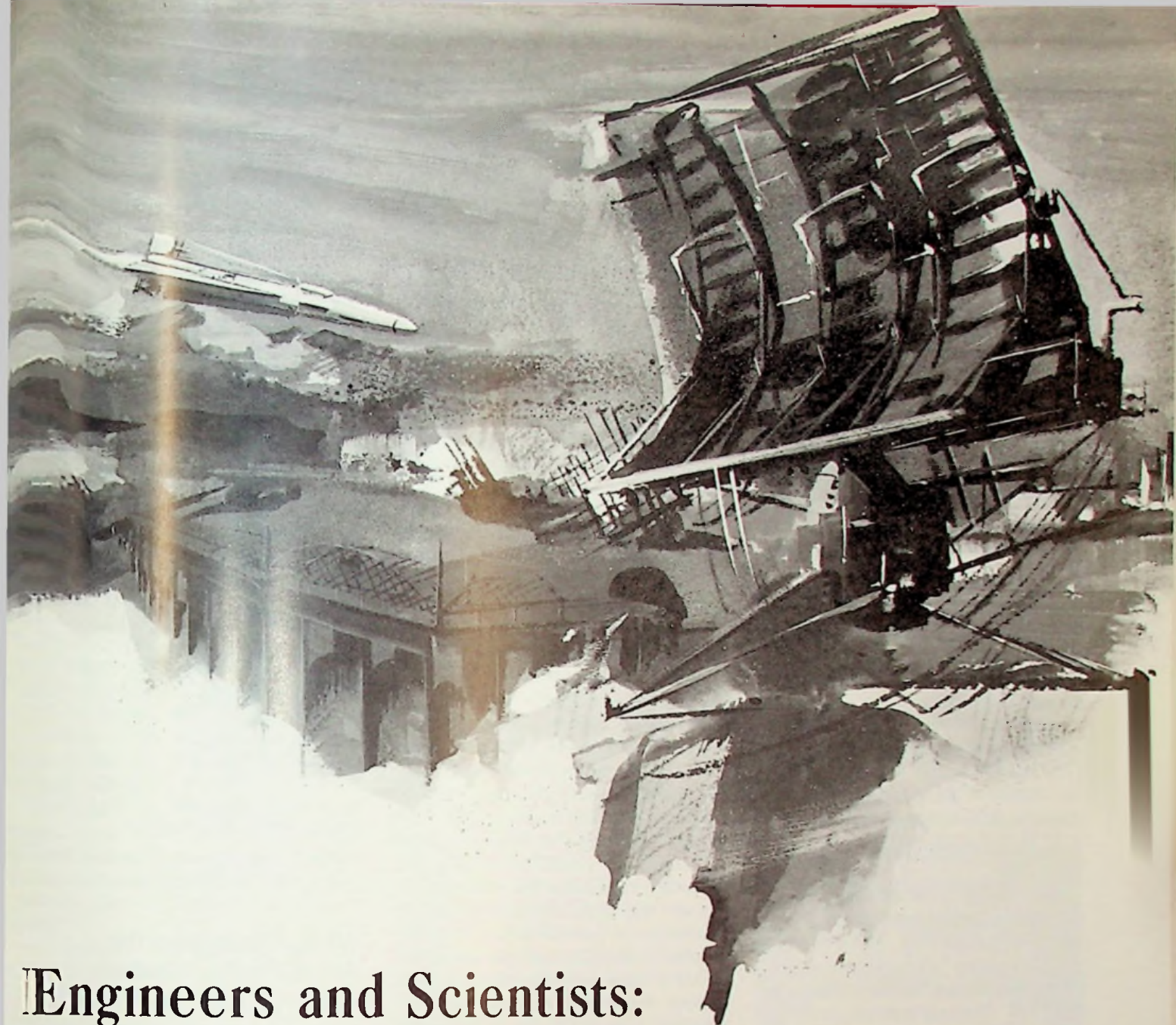
The award consists of a certificate and an honorarium of \$1000. It was established in 1956 for the outstanding paper published in any of the Transactions of IEEE in the period July 1 through June 30.

The Browder J. Thompson Memorial Prize is awarded to Marvin Carl Teich,

Assistant Professor of Electrical Engineering, Columbia University, for his paper entitled "Infrared Heterodyne Detection" (Proceedings of the IEEE, Vol. 56, No. 1, January 1968). Dr. Teich receives a certificate and honorarium of \$1000 under the provisions of this IEEE Prize Award, which was established in 1945 for the best paper appearing in any IEEE publication by an author (or authors) under 30 years of age.

The Institute Student Prize Paper Award will be received by Mr. John Alan Richards, University of New South Wales, Sydney, Australia. Mr. Richards receives a certificate and \$100, plus a trip to New York to receive his prize for his paper, "The Transient Response of the Lateral Photovoltaic Cell."

All three awards will be presented to the recipients at the IEEE Directors' Reception, March 25, 1969 at the New York Hilton.



Engineers and Scientists: Diversified opportunities now available on Hughes AGM's

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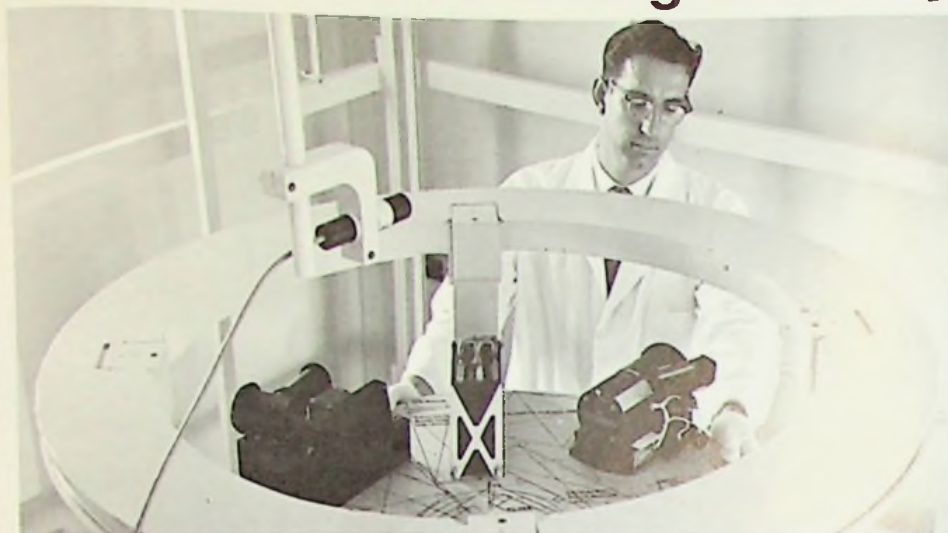
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Aspects of Low Field Magnetometry



E. J. Iufer is mapping Magnetic Fields produced by Pioneer Payload Assemblies. Photo taken in Ames' Magnetic Standards Laboratory.

