

EDITOR'S PROFILE of this issue

from a historical perspective ...

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

October, 1972:

Cover: A high-rise building in San Francisco, a topic for the Golden Gate Subsection. More on page 2.

Page 4: IEEE dues are \$25/year.

Page 5: A weekend Short Course is organized on starting your own business – just what you'd expect in our newly designated "Silicon Valley".



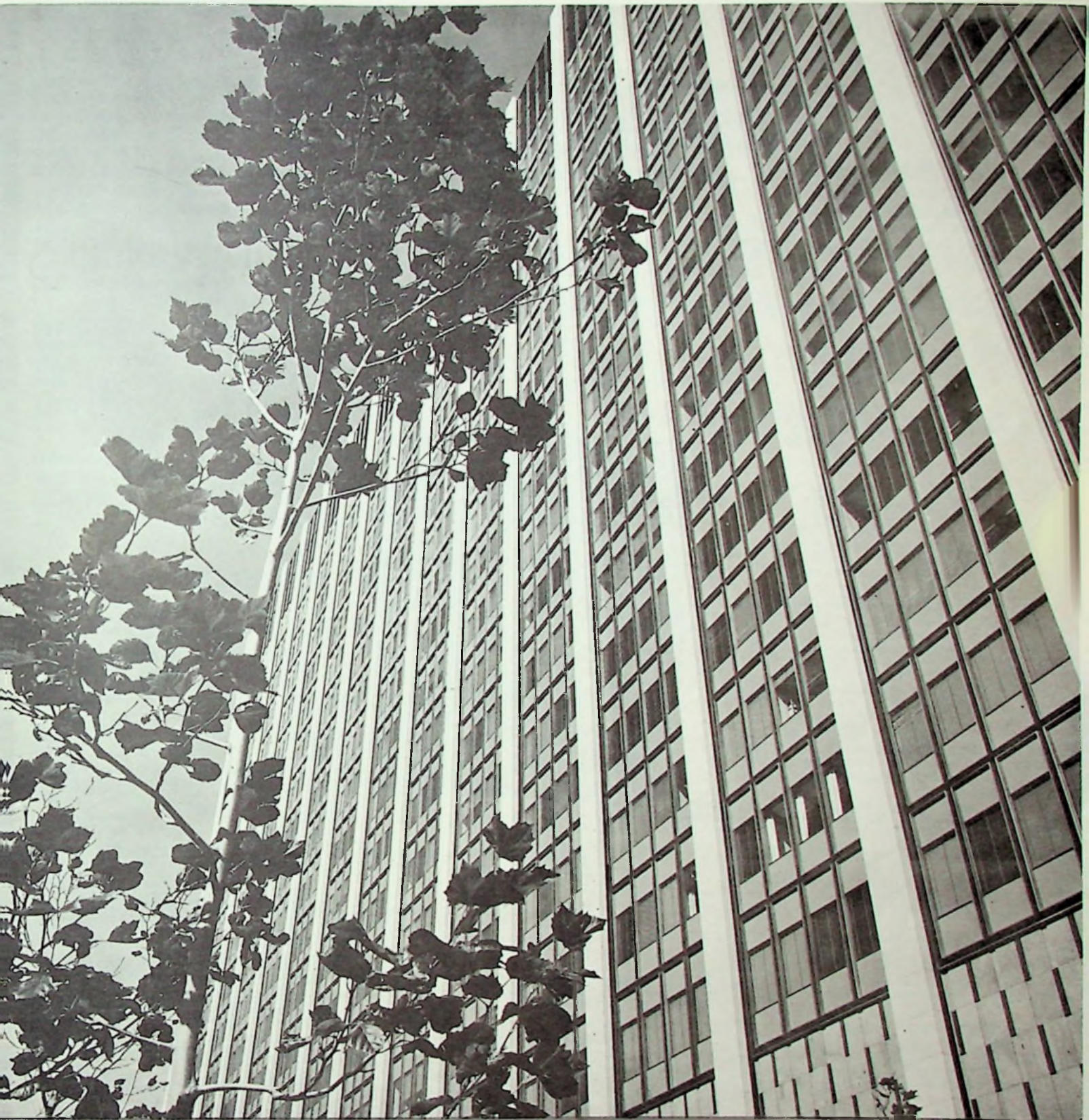
Archive of available SF Bay Area GRID Magazines is at this location:

https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

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

April, 2025

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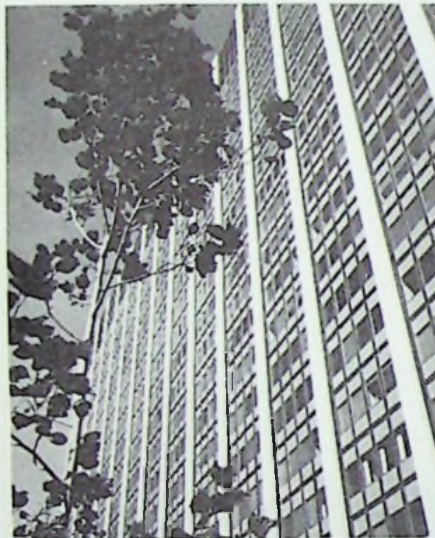
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THE COVER STORY

Concentration of high rise buildings in the small area of San Francisco creates increased requirements for the various services. This provides the interesting Cover Story for the October Newsletter.

The Golden Gate Subsection presents a noon luncheon meeting in the PG&E building on this interesting subject.



GGSS—NEW BULK & HEIGHT LIMIT FOR SAN FRANCISCO SKYLINE

Speaker: Mr. Peter Svirsky, San Francisco Planning Department. City planner by experience and lawyer by trade. Mr. Svirsky was instrumental in preparing San Francisco's URBAN DESIGN PLAN and the NEW ZONING ORDINANCE implementing bulk and height limits on buildings in our City. Remember Proposition "T"? The Manhattanization of our city? It looks as if the city WHO KNOWS HOW has come up with a good zoning law. Come to the meeting and hear what Peter Svirsky has to say.

Guests are invited, RESERVATIONS: 781-4211, Ext 1772 or 3371, by Tuesday, October 17th, Noon. Meeting will be Wednesday, October 18, 1972, Noon, at PG&E Headquarters, 77 Beale St., San Francisco, 3rd Floor; follow the signs to Room 301.

IF YOU ARE LOST, the CATERED luncheon is on the same floor as our Company cafeteria; use elevators 1st to 3rd floor.



WINCON 73 FEB 13-15, LOS ANGELES

M. D. Margolis, president of North American Rockwell's Autonetics Division, will serve as general chairman of the 1973 Winter Convention on Aerospace and Electronic Systems (WINCON) to be held next February 13-15 at the International Hotel in Los Angeles.

Now in its 14th year, WINCON provides leaders in government, industry and education with an annual forum for discussing current activities and disclosing recent advances in systems-oriented technology. It is sponsored jointly by the Los Angeles Council of the Institute of Electrical and Electronic Engineers and IEEE's Aerospace and Electronic Systems Group.



MEETING CALENDAR

AEROSPACE & ELECTRONIC SYSTEMS

OCT. 19 and 26, Thursdays, 6:30 PM. Meet at Control Center, 333 Grant Ave., San Francisco. No dinner. Reservations: Pat Hoppe, (415) 326-4350 x 6142.

Story on page 6

TOUR OF PT&T TELEVISION CONTROL CENTER.

conducted by Gary Fields of PT&T. Limited to 16 persons per tour.

ANTENNAS & PROPAGATION

OCT. 12, Thursday, 8:00 PM, Lockheed Research Lab Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Cocktails: 5:30 PM; dinner 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No reservations required.

Story on page 6

A BROADBAND PHASED ARRAY.

R. E. Franks, Head of Antenna Dept., ESL, Inc., Sunnyvale.

CIRCUIT THEORY

NOV. 11 and 12, Saturday and Sunday 9 AM, Slac Auditorium, 2575 Sand Hill Road, Menlo Park. For registration information see form with story. For further information call Les Besser (415) 593-8491 or Don Dible (408) 248-7770.

Story on page 5

"WEEKEND SHORT COURSE" on HOW TO START AND FINANCE A NEW BUSINESS.

