EDITOR'S PROFILE of this issue

from a historical perspective …

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

December, 1969:

Cover: The system map for the Electric System Dispatch Center in San Francisco for PG&E's new facilities, where a tour is scheduled. More on page 9.

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

Grid

DECEMBER 1969

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Communication Systems Analyst	BS or BA with Business emphasis	3	■	■	■	■			■												■
Senior Systems Programmer	BS, BA or MS with Mathematics emphasis	6			■		■	■	■	■											■
Senior Applications Analyst	BS, BA or MS with Business emphasis	6			■				■		■	■	■	■	■	■	■	■			■
Senior Systems Writer	Two years of college level courses	3			■														■	■	■

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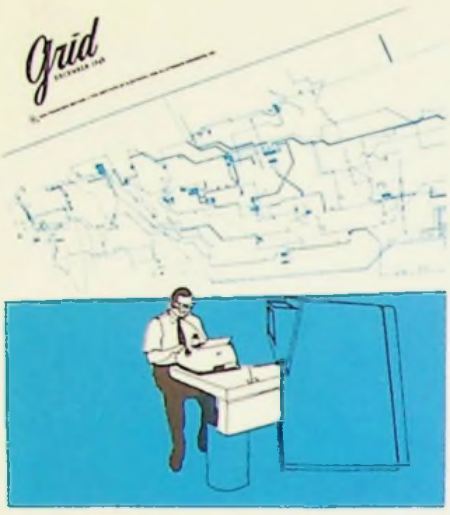

ON THE COVER

P.G. & E.'s Electric System Dispatch Office at the New Energy Control Center in San Francisco showing the System Map Board and one of the Dispatchers at an operating turret. P.G. & E.'s new electric power dispatch facilities will be opened for a tour following a discussion of their features at the Power Group Meeting December 9. See calendar for details.

Grid

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Call for Papers

The HAWAII INTERNATIONAL CONFERENCE ON SYSTEM SCIENCES to be held January 14-16, 1970, in Honolulu is the third in a series of conferences devoted to advances in information and system sciences. Papers are invited in these and related areas. The summaries of all accepted papers will be published in the conference Proceedings. This will not preclude publication of the full-length paper in IEEE or other scientific journals. For information write: Dr. Richard H. Jones (HICSS), Information Sciences Program, 2565 The Mall, University of Hawaii, Honolulu, Hawaii 96822.

The SECOND INTERNATIONAL GEOSCIENCE ELECTRONICS SYMPOSIUM will be held in Washington, D.C., April 14-17, 1970. Sponsored by the Geoscience Electronics Group of the IEEE, this symposium will present reports on work in progress in the field of geoscience electronics, and the stimulation of an exchange of information on the numerous aspects of this field. Authors are invited to submit a comprehensive abstract of about 400 words to the Technical Program Chairman by December 1, 1969. Supporting information, such as illustrations, can be submitted with the abstract. Interested authors should contact Mr. Ralph Bernstein, Chairman, Technical Program Committee, IBM Corporation, 18100 Frederick Pike, Gaithersburg, Maryland 20760.

The 8TH INTERNATIONAL CONFERENCE ON MAGNETICS (INTERMAG) will be held on April 21-24, 1970, at the Statler Hilton Hotel in Washington, D.C. The INTERMAG Conference is sponsored by the Magnetics Group of the IEEE. Papers are solicited in all areas of applied magnetics, related magnetic phenomena, and superconductivity. Abstracts must be received no later than December 12, 1969. For information on correct preparation of abstracts, contact Dr. Daniel S. Shull, Jr., Bell Telephone Laboratories, Inc., 3300 Lexington Road, S.E., Winston-Salem, N.C. 27102; phone (919) 768-3832.

The 1970 SOUTHWESTERN IEEE CONFERENCE (SWIEEECO) will be held April 22-24 in Dallas. The SWIEEECO Steering Committee solicits the submission and presentation of original research papers by researchers in universities, industries, and government. Quality papers in all electrical engineering disciplines are invited for twenty to thirty minute presentations. Four copies of a summary of at least 500 words and an abstract must be received prior to December 1, 1969. Please send abstracts and summaries to Professor Andrew P. Sage, Technical Program Chairman, 1970 SWIEEECO, Information and Control Sciences Center, SMU Institute of Technology, Dallas, Texas 75222.