The planned Jupiter flyby mission for Pioneer F and G will include systematic measurement of not only the weak magnetic fields found in interplanetary space but also the stronger fields expected during planetary encounter. Pre-launch measurement of the magnetic properties of the spacecraft and calibration of the flight magnetometer will require facilities capable of producing and measuring magnetic field vectors in the range of 5×10^{-11} to 5×10^{-3} Tesla ($1 \text{ gamma} = 10^{-9} \text{ Tesla}$).

The current state of knowledge of low field magnetometry as related to spacecraft testing will be discussed at the Magnetics Chapter meeting on March 11, at the Ampex Cafeteria at 8:00 PM. The emphasis will be on recent developments in fluxgate alkali-vapor and proton precession sensors.

E. J. Iufer studied at the University of Basel, Switzerland and at Oregon State University, where he graduated in

1951, with a B.S. Degree in Physics. From 1951-1960, he was Chief Engineer of the Naval Degaussing Station, Bremerton, where he was responsible for field analysis and magnetic treatment processes related to magnetic mine countermeasures. In 1960, he joined Dalmo Victor as a Senior Design Engineer, primarily concerned with the application of magnetometers to spacecraft and military measurement and control systems. For the past four years, Mr. Iufer has been with NASA as Manager for Magnetics, responsible for magnetic design and test of the Pioneer VI series of spacecraft. He has served as consultant to other government agencies and to industry in areas related to magnetic field analysis and control and has been the principal investigator on a magnetics field experiment flown on Aerobee Sounding Rockets.

Preceding the meeting, the dinner location is Scotty Campbells at 6:30 PM. Reservations necessary. See calendar.

Stanford will be Host to Photoconductivity Conference

The Third International Conference on Photoconductivity, which will be concerned with the fundamental physics of photoconductive phenomena in solids, will be held at Stanford University in Palo Alto, Calif., from August 12 to 15, 1969.

The conference will be devoted to recent progress in understanding photoconductive mechanisms and in the investigation of the structure and energy levels of solids by photoconductive techniques. Among the topics to be covered are the origin and structure of defect states in solids as revealed by photoconductivity measurements, the mechanisms of generation and recombination of excitons and electron-hole pairs created by exciting radiation, and the transport properties of photo-excited carriers.

Contributions to the conference are invited; the deadline for submission of abstracts is March 15 and notification of inclusion in the program will be made by May 1, 1969. Inquiries concerning the meeting should be directed to G. S. Pincus, Conference Secretary, Hughes Research Laboratories, 3011 Malibu Road, Malibu, Calif. 90265.

The conference is sponsored by the U.S. Office of Naval Research.

Winby Discusses the Art of Radio Control

Mr. Ivar Winby, Chief Engineer, Wintronix, San Jose, will discuss the general state of the art of radio control of model airplanes for research and recreation at the March 22 meeting of the Santa Clara Valley Subsection. He will also discuss related servo systems including those engineered and manufactured by his firm.

Several working model airplanes will be used during the discussion to demonstrate types and degrees of control.

Following the discussion, the group is invited by the Pioneer Radio Control Club to go over to the Sunnyvale Model Airport for actual flying demonstrations. (Directions will be given at the meeting).

High school age sons of members are invited to attend this discussion and demonstration.

The meeting will take place at 10:00 AM, Saturday, at the Club House, Adobe Wells Mobile Home Park, 1220 N. Lawrence Expressway, in Sunnyvale.

Student Wins Award

Ronald P. Thompson, S.F. State College, is the recipient of the 1969 Hickernell Award for his paper entitled "115 KV Load-Flow Analysis Using a Simplified Loop Digital Program."

The award constitutes a check for \$500, a certificate of recognition and a full expense paid trip to the Winter Power Meeting in New York to receive the award at a special luncheon.

In addition, his Professor, Rene Marxheimer will be recognized with an engraved plaque.

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Continuing Education in Engineering

A three-week program, September 1969, will be given by Continuing Education in Engineering, University Extension, in cooperation with The College of Engineering, University of California, Berkeley, on MATRIX AND FINITE ELEMENT STRUCTURAL ANALYSIS. The first week is Sept. 8-12; the second week, Sept. 15-19; the third week, Sept. 22-26.

The first week will provide instruction and practice in the fundamentals of using the computer systematically in large-scale structural studies, and will include matrix theory and computer programming. During the second week, the principles underlying various finite element methods will be discussed, together with demonstrations of their actual use. In the third week, the participants will be given five finite element programs and will be assisted in solving a problem of his own on a computer which will be made available.

All participants are required to enroll for the lectures of the second week, which may be combined as desired with either or both the workshops of the first and third weeks.

Enrollment Fee: First week: \$150; second week: \$250; third week: \$150. Faculty Member in Charge: Jerome M. Raphael, S.M., Professor of Civil Engineering, University of California, Berkeley.

A brochure containing a detailed schedule of subject matter and names of instructors will be available in June, 1969.

For further information please write or call Continuing Education in Engineering, University Extension, University of California, 2223 Fulton St., Berkeley, California 94720, or call (415) 642-4151.

A five-day short course, March 24-28, 1969 will be given by Continuing Education in Engineering, University Extension, in cooperation with the College of Engineering, University of California, Berkeley, on DESALINATION: METHODS AND APPLICATIONS.

This program, which will cover the development, theory, application, and economics of the principal methods of desalination, is planned as an authoritative introduction and a survey in depth of the state of the art, useful to engineers, scientists, and managers. Outstanding speakers from universities, industries, and research laboratories will present the latest theories and techniques of their specialties, including separation by phase change, reverse osmosis, and electrodialysis. These authorities will lead technical discussion sections scheduled for groups with common interests. Notebooks containing lecture and reference material will be furnished to each enrolled participant.

Location: 120 Latimer Hall, University of California, Berkeley.

Faculty Member in Charge: Alan D. K. Laird, Ph.D., Professor of Mechanical Engineering and Director, Sea Water Conversion Laboratory, University of California, Berkeley.

Enrollment fee: \$275. Advance enrollment is required. Enrollment may be made by individuals or companies. Upon receipt of a written request, a place in the program will be reserved for individuals requiring time to obtain authorization. No refunds will be granted after the opening of the program.