Program faculty of 16 small business experts.

COMMUNICATIONS SOCIETY

OCT. 17, Tuesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Dinner: 6:30 PM. Reservations: Dick Sherman (415) 326-4350 x 4104 or Ed Carr (415) 399-4189.

Story on page 8

WESTERN UNION'S NATIONWIDE DIGITAL TRANSMISSION NETWORK - A PROGRESS REPORT.

Russell DeWitt, Manager, Time Div. Systems Engineering, Western Union, Mahwah, N.J.

COMPUTER SOCIETY/ UNIV. OF SANTA CLARA

OCT. 7, 9:00 AM, Saturday, Daly Science Room 207, University of Santa Clara. See story for registration information.

Story on page 6

ONE DAY SHORT COURSE ON MINI COMPUTERS.

Dr. Fred Clegg, Organizer.

COMPUTER SOCIETY

OCT. 24, Details of this meeting will be announced to Computer members by mail.

Story on page 8

DIRECT DISTANCE DIALING WITH A CONTROL COMPUTER.

Dr. Manesh Shah, IBM Corp., Menlo Park.

CONTROL SYSTEMS SOCIETY

OCT. 25, Wednesday, 8:00 PM, Engineering Center, ME 551, University of Santa Clara. Dinner: 6:15 PM, Mariannes', 2500 El Camino near San Tomas Expressway, Santa Clara. No reservations required.

Story on page 8

DIRECT DISTANCE DIALING WITH A CONTROL COMPUTER.

Dr. Manesh Shah, IBM Corp., Menlo Park.

EAST BAY SUBSECTION

OCT. 17, Tuesday, 7:30 PM. Meet at Hanger #6 on Earhart Road by Oakland Airport. No dinner. Reservations: Hadi Monsef (415) 764-6000 or Jerry Parker (415) 835-8500 x 327.

Story on page 4

TOUR OF WORLD AIRWAYS FACILITIES.

ELECTROMAGNETIC COMPATIBILITY/JOINT MEETING WITH COMMUNICATIONS SOCIETY

OCT. 16, Monday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails: 5:00 PM, dinner at 6:45 PM. Reservations: Sue Davis (415) 493-3231 x 243 by Oct. 10.

Story on page 4

ELECTROMAGNETIC PULSE SIMULATION AND TECHNIQUES.

Dr. Gaeten Richard, President of Electromagnetic Processes, Inc.

ELECTRON DEVICES

OCT. 17, Tuesday, 8:00 PM, Brave Bull of Los Altos, 4390 El Camino Real, Los Altos. Dinner: 7:00 PM. Reservations: Section Office (415) 327-8622.

Story on page 8

BARITT DIODES.

Dr. Joseph Barrera, Hewlett-Packard Co., Palo Alto.

ENGINEERING IN MEDICINE & BIOLOGY

OCT. 10, Tuesday, 8:00 PM, U.C. Medical Center - Health Sciences West Tower, Room 300. No dinner.

Story on page 7

IMPLANTABLE, PNEUMATICALLY POWERED ARTIFICIAL HEART.

Dr. W. Carlyle Small, Jr., Chief Resident, Cardiothoracic Surgery, U.C. Medical Ctr., San Francisco; Paul K. Davis, President, Pacific Roller Die Co., Hayward.

GOLDEN GATE SUBSECTION

OCT. 18, Wednesday, 12 noon, 3rd floor PG&E Bldg., 77 Beale St., Room 301. Lunch catered in the room. - Follow the signs. Reservations: (415) 781-4211 x 1772 or 3371 by noon Oct. 17th.

Story on page 2

THE NEW BULK AND HEIGHT LIMITS FOR BUILDINGS IN SAN FRANCISCO.

Peter Svirsky, Planner, S.F. Planning Dept.

INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION

OCT. 18, Wednesday, 8:00 PM, University Room, Rickey's Hyatt House, 4219 El Camino Real, Palo Alto. Cocktails: 6:00 PM; dinner 6:45 PM. Reservations: (408) 289-2218, Nancy Lee.

