

EDITOR'S PROFILE of this issue

from a historical perspective ...

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

September, 1970:

Cover: The start of the academic year is when we publish information about the officers of our Section and chapters (usually called "Groups" in those days, carrying on the IRE tradition).



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



SEPTEMBER 1970



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

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PAN AM's 747 rates tour encore

The East Bay Subsection meeting-tour of PAN AM facilities on April 27 was so successful there will be another on September 28. The meeting (this time no dinner) is scheduled for 8:00 p.m. at the San Francisco International Airport PAN AM facilities.

PAN AM's 747 is the most stable aircraft ever to go into public service. Its combination of sheer weight, size and power help it weather many of the storms that plague lesser planes and often cause bumpy rides.

It is also one of the quietest to ride in. So quiet, in fact, that a senior PAN AM official riding as one of its first passengers commented that the patter of rain on the windows could be heard while in flight.

The 747 represents evolution in man's saga of flight — a logical progression beyond the 707 and 727. It has adapted all of the better features of today's jets, and introduced many innovations of its own.

Captain Johnnie Warren, of PAN AM, will speak to the East Bay Subsection about the 747. Following his talk, the group will tour the PAN AM facilities. The tour will include such items as: Training Building, Flight Simulators, Emergency equipment training (mock up of plane wing over pool of water), possibly training movies such as Hong Kong land strip, jet pilot movie, 747 movie, grooming room, etc. In addition, the visit will include the Maintenance Hangar Shops and a walk through the plane, if one is available.

Captain Johnnie Warren joined Pan American in November 1941, shortly after graduating from the U.S. Army Air Corps. He flew for PAA in Africa until called back on active duty with the Africa Middle East Wing of the Air Transport Command. During this period of active duty he was a check pilot and earned the Distinguished Flying Cross. Captain Warren returned to PAN AM in 1945 and has been based in San Francisco since December of that year. He has served as an instructor, line pilot and check pilot during this time. Reservations. See Calendar.



Captain Johnnie Warren

East Bay
Subsection
Feature

MEETING CALENDAR

COMMUNICATION TECHNOLOGY/VEHICULAR TECHNOLOGY

SEPT. 18

Story on
page 2

SEPT. 18, Friday, 6:30 PM for tour; 7:30 PM wine tasting; 8:30 PM dinner. Novitiate Winery in Los Gatos (see directions with story). Total price \$7.00 per person. Reservations: Don Kidder, 591-8461, ext. 525 or Jerry Godwin, 434-7700, ext. 4675 by Sept. 16th.

COMPUTER SEPT. 22

Story on
page 4

PARALLEL PROCESSING WITH THE PERFECT SHUFFLE. Dr. Harold Stone, Associate Professor of Electrical Engineering and Computer Science, Stanford University.

SEPT. 22, Tuesday, 8:00 PM, Skilling Auditorium, Stanford (near Durand Building). Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Cathy Morton, 321-3300, ext. 258 by Sept. 21st.

EAST BAY SUBSECTION SEPT. 28

inside
front
cover

TOUR OF PAN AM FACILITIES; DISCUSSION OF PAN AM's 747. Captain Johnnie Warren of Pan Am.

SEPT. 28, Monday, 8:00 PM, Pan Am Facilities, San Francisco International Airport. No dinner. Reservations: Mary Vilter, 399-4974 by Sept. 24th.

ELECTRON DEVICES SEPT. 9

Story on
page 3

CHARGE COUPLED DEVICES. Dr. George E. Smith, Head, Interface Device Dept., Bell Telephone Laboratories, Murray Hill, N.J.

SEPT. 9, Wednesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails: 6:00 PM; dinner: 7:00 PM. Reservations: Section Office, 327-6622.

ENGINEERING IN MEDICINE AND BIOLOGY SEPT. 8

Story on
page 4

TOUR: STANFORD UNIVERSITY HOSPITAL

SEPT. 8, Tuesday, 8:00 PM, Room W-001, Stanford Hospital, Palo Alto. Dinner: 6:00 PM, Red Cottage, 1706 El Camino Real, Menlo Park. Reservations: Harry Miller, 321-1200 ext. 6141.

GOLDEN GATE SUBSECTION SEPT. 21

Story on
page 12

CAMPUS DISORDERS AND OTHER LAW ENFORCEMENT PROBLEMS. Charles O'Brien, Chief Deputy Attorney General, State of California. Luncheon meeting.

SEPT. 21, Monday, 12 noon, Leopard Cafe, 140 Front St., San Francisco. Reservations: M. W. McLaren 764-5456 or Ken Walters, 399-2105 by Sept. 16th.

INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION SEPT. 16

INDUSTRIAL APPLICATIONS OF MINICOMPUTERS. E. H. Stewart, Digital Equipment Corp., Palo Alto.