The 1970 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE TO BE HELD FEBRUARY 18-20 IN PHILADELPHIA has issued a second call for papers inviting late news items (suitable for 10-minute papers) reflecting important new developments in the following or related solid-state circuit areas: Integrated Electronics, Circuit Techniques, Memories, New Device Applications, Optoelectronics, and Microwave Electronics. 100-word abstracts and 300-500 word summaries must be received by the Program Committee Secretary, L. D. Wechsler, General Electric Co., Electronics Park Building No. 3, Syracuse, New York 13201, by January 23, 1970.

A call for original technical papers to be considered for the 1970 NATIONAL TELEMETERING CONFERENCE IN LOS ANGELES NEXT APRIL 27-30 has been issued. The call for papers points to seven areas of session interest: telemetry in aerospace, biomedicine, oceanography, law enforcement, transportation, business and industry, and advanced telemetry technology. Abstracts of 300 words should be addressed to A. V. Balakrishnan, UCLA Dept. of Engineering, 405 Hilgard Avenue, Los Angeles, Calif. 90024.

The 13TH MIDWEST SYMPOSIUM ON CIRCUIT THEORY will be held in Minneapolis on May 7-8, 1970. Research papers on all aspects of Circuit Theory as well as System Theory, Control and Communication Theory are invited from all regions for presentation at the Symposium and publication in the Proceedings. Authors are requested to submit a title and a summary of their papers before February 5, 1970 to the conference chairman: Professor B. A. Shenoi, Dept. of Electrical Engineering, University of Minnesota, Minneapolis, Minnesota 55455. Authors of accepted papers will be notified on or about February 15, 1970 to submit the full text of their paper limited to 10 typewritten pages by March 15, 1970.

MEETING CALENDAR

ELECTRON DEVICES
DEC. 16

Story on page 5

THE MOON AND BEYOND: Garth Hull, Educational Services' Officer, NASA, Ames Research Center. Ladies and guests invited.

DEC. 16, Tuesday, 8:30 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails: 6:00 PM; dinner: 7:30 PM. Reservations: Section Office, 327-6622 by Dec. 9th.

ENGINEERING MANAGEMENT
DEC. 10

Story on page 10

PROJECTED ORGANIZATION FROM CUSTOMER'S POINT OF VIEW: Jean G. Goppert, Colonel, USAF, Asst. Deputy Director, Air Force Special Projects; FUNCTIONAL ORGANIZATION: Tom J. Harvey, Manager, Space Technology, SSD, LMSC; THEORETICAL ASPECTS OF BOTH PROJECT AND FUNCTIONAL ORGANIZATIONS: John P. Sackinger, Product Line Manager, Link-Singer Corp.

DEC. 10, Wednesday, 8:00 PM. Location to be announced on or about Dec. 1 by EM Group mailing.

ENGINEERING IN MEDICINE & BIOLOGY
DEC. 16

Story on page 11

LARYNGEAL ACTIVITY DURING SPEECH AND VOICE PRODUCTION: ELECTROMYOGRAPHY STUDIES: Dr. Thomas Shipp, Chief, Speech Research Laboratory, V.A. Hospital, San Francisco.

DEC. 16, Tuesday, 8:00 PM, 277 Cory Hall, U.C. Berkeley, corner of Hearst & Gayley – NE corner of Campus. (Parking across street). Dinner: 6:00 PM, Spenger's Fish Grotto, 1919 - 4th Ave., Berkeley. (Bottom of University at the Freeway). Reservations: 642-3338 by noon, Dec. 15th.

GOLDEN GATE SUBSECTION
DEC. 15

Story on page 12

CONSERVATION: THE WHOLE PICTURE: Pete Zars, Sierra Club. Christmas meeting; ladies and non-members invited.

DEC. 15, Monday, 8:00 PM, Engineers Club of San Francisco, 160 Sansome St., S.F. Cocktails: 6:00 PM, dinner: 7:00 PM. Reservations: 421-3184 by noon, Dec. 12th. (Cancellations must be made by noon, Dec. 15th).