Story on page 7

NEW TECHNIQUES IN SCR SWITCHING.

Don Partridge, Owner and Technical Director, Peripheral Power Systems.

INDUSTRIAL APPLICATION SOCIETY

OCT. 24, Tuesday, 8:00 PM. Meet at Hayward Shop, 500 Industrial Parkway West (East of Nimitz), Hayward. No dinner. Reservations: Frank Trayer (415) 431-7701; Ted Bubb (415) 781-1177 or Tom Googin (415) 982-2442 by Oct. 19th.

FIELD TRIP TO BART'S HAYWARD SHOPS

INFORMATION THEORY

OCT. 18, Monday, 8:30 PM, SRI Conference Room B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: Tong's, 1037 El Camino, Menlo Park. Reservations: Mrs. Ann Bellan, (415) 321-3300 x 247 by Oct. 13th.

Story on page 6

STOCHASTIC LANGUAGES AND THEIR ENGINEERING APPLICATIONS.

Prof. King-Sun Fu, visiting Prof. of EE, Stanford University.

MAGNETICS

OCT. 26, Thursday, 8:00 PM, Hewlett-Packard Auditorium, 5301 Stevens Creek Blvd., Santa Clara. No dinner.

Story on page 7

A REVIEW OF 1972 INTERMAG BY A SELECTED PANEL OF MEMBERS WHO ATTENDED THE CONFERENCE.

PARTS, HYBRIDS & PACKAGING

OCT. 18 and 25, Wednesdays, 7:30 to 8:30 PM, Hewlett-Packard Auditorium, 5301 Stevens Creek Blvd., Santa Clara. Registration fee \$15.00. Call Jim Ostendorf (415) 941-0336 or Bill Littell (415) 326-1970 for advance registration.

Story on page 6

A SIX-SESSION COURSE on ADVANCED INTEGRATED CIRCUIT TECHNOLOGY.

Session 1, Oct. 17: ISOPLANAR by Bill Baker, Fairchild. Session 2, Oct. 25: ION IMPLANT MOS by Bob Crawford, Mostek.

POWER ENGINEERING SOCIETY

OCT. 10, Tuesday, 7:30 PM, Engineers Club, 160 Sansome St., S.F. Cocktails: 5:30 PM, dinner 6:30 PM. For dinner reservations call Engineers Club (415) 421-3184.

Story on page 5

NUCLEAR POWER PLANT SAFETY.

Dr. John Hench, Atomic Power Equipment Dept., General Electric Co.

RELIABILITY

OCT. 18, Wednesday, 8:00 PM, Physics Lecture Hall PH 104, Stanford University. Dinner: 8:30 PM, Stanford View Restaurant, El Camino & Stanford Ave., Palo Alto. Reservations: Phil Guillot (408) 742-9371 by Oct. 17th.

Story on page 8

ILLIAC IV RELIABILITY GOALS.

Aldon L. Long, ILLIAC IV Project, Product Assurance Mgr., Burroughs Corp.

SYSTEMS MAN & CYBERNETICS

OCT. 18, Wednesday, 8:00 PM, SRI Conference Room B, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, Red Cottage, 1706 El Camino, Menlo Park. Reservations: Section Office (415) 327-8622 by Oct. 13th.

Story on page 4

FORECASTING TRANSPORTATION DEMAND.

Dr. John Billheimer, Systan, Inc., Los Altos.



**SMC – FORECASTING
TRANSPORTATION DEMAND**



Dr. John Billheimer will speak on "Forecasting Transportation Demand", continuing this year's SMC theme, "technological forecasting." Transportation planning is a forecasting area which has a profound effect on each of us, and Dr. Billheimer will guide us through this murky area. He will cover both theory and practice, pointing out where the two diverge.

Dr. Billheimer received his B.S. from the University of Detroit, his M.S. E.E. from M.I.T., and his Ph.D. in Industrial Engineering from Stanford in 1971. While at Stanford Research Institute from 1963-1972, he worked on the determination of optimal station spacing and route configurations for innovative mass transit systems, consulted on the 1972 National Transportation Needs Study, developed and demonstrated comprehensive statewide transportation planning techniques, and formulated and evaluated alternative crosstown people-mover systems for Manhattan. At the present time he is a Senior Associate at Systan, Inc. Los Altos, performing operations research and transportation system studies.