For more detailed information write to Continuing Education in Engineering, University of California, 2223 Fulton Street, Berkeley, California 94720, or call (415) 642-4151.

Wema Congressional Conference Luncheon

WEMA will again be host to management people of western electronics companies at our annual get-together with Senators and Representatives from the West, Friday March 21, 1969 in Washington, D.C.

This year, the eighth renewal of WEMA's Congressional Luncheon, we have an added dimension. Four respected Members of Congress, each of whom qualified by knowledge and position, have agreed to discuss with us the development — and impact — of Congressional policy upon federal procurement.

In all, the program offers a unique opportunity for you to discuss forthcoming legislation and existing laws with the 95 men and women who represent the West in the 91st Congress.

There is no charge for participation but, because of seating limitations, we can accept reservations only from the first 100 executives responding.

Reservations: Indicate whether you will be attending one or both functions to: WEMA, P.O. Box 11036, Palo Alto, Calif. 94306, or call (415) 327-9300.

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Design of Monolithic Operational Amplifiers

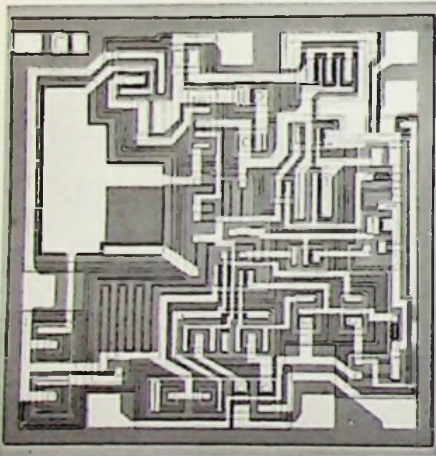


The Circuit Theory Chapter will present Dave Fullagar as featured speaker during their March 19 meeting.

Mr. Fullagar will describe the design of monolithic operational amplifiers from both the silicon technology and the circuit viewpoint. The factors influencing the design of low drift and high slew-rate circuits will be considered and some predictions made as to future developments in monolithic linear amplifiers. The talk will be illustrated by slides showing both present production and prototype R & D devices.

Dave Fullagar received his Master's Degree from the University of Cambridge in 1963 and has been in the United States since 1965. He joined Fairchild Semiconductor in 1966 and has been working on linear circuits since that time.

The meeting will be held at Stanford University, The McCullough Bldg., Room 134 at 8:00 PM, with dinner at the Red Cottage Restaurant at 6:00 PM. Reservations. See calendar.



A741

NEW MEMBERS

The Section
welcomes these new members

R. J. Bell	M. A. Larsen
D. B. Briglia	W. J. Lawrence
M. T. Burke	P. D. Lenn
P. F. Busch	S. T. Mayer
E. De Atley	R. H. Mondel
W. G. Dirks	F. F. Mulholland, Jr.
E. T. Eiselen	B. K. Murai
R. R. Hay	D. Nee
T. D. Hutson	R. V. Niedrauer
R. R. Johnson	M. Satou
H. C. Kanclek	J. H. Sayre
D. W. Kimball	R. D. Seifers
E. D. Laka	E. V. B. Stearns

Reliability/Maintainability/Safety Interface

The need for protection against injury or loss of life seems to be fairly obvious. The relationship of System Safety to total cost of ownership is oftentimes not quite so clear. In addition, there is need to improve our techniques for assuring adequate safety efforts without generation of excessive or unnecessary cost.

It would appear that fundamental to achieving these goals is understanding of the tasks necessary to implement a safety program and the manner in which elements of other activities effect safety or can be utilized to assure safety. Reliability and maintainability are disciplines which have major impact on and interface with System Safety. For this reason The Reliability Chapter has arranged a joint meeting on March 20th with the Bay Area MAINTAINABILITY Association and there are indications of participation from local members of the System Safety Society.

The panel convened to discuss this Reliability-Maintainability-Safety interface are well qualified to provide us with insight in regard to the best method for meeting our program needs. Major Philip J. Stack is a graduate of the University of New Hampshire with a degree in Mechanical Engineering. For the past two years he has held the position of System Safety Engineer in the Safety Office of the Space and Missile Systems Organization (SAMSO). Prior to joining SAMSO he held the position of Main-



John Decker



Sol Malasky

tenance Officer at the Strategic Air Command on the Minuteman Missile. John T. Decker is the Supervisor of Systems Availability of the Sylvania Electronics Systems - Western Division. He graduated from Northern Illinois University with a B.S. in Physics and prior to joining Sylvania was with A.C. Spark Plug and Philco WDL in the maintainability field. Among his professional affiliations is Charter Member of the Bay Area Maintainability Association in which he currently holds the position of President. Sol Malasky received a B.S. and M.S. in mathematics and physics at Brooklyn College. He has worked in the field of Reliability, Quality Assurance, Safety and Systems Effectiveness at North American, Lockheed, R.C.A., and G.E. At present, he is employed at the Aerospace Corporation as a Senior Staff Engineer. Mr. Malasky is currently engaged in the preparation of a text on Systems Safety.

The Bold Knight in Sunnyvale is the scene for cocktails, dinner and the meeting. Reservations are necessary. See calendar for details.

Eyes and Ears for Computers

The Systems Science and Cybernetics Chapter meeting on March 13 will present D. Raj Reddy as speaker. His talk will describe a computer system which uses a television camera as the eye, and a microphone as the ear. Problems and implemented solutions in the associated areas of scene analysis and description, and speech analysis and description will be discussed. A movie illustrating the present state of accomplishment will be shown.

D. Raj Reddy received the B.E. degree from the University of Madras in 1958, M. Tech degree from the University of New South Wales in 1961, and M.S. and Ph.D. degrees in Computer Science from Stanford University in 1964 and 1966 respectively. He was an Applied Science Representative with the IBM World Trade Corporation in Australia from 1960-1963. While studying at Stanford he worked as a Research As-



Dr. Reddy

sistant and instructor. Since 1966 he has been an Assistant Professor of Computer Science at Stanford University. Dr. Reddy is primarily interested in Artificial Intelligence and Language Design.

The meeting will be held at 8:00 PM in Conference Room B, SRI. Dinner at Dinah's Shack is called for 6:00 PM. Reservations. See calendar.

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Avionics Display Systems

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

Electronic Design

Linear Circuits

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

Electronic Design

CRT Excitation & Deflection Circuits

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Visit to COMSAT Earth Station at Jamesburg, Calif.