SEPT. 16, Wednesday, 8:00 PM, Rickey's Hyatt House, University Room, 4219 El Camino Real, Palo Alto. Dinner: 7:00 PM. Reservations: Fran Casalino (408) 289-2365 by Sept. 15th.

MICROWAVE THEORY & TECHNIQUES/ ANTENNAS & PROPAGATION SEPT. 17

Story on
page 9

HIGHLIGHTS OF APOLLO 12 MISSION FILM. Dr. Allan Smith, Chief of the Guidance and Control Systems, NASA, Ames Research Center. Wine tasting by Mirassou Winery. JOINT MEETING. Ladies and guests welcome.

SEPT. 17, Thursday, 8:00 PM, Stanford Research Institute - International Building. 6:00 PM wine tasting; 7:00 PM dinner. Cost: \$5.90 per person. Reservations: Dr. J. D. Bruce, 732-6550 or Section Office, 327-6622 by Sept. 14th.

MICROWAVE THEORY & TECHNIQUES/ ELECTRON DEVICES OCT. 5

Story on
page 9

MICROWAVE INTEGRATED CIRCUITS. Dr. Harold Sobol, Manager, Microwave Microelectronics, RCA Components Div., Somerville, N.J. JOINT MEETING.

OCT. 5, Monday, 8:00 PM, Hewlett-Packard Co., 5301 Stevens Creek Blvd., Santa Clara. Dinner: 6:00 PM, Hojo, Intersection 280 and Stevens Creek Blvd. Reservations: Section Office, 327-6622 by Oct. 1st.

SYSTEMS SCIENCE & CYBERNETICS SEPT. 21

Story on
page 11

THE ROLE OF THE TECHNICAL EXPERT IN MODERN SOCIETY - HIS RESPONSIBILITIES AND LIMITATIONS. PANEL DISCUSSION. Dr. Sidney Drell, SLAC; David Ransom, Pacific Studies Ctr.; Dr. Paul Shields, Technology and Society Committee; Dr. Stephen Zifferblatt, School of Education, Stanford.

SEPT. 21, Monday, 8:00 PM, Stanford University PH 101, Physics Tank, Lomita Mall off Serra St. Dinner: 6:00 PM, Stickney's, Town & Country Village, El Camino at Embarcadero, Palo Alto. Reservations: Section Office, 327-6622 by noon Sept. 18th.

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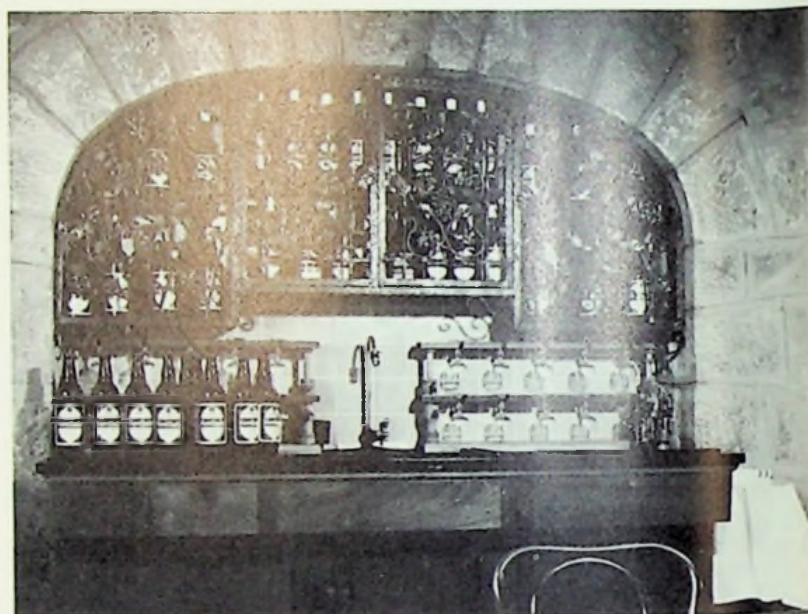
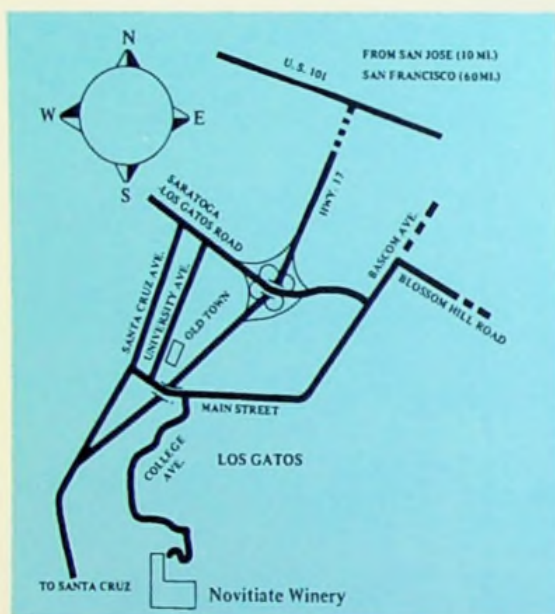
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Tech chapters sponsor winery event

The Novitate Winery will be the location of the Com Tech Chapter's sixth annual Wine Tasting Dinner and Kickoff Meeting, September 18. This year the Vehicular Technology Chapter will co-sponsor the event.