Note that the meeting will be held on Wednesday, Oct. 18, a change in our usual meeting date, made to accommodate the speaker's busy schedule. See Calendar for details.

IEEE VOTING MEMBERS – VOTE!

The June 1972 issue of IEEE SPECTRUM (pages 38 - 43) contained a special report outlining the background and explaining the proposed amendments to the IEEE Constitution. The Board of Directors urges all voting members to consider the issues and cast their ballots which will be received in early September. The members, by their votes, will decide what course the IEEE should take. All voting members are encouraged to exercise their voting privilege this year!



**JOIN IEEE NOW!
YOU'LL GET 15 MONTHS
FOR THE PRICE OF 12**

If you know an engineer who is not a member of IEEE, persuade him to join now, so he will get 15 months' membership (until Dec. 31, 1973) for one year's dues. He will pay the present \$25 dues assessment prevailing when he joins, and there will be no regional assessment to pay. This is a great bargain, but prospective members should join promptly, since the advantage dwindles month by month. Any new membership applications received by Dec. 31, 1972 will receive the \$25 rate for 1973. This is important for new members, for there may be an increase in dues for 1973.

**EBSS—TOUR OF
WORLD AIRWAYS FACILITIES**

The East Bay Subsection has arranged a tour of the World Airways operation and maintenance facilities in Oakland International Airport for Tuesday, October 17th at 7:30 PM. World Airways has the rank of largest carrier in the Air Charter Industry and America's Third Largest International Airline among Charter and Scheduled Operators. The Airways maintenance facilities is not only serving its own jet fleets but has maintenance contracts with some fifteen other major Airline Companies.

We will also have a chance to see the new World Air Center which is presently under construction. This massive structure with some eight acres under roof will be one of the first facilities in the U.S. designed specifically for maintenance of the largest of today's and tomorrow's jetliners and new generation air transports.

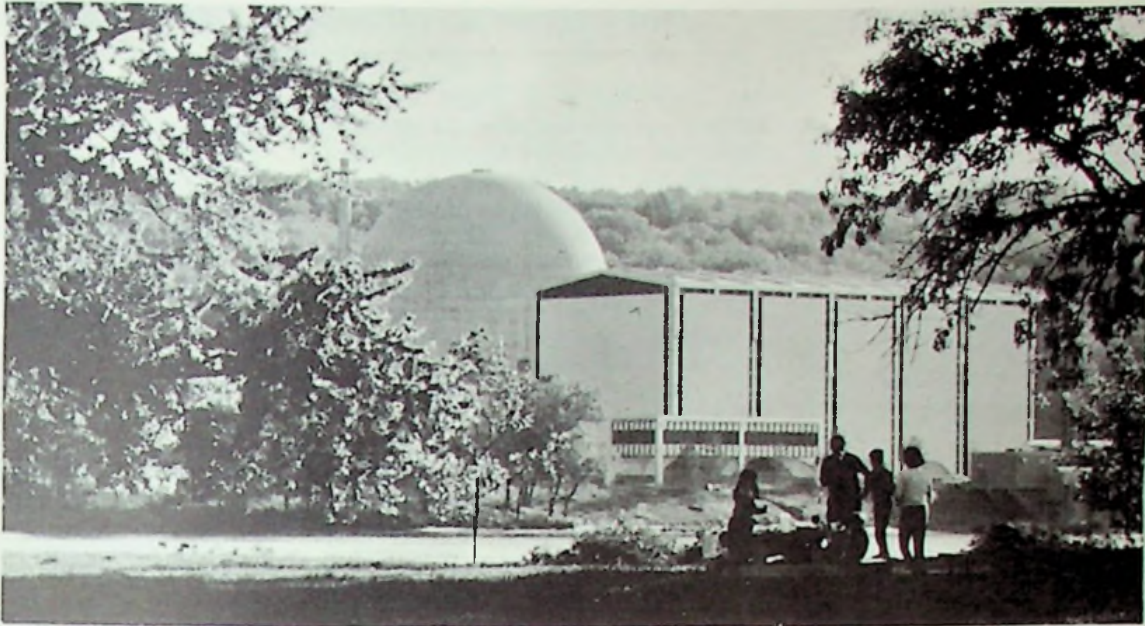
The tour will begin at 7:30 PM on Tuesday, October 17th at Hanger #6 on Earhart Road by Oakland International Airport. Please make reservations by calling Mr. Hadi Monsef, Bechtel Corporation, 764-6000 or Mr. Jerry Parker, PG&E Oakland at 835-8500, Ext. 327.