Santa Clara Valley Subsection and the Student Branch at the U.S. Naval Postgraduate School plan a visit to COMSAT's Earth Station at Jamesburg, California in Carmel Valley on Saturday, April 26, 1969. The field visit will be followed by a cocktail hour and dinner in the El Prado Room of the Naval Officer's Club.

Present plans call for gathering at the School (the old Del Monte Hotel) in Monterey before 1:00 PM on April 26th. Transportation to and from the COMSAT Station — about thirty-five miles — will be provided by Navy busses which will depart at 1:00 PM sharp. Wives and guests who would like to visit the COMSAT Station are welcome; others may spend the afternoon on their own. A cocktail hour will commence in the Officer's Club after the busses return from COMSAT about 5:00 PM and dinner will follow at about 6:30 PM. Dinner will be finished by about 9:00 PM and those who wish to return to the Bay Area may do so, although several

people plan to stay overnight in motels in the Monterey area.

COMSAT's Jamesburg Station is the newest Earth Station on the West Coast. It was built to work with Pacific Ocean satellites and provides communications to the Pacific Islands and the Far East. COMSAT operates the earth antenna and terminal equipment for the satellite link at Jamesburg. In the same building A.T. & T. Company operates earth link equipment which connects the satellite system back into Pacific Telephone's network in the Bay Area. This earth link consists of a multi-hop microwave system between Jamesburg and Oakland.

Reservations for the COMSAT tour and/or Officer's Club dinner will be required. They may be made by calling Mrs. Chris Montez on 408-291-4014. Announcement of this joint meeting on April 26th is being made now so that members can reserve the date. Further publicity will appear in the April Issue of the Grid.

United Airlines Maintenance and Engineering Base Tour

This year the San Francisco Power Group has chosen for the annual field trip a dinner and tour of United Airlines Maintenance and Engineering Base, located a short distance from San Francisco's International Airport.

The San Francisco United Airlines Maintenance Base is unmatched anywhere. They have the finest shops, the most talented staff, and the greatest fund of know-how in the business of maintaining today's jet airfleets. In an effort to prevent trouble arising from unreliability of equipment, United has elected to invest in substantial buildings and ground equipment. Elaborate structures have been built in the overhaul docks and servicing hanger to position mechanics and engineers at the proper work stations with the correct tools and utilities at their disposal. United employs some of the most advanced production and laboratory testing equipment in the United States today. Mr. Metzger of United said, "If what we visualize isn't in existence, we create it. In many cases, the book on new processes has been written from development work at the San Francisco base."

Guests, wives, and children over twelve (12) years of age are most welcome. Dinner will be \$2.00 per person. For further information and reservations, please call John A. Michelsen of the Bechtel Corporation at 764-6171, or Ivan H. Landis of the General Electric Company at 434-2211, prior to Monday, March 10, 1969.

Assemble at the United Airlines Maintenance Center in the Airport Shops Area just north of the airport on the bay side of U.S. 101, on Thursday, March 20, 1969, at 6:15 PM. Traveling north the proper exit is San Bruno Avenue. Proceeding south follow signs for the Airport Shops. The United Airlines facility is obvious from that point. Parking facilities will be provided inside the gate.

Larson Heads NAEM

Donald E. Larson, general manager of WESCON, has been elected president of the National Association of Exposition Managers for 1969.

NAEM is the 250-member association of operating executives of public, industrial, and professional conventions, fairs, and industrial expositions.

WESCON is sponsored annually by San Francisco and Los Angeles elements of the IEEE and WEMA.

IEEE Computer Group Names New Officers

The Computer Group of the Institute of Electrical and Electronics Engineers, Inc., has elected its executive officers and administrative committee members for 1969.

Named as chairman of the Group for a second term is L. C. Hobbs, president and senior consultant for Hobbs Associates, Corona del Mar, California. Elected as vice chairmen are Dr. Robert A. Kudlich, a program director at A. C. Electronics, General Motors Corporation, Milwaukee, Wisconsin and Dr. Edward J. McCluskey, Professor at Stanford University's Electronics Laboratory. Dr. Kudlich is also serving his second term as one of the Group's executive officers.

The Group's Administrative Committee, which elects half of its twenty total members each year, named the following Computer Group members to serve during 1969; David R. Brown, Stanford Research Institute; Dr. Curt F. Fey, Texas Instrument; Dr. A. S. Hoagland, IBM; Thomas E. Lindsay, Bell Telephone Labs; Milton A. Lipton, U.S. Army Electronics Command; Sam Nissim, Electronics Arrays, Inc.; Ralph J. Preiss, IBM; Rex Rice, Fairchild Semiconductor; Sei Shohara, Scientific Data Systems; John W. Worthington, IBM.



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Panel Session Views LSI Testing

There is a growing interest both among semiconductor device manufacturers and device users in large scale integrated circuits. Many papers have been written and presented about various aspects of designing, manufacturing, and using LSI. Not so much attention has been given to testing the devices.

Testing LSI devices and measuring their parameters is important to manufacturers and to users. Many questions arise in any discussion of this subject: How much testing is required? Is functional testing sufficient? How about dynamic parameters? How are LSI devices specified? and other similar questions often arise when LSI is being discussed.

The March meeting of the Instrumentation and Measurement group will be a panel session on these subjects.

Four prominent speakers will give short presentations of LSI testing, two from the point of view of the semiconductor manufacturing and two from test equipment manufacturers. After the presentations there will be an opportunity to ask questions and to have a panel discussion.

The speakers are Hal Grutchfield, Signetics; Owen Williams, Fairchild Semiconductor; Robert Broughton, E-H; and Gordon Padwick, Fairchild Instrumentation.

The meeting will be on Tuesday, March 12, at Hewlett-Packard, conference Room 5M. Prior to the meeting there is an opportunity to meet the speakers at dinner. Dinner is scheduled for 5:45 PM at Chez Yvonne. Reservations. See calendar.

P&T Execs Describe Control and program Channels

The Vehicular Technology meeting on Monday, March 17, will feature three speakers from the Pacific Telephone Company who will describe the characteristics and availability of radio control and voice telephone channels.

Gene Henderson, senior manager in charge of the Program Services Group for the Northern California Region (extending from Barstow to the Oregon border) will describe the facilities that are available, their usage and applicable tariffs. The Program Services Group furnishes radio telephone operation channels for radio telephone utilities, special applications, coastal harbor radio telephone, maritime, radio, television, wired music, and closed circuit television.

Technical matters will be discussed by Walter G. Carlson, Administrative Staff Supervisor, who has had more than forty years experience in telephone plant layout, circuit design, remote control and transmission. He and (Bill) W. P. Fisher, who is a member of the Chief Engineers Staff, will answer questions from the audience regarding characteristics of lines, terminal equipment, transmission, etc.