This meeting is primarily a social event to bring together regular members, new members and prospective members of the Tech Groups. Ladies are especially invited. An interesting and informative tour of the facilities will start at 6:30 PM; the wine tasting is scheduled for 7:30 PM; and dinner is scheduled for 8:30 PM. The sitdown, barbecue New York Steak dinner will be catered by Continental Caterers. Following the dinner, the new officers of

both groups will be introduced along with a review of the coming year's program.

Time stands still at the Novitate Winery located high above the village of Los Gatos, in the green foothills of the Santa Cruz Mountains. On the steep slopes, workmen with horse-drawn plows still furrow the vineyards where no tractor can ever reach. Each year the grapes are carefully harvested by hand. After crushing, the young wine is stored in the dimly-lit fermentation cellars. There, under the careful watch of the wine master, the wine ages slowly to maturity.

We will be looking forward to seeing

you on September 18. Reservations are being limited to 120 people, so call early. Reservations must be in by September 16. The cost is \$7.00 per person, payable in advance or at the winery.

To get to the Novitate, follow Hiway 17 south to the Los Gatos/Saratoga turnoff to Hiway 9. At first signal light turn left to University Ave. Follow University to the end and turn left onto Main St. Turn right at the first street (a big white apartment house on corner with gold letters "El Gato Penthouse.") This is on College Ave. Turn and keep to the right on College Ave., follow it to the end and there is the entrance to the winery.

CCDs claim novel structure

Scientists at Bell Telephone Laboratories have recently developed a new class of MOS devices for use in integrated circuits. These new devices are called "Charge Coupled Devices" (CCD's). The basic CCD structure is easier to fabricate than a conventional MOS transistor since it does not involve any diffusion steps. With this simple device structure, a number of imaging, logic, and memory applications have been suggested. For example, it has been claimed that CCD's will allow a factor of ten increase in shift register bit-density over that realized in conventional MOS designs.



Dr. George Smith

Dr. George E. Smith of Bell Telephone Laboratories will speak to the Electron Devices chapter on CCD's on Wednesday, September 9th at Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto.

Dr. Smith was born in White Plains, New York, on May 10, 1930. He received a B.A. in Physics from the University of Pennsylvania in 1955 and an M.S. and Ph.D. in Physics from the University of Chicago in 1956 and 1959, respectively. He joined Bell Telephone Laboratories in 1959 and initially studied the electrical properties and band structure of semimetals. At present, Dr. Smith is Head of the Interface Device Department and his primary interests are in new semiconductor devices and in the device physics of semiconductor-insulator interfaces.

Quality aspects of microelectronics

Last season the PMP Chapter twice sponsored a six-session course in Microelectronics. Both times these sessions were over-subscribed and were well received by those in attendance.

This year, by popular demand, we will present a course on the Quality Aspects of Microelectronics. The course will include such topics as quality control, reliability, and failure mechanisms in monolithic, hybrid and thin film circuits.

The general course outline will include:

1. The physics of packaging – package selection – thermal considerations – general terminology. (Speaker to be announced)
2. Reliability standards and statistics – test considerations – environmental tests – burn in. (C. E. Leake, Lockheed)
3. Bipolar and MOS failure mechanisms. (Don McWilliams, Calif. State College, Los Angeles)
4. Thin films – limitations, tolerances and failure mechanisms. (Weldon Jackson – Hewlett-Packard)
5. Testing – How to test and what to test – functional – dynamic – life tests. (L. G. Reis, Jr., Lockheed)
6. Packaging – future concepts – conclusions. (William Cox, Hugel Industries)

It is planned to begin the course in late October and run through the month of November. Further announcements and details will appear in the October issue of the GRID. The course registration fee will be \$10.00 for the six sessions. For advanced registration please contact Jeff Schlageter, PMP Sect. Treas., Fairchild Semiconductor, 464 Ellis St., Mt. View, 94040. Phone: 962-3881.

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Forster named nuclear science chairman

Julian Forster, a member of this Section, has been elected Chairman for 1970. Mr. Forster is Manager of Requisition Engineering at the Nuclear Instrumentation Department of General Electric in San Jose.