**EMC—ELECTROMAGNETIC PULSE
SIMULATION & TECHNIQUES**

This lecture will present a review of electromagnetic pulse techniques, and will look at problems associated with producing a valid simulation for test objects of different sizes. Four different simulation cases will be covered, and test plans, instrumentation requirements, data reduction processes will be discussed.

The speaker will be Dr. Gaeten Richard, President of Electro Magnetic Processes, Inc. This organization is a group of electromagnetic radiation experts, and Dr. Richard's activity now is centered in electromagnetic pulse simulation.

This will be a joint meeting with the Communications Society.



A FAMILY PICNIC ADJACENT TO AN OPERATING NUCLEAR POWER PLANT

**PES – NUCLEAR POWER PLANT
SAFETY**

Nuclear power plants offer the nation a proven source of clean, reliable electric energy to meet steadily increasing power demands. With projected shortages of conventional fuel and concern for the environment being topics of current discussion and high public interest, the engineer today is often questioned about nuclear power plants. In particular their safety and safety features are matters of common concern.

To become informed of the many aspects of nuclear power plant safety, the San Francisco Chapter of IEEE Power Engineering Society has scheduled this topic for its first 1972-73 technical meeting. The guest speaker will be Dr. John E. Hench of the Atomic Power Equipment Department of the General Electric Company. Dr. Hench received his PhD degree from Stanford University and is currently responsible for establishing all functional design requirements defining the Boiling Water Reactor Emergency Core Cooling Systems network, issuing control functional specifications, and determining and defending its overall performance.

CT-START YOUR OWN BUSINESS SHORT-COURSE PLANNED

A weekend short-course on "How to Start and Finance a New Business" will be presented at the Stanford Linear Accelerator Center Auditorium on November 11 and 12, sponsored by the Circuit Theory Chapter of the IEEE in cooperation with The Entrepreneur Press.

A program faculty of 16 small business experts has been assembled for this purpose. The first day's presentation will include the following subjects: "Company-Sponsored Entrepreneurship, the Alternative to Spinoffs," "Idea Protection, Employment Contracts and Liability of the Entrepreneur," "The Founding Team and the Board of Directors," "Sources of Help in Preparing a Business Plan," "How to Prepare a Market Study and Plan Market Strategy," and "How to Prepare Pro Forma Financial Statements."

The second day will be set aside for the subject of "Sources of Capital," and speakers will include attorneys, investment bankers, venture capitalists, commercial bankers and other representatives of financial institutions.

Admission to the program will be \$45 for regular IEEE members, \$35 for student and unemployed IEEE members, and \$55 for non-members. All attendees will receive a complimentary copy of the book *Up Your OWN Organization! A Handbook for*

the Employed, the Unemployed, and the Self-Employed on How to Start and Finance a New Business, by Donald M. Dible, refreshments and lunch on both days.

Advance registration is required which can be done by using the form below. For further information call: Les Besser at (415) 593-8491 or Don Dible at (408) 248-7770.

**CIRCUIT THEORY GROUP SHORT COURSE
ON START YOUR OWN BUSINESS
REGISTRATION**

(Should be received before November 6, 1972)

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

Enclosed is check (payable to San Francisco G-CT Chapter) in amount of \$ _____ to cover enrollment fee.