This would be a good time for Walt Carlson's friends to join with the Vehicular Technology Group and wish him health and happiness during his forthcoming retirement.

The Continental Motel in San Francisco is the cocktails, dinner and meeting place. See calendar for time and reservation details.

Specialists Presented as Seminar Speakers

Satellite meteorology will be the subject of a three-day seminar held in San Francisco Thursday through Saturday, May 1 to 3, 1969, under sponsorship of University of California Extension, Berkeley. Principal speakers will be Sigmund Fritz, acting chief space scientist, and Vincent J. Oliver, head, applications branch, both with the National Environmental Satellite Center; Theodore Fujita, professor of meteorology, University of Chicago; and William Nordberg, assistant chief, Laboratory for Atmospheric and Biological Sciences, NASA, Greenbelt, Md.

Intended for meteorologists and for scientists and engineers in related fields who are interested in the current and projected roles and capabilities of satellite meteorology, the seminar will cover such topics as operational applications and utilization of cloud pictures, interpretation of radiation measurements, vertical structure measurements of the atmosphere and satellite sensor development, cloud motions derived from time-lapse photography, display measurement and processing of satellite-observed and allied data using electronic techniques, as well as other ground-based data handling and display systems.

The registration fee is \$160; a \$90 fee is available to students. For details write to Ronn Patterson, Letters and Science Extension, University of California Berkeley, Calif. 94720; or phone (415) 642-1061.

No man is an Iland, intire of it selfe; every man is a peece of the Continent, a part of the maine; if a Clod bee washed away by the Sea, Europe is the lesse, as well as if a Promontorie were, as well as if a Man nor of thy friends or of thine own were. Any mans death diminishes me, because I am involved in Mankinde. And therefore never send to know for whom the bell tolls. It tolls for thee.

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Cries of Help from the Bottom of Your Priority List

How many of the nation's electronic manufacturers attempt to sell in foreign lands? Nearly all. How many are doing as well as they ought to? Nearly none, in the opinion of international trader William Caithness, who has just completed an 11-week, round-the-world survey of U.S. firms in foreign markets and found that most electronic companies sabotage their own selling effort overseas because they won't give their salesmen the engineering and technical support they must have. Caithness warns that by not showing the flag sufficiently abroad, the Americans are increasing the likelihood that the battle for supremacy between them and emboldened European and Japanese manufacturers will be fought in markets right here at home.

"From the European viewpoint," Caithness, an official of the San Francisco trading firm, Frazar & Hansen, Ltd., declares, "U.S. manufacturers lack initiative to support effective or sustained effort over there. They do not communicate well or give adequate engineering or sales-promotional support in those markets, many of which are bigger than our own." When the call for help arrives from the overseas sales representative, he says, "too many U.S. companies send it right to the bottom of the priority pile. The result is that the sales rep is left hanging out there."

Reacting to the indictment, a spokesman for the 600-member Electronic Industries Assn., Washington, D.C., admits that inadequate sales support exists, but that only about 15% of U.S. electronic exporters are guilty of it. The majority of these, he says, are smaller producers that maintain no sales staffs overseas, relying instead on distributors, importers, and others. Caithness agrees that the problem is most acute among the small manufacturers and that giants such as IBM, ITT, Motorola, and Texas Instruments, with both manufacturing facilities and sales staffs located overseas, are performing support chores satisfactorily. The guilty, he says, are found in the middle ground, "those doing \$20 and \$30 million business overseas," and they total "far more than 15% of the total industry." He adds, "I know of some companies doing over \$100 million in sales and some others maintaining overseas sales teams that aren't performing supporting services as they should."

"The simple truth is that your sales support must be a lot better overseas

than in the U.S. and too often it isn't," Caithness says. U.S. companies need to imitate the European and Japanese concern for selling abroad, he says, declaring, "U.S. manufacturers must realize this, improve their marketing posture abroad, get into it if they aren't already, or else they can expect to be spending more and earning less at home" as foreigners in growing numbers come here to sell.

Other faults Caithness turned up during his tour are a tendency among Americans to underestimate the technical skill of others, ignorance about foreign competitive products (Europeans, he says, have a good understanding of U.S. goods), and a willingness by many U.S. companies to settle for "underachievement" abroad. "Companies which sell 20% of their products overseas could make it 40% by giving better

sales support," he holds, "but that would mean work. The U.S. manufacturer puts exporting as his last interest. The complacency is considerable."

"European and Japanese manufacturers are determined to make greater inroads into the U.S. domestic markets," he predicts. High-quality U.S. electronic equipment can offset the competition at home by being offered in "the very substantial and profitable markets abroad under sales programs that are effectively promoted and supported." Caithness' view is supported by W. Rollin Johnston, manager of international trade development, Bailey Meter Co., who lists "competent after-sale service, either by representatives or directly from headquarters" as basic to any firm's overseas marketing program, especially in the area of capital goods.

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IEEE Convention (Cont'd)

Materials for Spanning the Infrared to the Microwave Gap (Mon. PM)

Recent Advances in Laser and Holographic Optical Systems (Wed. AM)

The Laser Comes of Age - I (Tues. AM)

The Laser Comes of Age - II (Tues. PM)

MATERIALS

Glasses in Electronics - New Frontiers and New Uses (Wed. PM)

Insulating Materials and Electronic Systems Team Up for the Future (Fri. AM)

Materials for Spanning the Infrared to the Microwave Gap (Mon. PM)

Thin Films or Thick? (Tues. AM)

MICROWAVES

Computers Can Help Solve Your Microwave Problems (Tues. AM)

High Power Microwave Tubes (Wed. PM)

Integrated Microwave Circuits (Mon. AM)

Low Noise Receivers (Wed. AM)

Microwave Reflectometry (Tues. PM)

OCEANOGRAPHY

Engineering for Oceanography (Wed. PM)

OPTICS

Acoustical and Optical Interactions (Mon. AM)

PACKAGING

The Electronic Package - What, Why, How Much? (Thurs. PM)

POWER

Electric Power Systems of the Future: New Sources, Uses and Techniques (Thurs. AM)

Increased Power Reliability for Industrial Systems (Wed. PM)

New Lines of Power Transmission (Thurs. PM)

Static Converters - World Wide (Tues. AM)

RELIABILITY

Electric Systems Reliability (Thurs. AM)

Fundamentals of Reliability Engineering (Mon.-Thurs. AM)

Increased Power Reliability for Industrial Systems (Wed. PM)