Since 1957, J. Forster has been associated with nuclear power systems engineering. He has specialized in the instrumentation and control of boiling water reactors. For several years he has been a national figure in the develop-



Julian Forster

ment of nuclear power standards. Recently, in conjunction with the Power Group he has been active in the formation of the new Joint Committee on Nuclear Power Standards.

NEW MEMBERS

*The Section welcomes
these new members*

Baer, R. L.	Merriam, M. F.
Banarer, R.	Paz, R. A.
Bartlett, M. R.	Quan, E.
Batley, J. F.	Radnoty, C. K.
Byrne, O. L.	Rees, F. J.
Cooley, G. F.	Regnier, G. S.
Divoky, W. F.	Roennmann, H.
Dowley, M. W.	Sahasrabudhe, A. P.
Fesler, J. M.	Salmond, K. A.
Fleisetter, J. M.	Sandjideh, M.
Foerster, R. E.	Schembri, J. J.
Glynn, C. K.	Silligman, R. E.
Gregory, J. T.	Smith, R. W.
Grochau, G. A.	Soderstrand, M. A.
Haga, E. J.	Sreekakula, R.
Harris, G. G.	Stanford, A. G.
Helmke, F. K.	Stockwell, R. H.
Ho, Bin-Lun	Stoeppel, G.
Hoag, J. W.	Strachan, J. L.
Hornak, T.	Tether, A. J.
Hou, S.	Tomsik, Hermann J.
Kirn, W. H.	Tse, T.
Liechti, C. A.	Utz, P. J.
Maleski, G. J.	Walker, A. D.
McKnight, E. V.	

Efficiency of parallel processing aided for perfect shuffling

The efficiency of parallel processing may be enhanced by wired-in capability for performing a perfect shuffle. Given a vector of N elements, the perfect shuffle of this vector is a vector in which the elements are arranged as if the elements were cards in a deck that had undergone a perfect shuffle. That is the shuffled vector alternates between elements from the first $N/2$ components and the last $N/2$ components of the unshuffled vector.

We indicate by a series of examples that the perfect shuffle is an important interconnection pattern for a parallel processor. The examples include the Fast Fourier Transform, polynomial evaluation, sorting, and matrix transposition. For the FFT and sorting, the rate of growth of computational steps for algorithms that use the perfect shuffle is the least known today, and is somewhat better than the best rate that is known for versions of these algorithms that use the interconnection scheme used in the Illiac IV.

Dr. Stone received his BSE degree from Princeton University in 1960 and his M.S. and Ph.D. degrees from the University of California, Berkeley, in 1961 and 1963, respectively. In 1962 he served as a Consultant to the Electronics Department of the RAND Corporation where he studied problems associated with communication satellites. After completing his dissertation in the field



Harold Stone

of coding theory, he was a Consultant to the Gilliland Instrument Company. He became a Research Engineer in the Command and Control Systems Group of the Boeing Company in 1963 and in November of that year he joined the Computer Techniques Laboratory of Stanford Research Institute. He has been active in the field of design automation and has led the development of a language and a compiler for the translation of logic diagrams into wire lists and parts lists. He has been at Stanford University since 1968 as Acting Associate Professor and as Associate Professor of Electrical Engineering and Computer Science since 1970. Dr. Stone is a member of Sigma Xi and Phi Beta Kappa, and the IEEE. He has served as Assistant Review Editor of the Computer Transactions since 1966.

The Computer Group meeting, scheduled for September 22 in Skilling Auditorium, Stanford University, will begin with a dinner at Rickey's Swiss Chalet. See Calendar for details and reservation information.

Grid

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EMB presents unique program

The direction this year of E-MB will be to discuss and disseminate to the membership current practices and problems related to medicine through a theme for the year. This year our interests will concentrate on "The Hospital and You."

A brief business meeting to introduce newly-elected officers is planned as well as a presentation of the tentative program for the coming year. A diversified calendar of topics and qualified speakers will be offered to interest many facets of engineering and involve the physician and scientist.

A guided tour of four specialty areas in the Stanford University Hospital is scheduled to include: a) Coronary Care Unit; b) Computer assisted Heart Cath and EKG laboratory; c) Clinical labora-

tory and d) Experimental research laboratory.

Unique opportunities will be available to observe existing hardware, current technology and problem areas. Qualified tour hosts will be available to answer questions following the tour when coffee and donuts will be served.

The meeting will be held in the Stanford University Hospital conference room W-001 at 8:00 PM. Please be prompt. Dinner at 6:00 PM at the Red Cottage, 1706 El Camino Real, Menlo Park.