Name _____

Home or Bus. Address _____
(Street)

(City, State and Zip) _____

Bus. Phone _____

IEEE Affiliation, _____ Member

_____ Student Member or Unemployed

_____ Non-Member

IEEE Membership No. _____

1973 WESTERN REGION CONFERENCE ON MINICOMPUTERS AND THEIR APPLICATIONS

Honolulu, Hawaii, has been selected as the site for the 1973 Western Region Conference on Minicomputers and Their Applications, May 2-3-4, 1973, to be held at the new Sheraton Waikiki Hotel. Three full days of technical sessions, field trips and exhibits are planned. The technical sessions will range from original contributions to tutorial presentations and state-of-the-art papers on minicomputer hardware, software and applications. Some of the sessions will be geared to the practicing engineer who may have some experience with conventional and special purpose computers, but who is unfamiliar with the capabilities and constraints of minicompu-

ters. There will be sessions devoted to specific major function areas, such as management information systems, data acquisition and reduction, process control, simulation, business accounting and time sharing. Papers describing applications of minicomputers in such fields as power, communications, ocean engineering, bio-medics, and education are also planned. The program will include both contributed and invited papers. Printed proceedings will be available at the conference.

Special travel arrangements in later GRID announcement. Contact Roy J. Yee, Kems Inc., 239 Puuhale Road, Honolulu.

REGION VI OFFICERS ACTIVE

Chairman Bud Eldon has arranged for distribution of the Region VI Newsletter to Section officers, G/S Chapter chairmen, Student Branch Counselors and others. This is a big step forward since the Region has an active Executive Committee. Their letters are full of news.

Gleaned from the September Newsletter:

- Do not forget the Region VI Conference in Hawaii May 2-4.

- John Guarrera, Region Director, is chairman of the IEEE Professional Activities Committee.

- Region membership now is 30,341, up 227 during the past 30 days. This included 137 new members and only 46 dues in arrears paid. The Region still has 2,423 dues in arrears. Under the new rebate schedule, sections will receive a bonus for new members, but lose money on those in arrears. This is a real incentive to start planning now for an active membership committee. Your Region Area M7T Rep is ready to help. Call on him if needed.

- There is a great advantage for Sections and Chapters to change from a fiscal year to calendar year operation. If your Section operates on a fiscal year basis, consider changing to calendar year operation.

- To communicate with the officers of Region VI, contact:

Gerry Goldenstern, Exec. Secr.
3600 Wilshire Blvd. - Suite 1920
Los Angeles, Calif. 90010
phone (213) 387-1206

IECI - NEW TECHNIQUE IN SCR SWITCHING

Mr. Partridge (BSEE, San Jose State) spent 7 years in SCR Power Conversion, 2½ years as owner and technical director of PERIPHERAL POWER SYSTEMS.

The talk will be a technical description of a new SCR switching circuit that duplicates the action of a transistor used in the switching mode. The talk reviews why all SCR DC/DC choppers to date are limited in chopping frequency. Then a basic SCR circuit that duplicates the action of a transistor used in the switching mode is developed (25K Hz switching frequency with increased switching losses). Concepts of trapped commutation energy are introduced. The trapped energy in the new concept is very low, and the circuit improved by returning the trapped energy to the DC source. Among circuit applications discussed:

DC/DC chopper; DC isolation and impedance matching obtained using one power SCR.

Inverter circuit using any number of SCR's in series, all DC/AC SCR's have a defined voltage under all conditions.

3-phase inverter, six power SCR's commutated with one commutator, a defined voltage at the load under all load conditions and power factors.

EMB - ENGINEERING IN MEDICINE & BIOLOGY

What's New in Artificial Hearts?

One of the latest developments is an implantable, piston activated, pneumatically powered, variable stroke output artificial ventricle which has undergone preliminary testing in calves with survivals of up to seven days. The presentation will be two-fold: First, a description of the design and manufacture of the artificial ventricle will be presented by its sole inventor, Mr. Paul K. Davis, President of Pacific Roller Die Company, Hayward. Next will be a description of the implantation procedure and results, including hematologic and biochemical data, presented by Dr. W. Carlyle Smail, Jr., Chief Resident, Cardiothoracic Surgery, University of California Medical Center, San Francisco.