SELF-ORGANIZING SYSTEMS

Self-Organization and Learning Systems - Review and Outlook (Mon. AM)

SOCIO-TECHNOLOGICAL IMPACT OF ENGINEERING

Electronically Expanding the Citizen's World (Tues. Evening)

System Technologies in Politics and Economics (Tues. AM)

The Role of the Citizen Engineer in Technological Decision Making (Mon. PM)

Where Is the Electrical Profession Headed? (Tues. PM)

STANDARDS

An International Language for Electronics? (Thurs. PM)

SYSTEMS ENGINEERING

The Interdisciplinary Nature of Design (Thurs. AM)

Insulating Materials and Electronic Systems Team Up for the Future (Fri. AM)

TRANSPORTATION

Air Traffic in the 1980s: Order, Chaos, or Catastrophe? (Tues. PM)

Rail Transportation Systems (Mon. AM)

System Technologies in Politics and Economics (Tues. AM)

URBAN DEVELOPMENT

System Technologies in Politics and Economics (Tues. AM)

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Exhibitionism in Electronic Products

A one-day seminar on new ideas and successful techniques of exhibiting electronic products will be presented by WESCON in San Francisco March 6.

This is a "vertical" seminar, concentrating entirely on marketing of high-technology equipment to professional engineering audiences. WESCON offers the program to electronics marketing, advertising, and sales executives as a guideline to better trade show programs.

The seminar will run from 9:30 AM to approximately 4:00 PM. Open discussion will be encouraged, and ample time for questions is provided.

Registration of \$20 includes coffee breaks, cocktails, and luncheon, and copies of speakers' prepared remarks. Attendance at the seminar in San Francisco will be limited to 125 persons. Registration must be made in advance.

Hotel accommodations are being left to each individual. For convenience of those who may wish to stay in the seminar hotel, reservations can be made by contacting Vickie Post, Fairmont Hotel, Atop Nob Hill, San Francisco 94106, or call (415) 362-8800.

For registration and other seminar details contact WESCON, 3600 Wilshire Blvd., Los Angeles 90005, (213) 381-2871.

PROGRAM

I Introduction and Background

Trade-Shows and trade-offs; Engineers are funnier than people; What trade shows can't do; The case against shot-guns. — W. H. Heflin, FRL, Inc.

II Facts of Life About Trade Shows

The name of the game is contact; Fall-outs and spin-offs; 10 keys to show selection; Where do shows fit in the budget? — Don Larson, WESCON

III Deciding What the Show Should Do for You

Setting real goals; Product-inquiries; How many should you get; The values of feedback; The launching pad for new product campaigns. — Russell M. Berg, Corp. Advertising and Sales Manager, Hewlett-Packard Co.

IV Engineering the Exhibit

Interfaces: marketing, management, engineering, sales; How much to show and how to show it; Institutional exhibit vs. marketing tool; What about divisional autonomy? — A. Luke Ward, Manager, Sales Promotion, Astrodata, Inc.

V Making the Most of Show Services

Some myths about show traffic; How to avoid high move-in costs; Homework pays off in show services; Checking up on show management. — R. D. Rankin, WESCON

VI Filling the Communications Gap

How PR and promotion can support the exhibit; How much to do and when to do it; What's news?; What editors want; How show management builds attendance. — John M. Bergman, Director of PR, P. R. Mallory & Co., Inc.; Ralph Dobriner, Electronic Design; Ted Shields, WESCON

VII The Point of Personal Contact

Put the "booth man" on the team; How to prepare him for the onslaught; How to keep him effective; Who's in charge? — Edward T. Clare, VP, Marketing, Cohu Electronics, Inc.

VIII After the Ball is Over

Two views of follow-up; De-briefing the boothmen; Comparing results with expectations; Using reports and analyses. — Arthur M. Heller, Manager, Marketing Communications, Signetics Corp.

Advances in Absolute Stability of Nonlinear System

A brief review of the absolute stability concept and its applications to stability analysis on nonlinear systems will be outlined at the Automatic Control Chapter meeting, Tuesday March 18. Emphasis is placed on the unrealistic assumptions that are made regarding the system characteristics in order to achieve the analytical simplicity of global stability. Several modifications of the absolute stability concept are proposed which relax conditions on the nonlinearity and the linear part of the system to consider more practical situations. Methods for stability analysis and design of relevant system configurations are discussed.



Dr. Siljak

Dragoslav D. Siljak was born in Belgrade, Yugoslavia and received his B.S.E.E., M.S.E.E. and Sc.D. Degrees, all from the University of Belgrade. Since 1960, he has been of the staff of Belgrade University where he was appointed Docent Professor of Electrical Engineering. Since 1964 Dr. Siljak has been an Associate Professor in the Electrical Engineering Department of the University of Santa Clara, Santa Clara, California, where he teaches courses in system theory and application. He is author of the book *NONLINEAR SYSTEMS* (Wiley, 1969).

Dr. Siljak is a member of the Automatic Control Chapter of IEEE.

The meeting is scheduled for 8:00 PM at the University of Santa Clara Engineering Center, Room 551. Angelo's Restaurant is the dinner location, the time 6:15 PM. See calendar.

The Editor ...

We continually urge program chairmen to give us more vivid and informative meeting announcements—photos of lecturers with biographies. In this day and age you've got to hard-sell your message.

IEEE Elects Board of Directors for 1969

Dr. F. Karl Willenbrock, Provost of the Faculty of Engineering and Applied Sciences at the State University of New York at Buffalo, newly-elected President of the Institute of Electrical and Electronics Engineers announced that on January 7, 1969 the Institute's Annual Assembly elected the following to the IEEE Board of Directors:

Directors-at-Large: Mr. G. J. Andrews, ITT Latin America, Buenos Aires, Argentina; Dr. Werner Buchholz, IBM Development Laboratory, Poughkeepsie, New York; Dr. George Sinclair, Department of Electrical Engineering, University of Toronto, Toronto, Canada; and Dr. J. G. Truxal, Polytechnic Institute of Brooklyn, Brooklyn.

Director, IEEE Region 10: Dr. D. G. Lampard, Electrical Engineering Department, Monash University, Clayton, Victoria, Australia.

Also elected by the Annual Assembly to serve in 1969 were the following: Vice President Publication Activities — Dr. M. E. Van Valkenburg, Department of Electrical Engineering, Princeton University, Princeton, New Jersey; Vice President Technical Activities — Dr. J. H. Mulligan, National Academy of Engineering, Washington, D.C.; Secretary — Mr. R. W. Sears, Bell Telephone Laboratories, Inc., Murray Hill, New Jersey; and Treasurer — Dr. Harold Chestnut, General Electric Research and Development Center, Schenectady, New York.