For those coming from out of town use the Embarcadero Road off-ramp from Highway 101, go west on Embarcadero to the Stanford Campus and follow the signs to Stanford University Hospital.

State variables & EE review courses

"Practical Applications of State Variables" and "Review of Electrical Engineering" are among the evening courses to be offered this fall by Continuing Education in Engineering, University of California Extension, Berkeley.

"State Variables" is the first part of a two-term course for circuit design and control engineers who wish to apply advanced mathematical techniques to computer-aided design of linear and non-linear circuits. Taught by Don Parker, senior research engineer at Stanford Research Institute, it will meet from 5 to 7:30 p.m. Mondays, Sept. 28 through Dec. 14, in room C-12 at Menlo-Atherton High School, Ravenswood and Middlefield Rds., Atherton; the enrollment fee is \$75.

The electrical engineering review course, designed to assist in preparation for the State Board examination, will be taught by Zoltan B. Dios, electrical engineer with the Sixth Army utilities branch, and will meet from 7 to 9 p.m. on Tuesdays and Thursdays, Sept. 8 through Nov. 12, in room 3108 of Etcheverry Hall at the UC campus in Berkeley; the fee is \$75.

Further details of these and other courses — including courses in operations research techniques, engineering statistics, engineering computer applications and related subjects — may be obtained by writing to Continuing Education in Engineering, University of California Extension, 2223 Fulton St., Berkeley 94720, or calling (415) 642-4151.

New Action for IE & CI

A local chapter of this group is being revitalized. Plans are being formulated, calling for programs of current interest in the fields of industrial electronics and instrumentation, announcements of which will be made in the forthcoming issues of the GRID. The officers of this local group chapter are listed in the directory portion of this issue of GRID and may be contacted for further information.

Programs already in the planning stage include such topics as: Industrial Application of Minicomputers, Intrinsic Safety, Lockheed Underseas Drilling Platform and Noise in Industrial Equipment.

pecial issues for grid

In an effort to improve GRID editorial, making it a more effective vehicle of information for our readers, we are introducing "Special Issues." Each issue of the GRID this year, October through June, will feature one or more of the disciplines pertinent to local Group Chapters within electrical and electronic engineering. This new plan will encourage Chapters dealing with a particular field to delve into it more deeply in the GRID with stories on latest developments, significant changes, human aspects of the area, all of the facets that make each topic stimulating and relevant. We are very hopeful that this new approach will offer engineers and scientists an opportunity to enlarge their scope of interest.

GRID's concentrated readership includes engineers in 31 electrical/electronics related disciplines, many of whom are Senior Members or Fellows holding key assignments in Bay Area industry or research and development laboratories. In addition to these established professionals, GRID is also read by more than 1,000 members of IEEE student branches in colleges and universities in the Bay Area. Advertisers and companies dealing with products or services in each particular field will have an opportunity to take advantage of these "Special Issues" in their advertising plans, zeroing in on the heart of the important northern California electrical/electronics and management community.

The following is a tentative schedule for our "Special Issues." We welcome recommendations and suggestions for further improvement.

ISSUE	DISCIPLINE	CONTRIBUTING CHAPTERS
October	Instrumentation, Electronic Control and Measurement	IE&CI, IM, AC, IGA
November	Computer and Information Theory	Computer, IT
December	Power	Power, Magnetic, EMC
January	Communications, COORDINATE WITH: COMTEC Seminar	A&P, A&E, MTT, CT, COMTEC, IT, VT
February	Solid-State Devices and Circuits Micro-Electronics,	PMP, Reliability ED
March	Aerospace and Electronic Systems	A, ES
April	Medicine and Biology,	EMB
May	Nuclear Science	NS
June	Systems Science and Cybernetics	SSC

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George R. Oeh

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John Peschon

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Ronald J. Whittier

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Continued on page 10

Program Coordination Meeting

On July 15, 1970 a Section Program Coordination Meeting was held at Stanford Research Institute in Menlo Park. Our new Chairman Don Pederson welcomed the group and introduced all of the new Section Officers plus several members of EXCOM.

Vice Chairman Larry FitzSimmons reported that during our last fiscal year 1969-1970, there was a 27% increase in our Group Chapter, Subsection and Section meetings to 166. There was also a corresponding increase in attendance to some 8,400 persons. Congratulations are in order to our Group Chapters for their splendid organization,

planning and technical programs that produced this increase in value to our many Section members.