Our meeting will be in Room 300 of the Health Sciences West tower of U.C. Medical Center, San Francisco. Use the main entrance of Moffitt Hospital, take the elevators on the west side of the hospital to the third floor, then follow the posted signs to the Health Sciences West tower. Use the Parking Garage opposite the Moffitt Hospital's main entrance.

MAG - A REVIEW OF 1972 INTERMAG CONFERENCE

The Magnetics Chapter will hold a meeting on Oct. 26th to review the 1972 INTERMAG Conference. A selected panel of members who attended the conference will hold an open discussion giving their impressions in the areas of magnetic recording, bubbles and optical memories. Floor comments and discussion will be encouraged.

SC – CONFERENCE NOTICE

The Second Annual Computer Communications Conference will be hosted by California State University at San Jose on January 24-25, 1973. This year's theme is "Time-Sharing: Past, Present, Future". The conference is co-sponsored by IEEE Communications Society and the Peninsula Chapter of ACM. Further details will appear in the January GRID.

E D – BARITT DIODES

The Barrier Injection Transit Time device may or may not be an answer to the microwave engineer's prayers. It is, however, an interesting device in either case and it will be described and contrasted with other solid state oscillator and amplifier sources. The BARITT Diode holds promise of giving lower noise than IMPATT Diodes and lower cost than Gunn devices. This is of particular interest for local oscillators for microwave receivers. Discussion will include the historical and most recent theoretical development of the device along with results from small signal analysis. Emphasis will be placed on actual experimental results including power, efficiency and noise levels as functions of device and operating parameters.

Dr. Barrera received his B.S. in Engineering from Harvey Mudd College in 1962 and his PhD from Carnegie Institute of Technology in 1966. Since then he has worked at Hewlett-Packard on Gunn Diodes, noise phenomena and other microwave oscillators.

CS – WESTERN UNION'S NATION-WIDE DIGITAL TRANSMISSION NETWORK – A PROGRESS REPORT



Mr. Russell DeWitt will describe the initial planning and subsequent development, testing, and service trials of the various building blocks of Western Union's nationwide digital transmission network to the Communications Society at their October 17 meeting. Early applications as well as the new TDM on Hybrid Radio System between Atlanta and Cincinnati will also be discussed. Recent FCC approval has been given for a 20 MBS capacity radio channel which, in addition to other newly approved routes, will provide digital channels with a high order of performance and reliability having various bit rates from teleprinter speeds to voice band data rates and wideband data rates.

Mr. DeWitt is Manager of Time Division Systems Engineering at Western Union in Mahwah, New Jersey where he is responsible for planning, systems engineering, and development of TDM and digital transmission systems for use in WU's nationwide communication network. Prior to joining Western Union in 1966 he had many years of experience in data networks, PCM and digital transmission with Bell Telephone Laboratories. He received the MSEE degree from Columbia University and is a Senior Member of IEEE and a member of Tau Beta Pi.

CSS – DIRECT DISTANCE DIALING WITH A CONTROL COMPUTER

Many independent telephone companies are attempting to modernize their control office exchanges to provide direct distance dialing to users. For them it is a jump from electromechanical technology to modern electronic technology. The speaker will discuss the use of a control computer to close this technological gap and at the same time provide an extremely flexible and reliable system which performs direct distance dialing and toll billing in a step by step central office.

R-ILLIAC IV RELIABILITY GOALS

Did you ever try to make an electronic system using a 1/4 million plastic integrated circuits available 90% of the time? This is the task that Aldon Long of Burroughs Corp. has to accomplish with the ILLIAC IV computer located at NASA Ames Research Center. Mr. Long's presentation will not only cover the strategy for achieving a 90% "up-time", but will also review the ILLIAC IV system, the component and packaging technologies used, and reliability monitoring analysis and prediction results.

Mr. Long, after receiving his BS and MS from Carnegie Institute of Technology, led a study of the radiation effects on parts and materials at Fort Monmouth, N.J. In 1960, shortly after he began his career with Burroughs, Mr. Long became the Test & Evaluation Supervisor and performed studies on IC packaging and reliability. He was appointed Project Manager in 1970 for the ILLIAC IV program. Originally responsible for the design and development of the Arithmetic Units, he is now responsible for Product Assurance.