PROPAGATION SYSTEMS

RESEARCH ENGINEERING MANAGER

Manage Research Department of the Propagation Systems Laboratory. Conceive, initiate and supervise basic and applied theoretical and experimental (laboratory and field) studies of scattering and propagation of waves including acoustic, radio, and optical. Maintain laboratory facilities to support laboratory studies. Specific areas of investigation will include troposcattering, optical propagation scattering from aircraft, and scattering from missiles and related objects, with applications to OHD systems airborne systems, and to the development of EW systems concepts. Responsible for initiating new business efforts.

Ph.D. Physics or EE desired. Five to ten years combined experience in theoretical and experimental studies related to scattering and propagation to include 3-4 years supervisory experience.

PROCESSING ENGINEERING MANAGER

Manage Advanced Processing Systems Department of the Propagation Systems Laboratory. This department is responsible for developing signal processing techniques, developing and applying system simulation techniques, maintaining a processing facility, identifying systems requirements, designing systems, and for providing technical support for development and implementation of hardware and software for specific systems.

M.S., Ph.D., EE, Physics, or Applied Mathematics required. Five to ten years combined experience related to implementation of processing systems and systems design.

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ANALYSIS & DESIGN

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Analysis of electronic system vulnerability to ECM. Determination of ECM system requirements. Theoretical and experimental evaluation of alternative ECM system concepts.

ECM SYSTEM DESIGN

Formulation of advanced ECM system concepts. Determination of concept technical feasibility. System optimization based on cost and effectiveness considerations. Development of operational systems.

PROJECT MANAGEMENT

Provide technical leadership of projects ranging in size from small R&D projects through major avionic system developments.

SURVEILLANCE SYSTEMS

SURVEILLANCE

To perform technical requirements analysis, system concept formulation and system design of multisensor surveillance and target acquisition systems. Will be primarily responsible for sensor requirements and sensor interface with total multisensor systems. Will perform analysis for sensor type selection and concept formulation. Will have working knowledge of LLLTV, FLIR high resolution radar, laser rangefinder, IR line scanner, photo, and laser camera sensors and how they impact upon a total multisensor system. Both systems studies and system design will be performed.

BS in EE or Physics, with MS desirable. 3 years' experience in surveillance and target acquisition systems required. Must have working knowledge, from a systems viewpoint, of 2 or more of the following sensors: LLLTV, FLIR, high resolution radar, laser rangefinder, IF line scanner.

AIRBORNE MULTISENSOR

To perform requirements analysis, system concept formulation, and systems design, in airborne multisensor reconnaissance, surveillance, and target acquisition systems. Will be concerned with overall avionics configuration. Will examine navigation requirements and cockpit configuration requirements. Will interface sensing systems with overall avionics system. Will play key role in concept studies, design and tradeoff studies, and prototype design.

BSEE/MSEE desired, with 3-6 years' experience in airborne avionics systems including airborne sensing means.

To arrange an interview-appointment at your convenience please call Mr. David Walsh at 966-2995 any time this week. If unavailable for an interview at this time please forward your resume in complete confidence to Mr. Walsh, P.O. Box 188, Mountain View, California 94040. U.S. Citizenship required. Sylvania is an equal opportunity employer.

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Call for Papers

The 1969 IEEE INTERNATIONAL SYMPOSIUM ON CIRCUIT THEORY, to be held December 8-10, 1969 at the Mark Hopkins Hotel, in San Francisco, features the presentation of original research papers and invited papers by researchers from both industry and universities. The Symposium provides a forum for discussion of topics in circuit and system theory. The theme is that of work at the interface between theory and practice. Of course high quality papers from throughout the broad spectrum of the field are welcome.

Instructions for Authors: Regular and short papers must be submitted before July 1, 1969. All manuscripts are to be in the standard format of contributions to the IEEE Transactions on Circuit Theory, with short papers prepared as letters-to-the-editor. Consult the back cover of the Circuit Theory Transactions for manuscript preparation instructions. Each paper is to be accompanied by a one-page summary headed by a title and author names and affiliations, suitable for photo reproduction, typed double-spaced on white-bond paper with 1½" margins. Manuscripts will be simultaneously considered for oral presentation at the Symposium or inclusion in the IEEE Transactions on Circuit Theory or both. Summaries of symposium papers will be published in a digest available at the Symposium.

Deadline for submission of papers is July 1, 1969. The Technical Program Chairman will notify authors of accepted symposium papers by October 1, 1969. All manuscripts are to be submitted directly to the editor, IEEE Transactions on Circuit Theory: Professor B. J. Leon, School of Electrical Engineering, Cornell University, Ithaca, New York.

The TENTH ANNUAL SYMPOSIUM ON SWITCHING AND AUTOMATA THEORY, sponsored by the Switching and Automata Theory Committee of the IEEE Computer Group and the Department of Applied Analysis and Computer Science of the University of Waterloo will be held in Waterloo, Ontario, Canada, on October 15-17, 1969. Papers describing original research results in the general areas of switching theory, automata theory, formal languages, theory of computation, theory of programming, and theoretical aspects of logical design are being sought. Typical (but not exclusive) topics of interest include: Abstract Languages, Adaptive Logic, Algebraic Formulations of Automata, Asynchronous Circuits, Automata

Theory, Cellular Theory, Computational Complexity, Iterative Circuits, Minimization Techniques, Reliability and Fault Diagnosis, Sequential Machines, Theory of Parallel Computation, Theory of Programming Languages, Threshold Logic, and Probabilistic Sequential Machines and Automata.

Authors are requested to send six copies of detailed abstracts (no word limit) to: Professor John E. Hopcroft, Department of Computer Science, Cornell University, Upson Hall, Ithaca, New York, 14850, by May 16. Authors will be notified of acceptance or rejection by June 27. For inclusion in the Conference Record, a copy of each accepted paper typed on special forms, will be due at the above address by August 15.

The Mohawk Section, IEEE, has issued a call for papers for the Computers and Communications Conference, to be held at the Bessches, Rome, N.Y., on September 30 - October 2, 1969. The objective of this conference is to review latest communications/computer processing developments to take advantage of computer techniques which may be applicable to problems confronting researchers and operational personnel in the communications area. In addition the conference will consider the role of communications techniques in the development of computer systems. In each area application and implementation, rather than just theoretical aspects, will be emphasized.

A series of technical sessions and panel discussion will explore such topics as (a) Signal Processing, (b) Computer-Aided Design for Communications Equipment and Systems, (c) Decision and Control, (d) Simulation, (e) On-Line Communications, and (f) Interactive Graphics.