The relations among EXCOM, the Subsections and the Group Chapters was discussed, our meeting rebates reviewed and the Services of our Section office and the GRID were explained. There was excellent attendance by the Subsections and Group Chapters with 18 Chairmen present, 4 Vice Chairmen and 5 other elected officers. After substantial discussion, the following 1970-1971 Program Schedule was agreed to:

SUBSECTIONS AND CHAPTERS PROGRAM SCHEDULE SAN FRANCISCO SECTION, 1970-71

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	SATURDAY
FIRST	----- THIS WEEK HELD OPEN TO INSURE GRID DELIVERY -----				
SECOND	SCVSS	Electron Devices Engineering in Medicine & Biology Power Magnetics	Engineering Management †Microwave Theory & Techniques	Industry & General Application Reliability	Education (Oct. & Nov. only)
THIRD	Vehicular Technology Electromagnetic Compatibility Systems Science & Cybernetics	Automatic Control Nuclear Science Communication Technology	Industrial Electro- nics & Control Instrumentation Circuit Theory Antennas & Propagation	Audio & Electro- Acoustics Information Theory Aerospace & Electronic Systems	
FOURTH	EBSS	+Parts, Materials & Packaging Computer	*GGSS		Education (Rest of fiscal yr.)

† Exception — Will be held on Monday on Oct. 5, 1970

* Noon meetings are OK any day of the month.

+ P.M. & P. training class to be held every Tuesday night during Oct. & Nov. in 1970.



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Avantek's new VP

Dr. Forrest F. Fulton, Jr., has joined Avantek, Inc., Santa Clara, California, as Vice President of Engineering.

He brings to Avantek almost 20 years of experience in the analysis, design and integration of advanced electronic systems, including satellite communications, communications and control systems, telemetry links, signal processing, storage-retrieval and data processing.

The professional activities of Dr. Fulton include Senior Membership in the IEEE.

He is the author of numerous papers and holds several patents related to advanced electronics hardware.

MTT holds special meetings

The Microwave Theory & Techniques Chapter will be holding two meetings. The first, on September 17th, will be joined with the Antennas & Propagation Chapter. This kick-off meeting, to be held at SRI's International Building, will begin with wine tasting by Mirassou Winery. Dinner will be followed by a 28-minute color film entitled "Apollo 12: Pinpoint for Science." This film illustrates the highlights of the Apollo 12 mission. Through commentary by the astronauts during their flight, and selected motion and still pictures taken by them, the film provides an eye-witness review of their historic journey to a pinpoint landing on the Ocean of



Dr. Allan Smith

Storms. Dr. Allan Smith, Chief of the Guidance and Control Systems Branch at NASA's Ames Research Center, will be the guest speaker following the film. Dr. Smith has specialized in automatic flight control systems, servo mechanisms and variable stability aircraft. He is author of several papers in his various fields. Dr. Smith is a member of the AIAA and IEEE. During 1962-1963, he was attached to the NASA Headquarters Office of Long Range Plans in Washington, D.C. He was also a member of the NASA Electronic Laboratory Area Survey Committee in Washington earlier this year.

This unusual photograph, taken during the second Apollo 12 extra-vehicular activity (EVA-2), shows two U.S. spacecraft on the surface of the Moon. The Apollo 12 Lunar Module (LM) is in the background. Here Astronaut Alan L. Bean is shown examining the unmanned Surveyor III spacecraft. The Apollo 12 LM, with Astronauts Charles Conrad Jr., and Alan L. Bean aboard, landed about 600 feet from Surveyor III in the Ocean of Storms.



The second meeting will be held jointly with the Electron Devices Chapter on Monday, October 5th, at the Santa Clara Division of Hewlett Packard. Dr. Harold Sobol, Manager of



Dr. Harold Sobol

Microwave Microelectronics, RCA Components Division in Somerville, N.J., will be the featured speaker. Dr. Sobol will speak on the state-of-the-art of microwave integrated circuits (MICs). Nearly every medium and low-power microwave function has been performed with MICs. The various technologies and circuit techniques used in current MICs will be discussed. Electrical and material design considerations will be given. Examples of circuits illustrating the different approaches to integrating microwave circuits will be shown, and examples of subsystems and systems constructed with MIC components will be presented.

Dr. Sobol worked on radar and traveling-wave tube studies at the University of Michigan's Willow Run and Electron Physics Laboratories from 1952 to 1959. In 1960, he joined the IBM Watson Research Center and was involved with work on high-speed superconducting circuits. He joined RCA Laboratories in 1962 where he worked on plasmas, klystrons, solid-state devices and microwave integrated circuits.

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Don Weller



Stuart D. Winter



Charles E. Leake



Martin A. Fischler

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RELIABILITY: Chairman: *C. E. Leake*, LMSC, Dept. 62-05, B/152, Sunnyvale, 94088; 742-0824. Vice Chairman: *W. L. Finch*, LMSC, Dept. 62-05, B/152, Sunnyvale, 94088; 743-1577. Secretary-Treasurer: *G. Bower*, Fairchild Semiconductor, Mail Sta. 4-117, 313 Fairchild Drive, Mt. View, 94040; 962-4111. Program Chairman: *P. J. Guillot*, LMSC, Dept. 62-05, B/152, Sunnyvale, 94088; 742-7026.