There will be two categories of contributed papers: "long" - for 20-minute presentation, and "short" - for 10-minute presentation, each with a discussion period to follow. Authors of "long" papers should submit a complete manuscript (not to exceed 4000 words) plus a 50-word abstract. Papers for "short" presentations only will be considered on the basis of a 200-word abstract. Manuscripts submitted for "long" presentation which cannot be accommodated in this category will be considered for "short" presentation.

All manuscripts (in duplicate) and abstracts (five copies) should be submitted no later than 1 June 1969. Address all

correspondence to: Computers and Communications Conference, 304 East Chestnut Street, Rome, New York, 13440, Attn: Technical Papers Committee. Telephone inquiries can be made to either Mr. John Entzminger, (315) 330-2003 or Mr. Charles Constantino, (315) 336-8400.

The SYMPOSIUM ON PARALLEL PROCESSOR SYSTEMS, TECHNOLOGIES AND APPLICATIONS will be held at the Navy Postgraduate School, Monterey, California on June 25, 26, 27, 1969. It is sponsored by the Office of Naval Research, Naval Weapons Center, Navy Postgraduate School, Hobbs Associates, Inc.

Increased application requirements, new computer technologies, and new concepts in system organization have led to increasing interest in more highly parallel computer organizations. At least three different objectives favor parallel processor organization:

1. Very large problems that cannot be handled with conventional machine organization approaches within the circuit speeds permitted by the existing state-of-the-art.

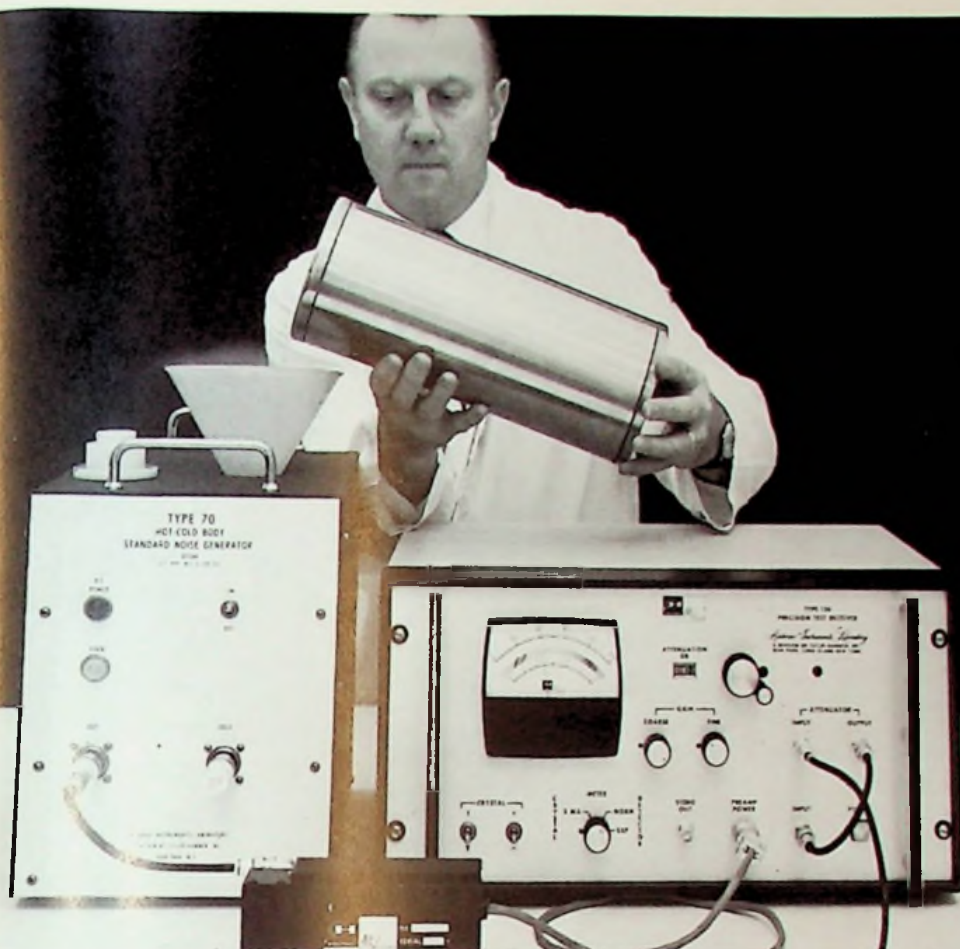
2. Problems which are inherently parallel in nature - e.g., ones in which several independent data paths must be processed simultaneously.

3. Effective utilization of LSI semiconductor technology places heavy importance on minimizing interconnections between arrays and on the repetitive use of very large logic arrays.

In order to provide a forum for this exchange of information, a symposium is planned to bring together active workers and interested participants from system, device, and application disciplines. Papers will be solicited from a number of people in all three disciplines who are known to be actively working in this area. In addition, this Call for Papers requests the submission of systems, hardware, and applications papers from other workers in these fields.

Three typed (double-spaced) copies of complete papers and 500-word abstracts should be submitted by 16 March 1969 to: L. C. Hobbs Associates, Inc., P.O. Box 686, Corona Del Mar, California 92625.

All papers submitted in response to this Call for Papers will be carefully reviewed by at least three reviewers and authors will be notified of acceptance or rejection of their papers and any changes requested by approximately 1 April, 1969.



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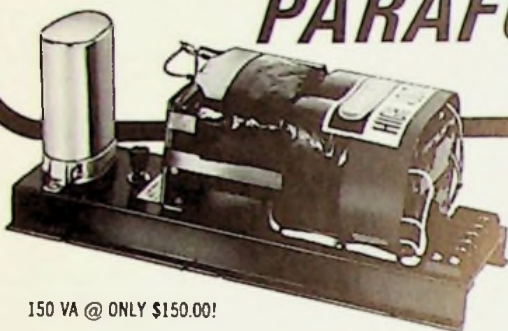
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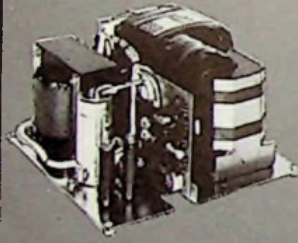
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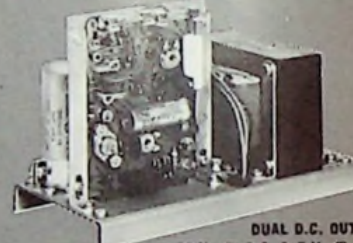
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