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Fresno State College, EE Department, Fresno, 93710; 222-5161. Counselor: *James H. Smith*.

Heald Engineering College, 1215 Van Ness Ave., San Francisco, 94109; 771-9192. Counselor: *M. A. Tzytovitch*.



R. B. Marxheimer



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L. Padulo



A. R. Neureuther

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University of California, EE Department, Berkeley, 94720; 642-3306. Counselor: *A. R. Neureuther*.



T. J. Healy



J. M. Bouldry

University of Santa Clara, Santa Clara 95053; 246-3200 ext. 227. Counselor: *T. J. Healy*.

U.S. Naval Postgraduate School, Monterey, 93940; 646-2254. Counselor: *J. M. Bouldry*.

The technical expert in modern society

The September meeting of the Systems Science and Cybernetics Chapter will feature a panel discussion on "The Role of the Technical Expert in Modern Society - His Responsibilities and Limitations."

In the technical arena, "truth" is established by an overwhelming consensus of the scientific community. Unless the consensus is overwhelming, that is, unless there are extremely few reasonable scientists likely to disagree when presented with the facts, analyses, and uncertainties, the "technical truth" in the area under consideration has not been reached. However, there are many problem areas today in which experts differ as to the technical truth, areas such as ABM, dangers of radiation, and effects of flood control projects. The panel will discuss the problems of engineering truth in competitive environments - problems involving public affairs. They will examine questions such as:

- What formal review mechanisms should be set up for monitoring expert advice?
- What are the limits to impartial judgments in technical questions?
- What is the role of the professional society in this area?
- Can one identify for the public when an expert's expertise stops and his personal opinion begins?
- What are acceptable credentials for a "technical expert"?
- What happens to scientific impartiality when the investigator is directly affected by his investigations?

The panel will consist of Dr. Sidney Drell, Deputy Director of SLAC, David Ransom, Pacific Studies Center, Dr. Paul Shields, Technology and Society Committee (TASC), and Dr. Stephen Zifferblatt, School of Education, Stanford University.

The meeting will be held September 221 at 8 pm at Stickney's in Palo Alto. Reservations should be made, see calendar for details.

CT offers 'One Day' courses

A series of one-day short courses on current topics in solid state circuits field will be offered by the IEEE Circuit Theory Group during the year 1970-71. These courses will be given on Saturdays at various locations in the Bay Area.

The first of the series, "Linear Integrated Circuits" will try to familiarize the practicing electronics engineer with the design and the applications of the state-of-the-art linear integrated circuits. The topics to be covered include: Basic Design Guidelines for Linear Integrated Circuits; Design Considerations for Operational Amplifiers-Integrated Regulator, Sense Amp and Comparator Circuits; Digital/Analog Interface Circuits; Analog Multipliers and Modulators; and Frequency-selective ICs-Phase-Lock Techniques.

The instructor will be Alan B. Grebene, Manager of Circuit Research, Signetics Corporation. Dr. Grebene received his MSEE from U.C. Berkeley in 1963 and his Ph.D. from Rensselaer Polytechnic Institute in 1968. He was a member of the Technical Staff at Fairchild Semiconductor from 1963 to

1964 when he joined Sprague Electric Company. He has published numerous papers on integrated circuits and holds several U.S. patents. In 1969-1970 he served as a Lecturer in the Department of Electrical Engineering at the University of Santa Clara.

Guest Lecturers will be Mr. Robert J. Widlar, Director of Advanced Circuit Development, National Semiconductor Corporation and Dr. Garth H. Wilson, Vice-President of Engineering, Precision Monolithics.

The fee for the course is \$10.00 for IEEE regular members, \$5.00 for student members and \$20.00 for non-members. The fee also includes the lecture notes to be handed out. The enrollment for this course is limited. Therefore, persons interested in taking this course are urged to enroll early by completing and mailing the registration form below. Deadline for registration for the "Linear Integrated Circuit" course is October 1. For additional information concerning the program, write or call Dr. A. B. Grebene, Signetics Corporation, 811 E. Arques Avenue, Sunnyvale, California 94086; (408) 739-7700.

Registration Form

(Should be mailed before October 1, 1970)

Mail to: Mr. Dale Nielsen
c/o IEEE San Francisco Section Office
Suite 2210, 701 Welch Road
Palo Alto, California 94304

Enclosed is check (payable to San Francisco Circuit Theory Group) in the amount of \$..... to cover the enrollment fee.

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Law enforcement & campus problems

The September 21st meeting of the Golden Gate Subsection will feature a special speaker, Charles A. O'Brien, California's Chief Deputy Attorney General.

Mr. O'Brien, a Harvard Law Graduate of 1953, directs one of the largest legal staffs in the nation — over 260 attorneys. In addition, he oversees the operations of the California Department of Justice's law enforcement division with a staff of 1000 specialists in criminal investigations and organized crime, narcotics enforcement, criminal research, crime laboratories and law enforcement computer applications.

The Chief Deputy entered the Department of Justice as an Assistant Attorney General in 1959 after six years of private practice in San Francisco. He was later named Chief Assistant Attorney General in Charge of the Division of Criminal Law and Enforcement.

In 1961, he served a year as Executive Secretary to Governor Edmund Brown before being named to his present position. He has served as Chief Deputy under Attorneys General Thomas Lynch and Stanley Mosk.



Charles O'Brien

Mr. O'Brien has actively headed the Attorney General's attack on environmental pollution including the billion-dollar lawsuit for the Santa Barbara oil slick and efforts against air and water pollution.

Speaking on "Campus Disorders and Other Law Enforcement Problems," the Chief Deputy will be using information gathered on visits to over 30 college campuses in the past two years where he has worked to bring college administrators and students together in dealing with campus crises and has advised on law enforcement response to campus problems. The meeting will be a noon luncheon at the Leopard Cafe in San Francisco, see calendar for details.

Power group's new education course

This fall the Power Group will offer another new class under its professional education program. The course will be entitled "Utility System Planning" and will cover such topics as Engineering Economics; Load Projections; generation, Transmission, and Distribution System Analysis; Land Acquisition and Construction. The classes will begin in mid-September. The time, place, and evening will be announced later through mailings to Power Group members and company bulletin boards.

The registration fee will be \$7.50 for IEEE members and \$10.00 for non-members. If enrollment limitations are required, IEEE members will be given preference. Power Group members will receive application forms along with further details by mail.

For more information and registration, contact Bill Slimak at Pacific Gas and Electric Company, 245 Market Street, Room 1102, San Francisco, California 94106. Telephone: 781-4211, Extension 2529.

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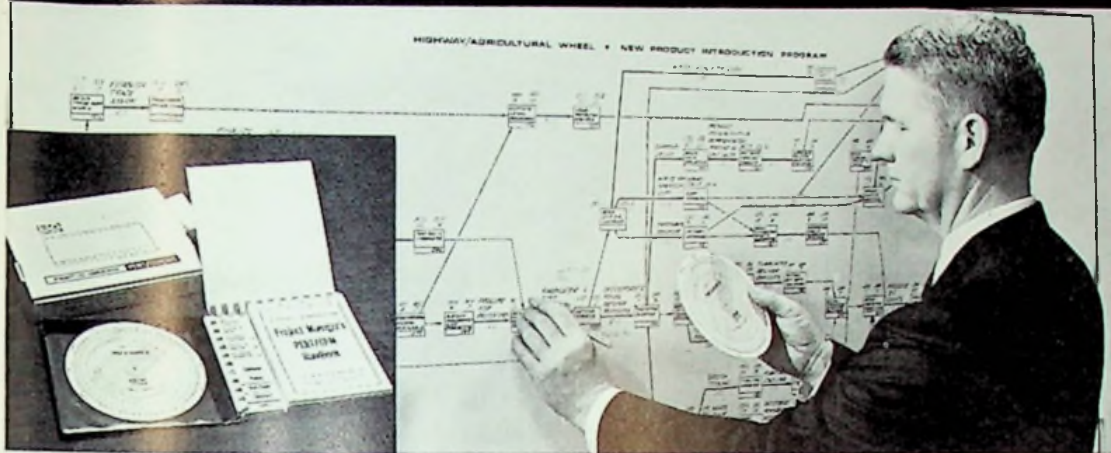
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INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION GROUP MEETING 16 SEPTEMBER 1970

On 16 September, the Industrial Electronics & Control Instrumentation Group will hold a technical session at Rickey's Hyatt House in the University Room on Computer Applications in Industry. The speaker will be Mr. Edward Stuart of Digital Equipment Corporation. Mr. Stuart is a graduate of Massachusetts Institute of Technology, and is a marketing specialist at D.E.C. He has had considerable experience in developing and applying computers to science and industry. The subject of his talk will be directed toward miniaturized computers. The discussion will be a general talk directed to instrumentation design and application engineers, covering general functional operation of computers, a review of typical industrial applications, and a discussion of criteria used in the selection of computers. The talk will also include some interesting software information of use to users of these digital machines.

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<i>Voltmeters</i>	. . .	Yes sir, I'll connect you with an Instrumentation Staff Engineer.

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