POWER
DEC. 9

Story on page 9

PACIFIC GAS & ELECTRIC CO.'s NEW ENERGY CONTROL CENTER. Robert H. Miller, Asst. Manager of Power Control, PG&E Co.

DEC. 9, Tuesday, 7:30 PM, Engineers Club of San Francisco, 160 Sansome St., S.F. Cocktails: 5:30 PM; dinner: 6:30 PM. Reservations: 421-3184 by Dec. 8th.

VEHICULAR TECHNOLOGY
DEC. 15

Story on page 11

STUDY OF LAND MOBILE FREQUENCY UTILIZATION: Wilbur R. Vincent, Special Asst., Communication Studies, Engineering Systems Division, SRI and Thomas I. Dayharsh, Research Engineer, Communication Systems Dept., Engineering Systems Division, SRI.

DEC. 15, Monday, 8:00 PM, Gold Platter, 1000 El Camino, San Carlos. Cocktails: 6:00 PM; dinner: 7:00 PM. Reservations: W. H. Nye, 328-1200 or Al Isberg, 433-3800 by Dec. 12th.

CGP Aids Students

Heald Engineering College of San Francisco has become the first college in the nation to participate in the new Comparative Guidance and Placement Program (CGP) developed by the College Entrance Examination Board and Educational Testing Service.

CGP is designed to aid students in making their educational and vocational plans. Data collected from the various tests and questionnaires of CGP which measure the student's background, interests, and abilities will improve the student's chances of making a realistic decision concerning his course of study and eventually his career.

Results from the CGP measurements will also aid counselors and advisors in placing students in appropriate courses, identifying students who need financial assistance, and planning curricula relevant to the students' needs.

The faculty and administration of Heald Engineering College, through the adoption of CGP, are anticipating improved class scheduling, fewer dropouts, and fewer mistaken career choices among students. To date, 22 colleges have agreed to participate in CGP, and some 25,000 students will take the battery of tests and measurements.

NEW MEMBERS

The Section
welcomes these new members:

S. R. Altizer	D. D. Judd
E. B. Altman	M. N. Karkar
L. C. Amante	B. J. Kozol
J. Berger	G. C. Lee
E. C. Boring	M. A. Liccardo
A. P. Cardiasmenos	C. C. Liu
T. Chen	J. J. Miller
T. J. Chou	J. J Murray
M. J. Colangelo	E. M. Nelson
J. R. Davis	J. K. Pollaniemi
R. E. De Nure	J. R. Phippen
Z. A. Dill	R. E. Pitts
D. E. Eesley	P. J. Portesi
R. G. Ferguson	N. D. Schoenberger
T. P. Floryan, Jr.	W. S. Tandler
R. T. Gibson	S. N. Tawde
R. H. Gordon	S. S. Virk
J. E. Hale	H. G. Weissenberger
P. E. Irwin	I. Wilenken
J. J. Jedeka	R. J. Whittier
L. K. Jones	G. E. Zichterman

Congratulations to this member recently advanced to the grade of Senior Member:

L. B. Bayley, Jr.

Winter Power Meeting

The next Winter Power meeting of the IEEE may set new attendance records when it convenes at the Statler-Hilton in New York. The General Committee expects almost 3,000 engineers from all over the world to attend this seventh annual gathering in New York during the week of January 25 to January 30, 1970.

J. W. Bean, Technical Program Chairman, advises that response from authors as of August 30 indicate the meeting will include approximately 175 papers which will be presented in over 50 technical sessions. Numerous panel discussions on important subjects are now being organized.

The Electrical Insulation Group will again join the sponsoring Power Group, and a tutorial course, "The Role of Prime Movers in System Stability," will be offered. Attendance at the tutorial course will be limited and, if last year's experience is indicative, early registration is essential to assure acceptance. Advance programs will be mailed early in December.

The extremely successful Monday Night Social Hour which was instituted last year will be continued as part of the full social program being planned.

Power Group Officers and TOD have requested that all committees plan to meet during the General Meetings and Conferences and offer sufficient space for all such meetings.

The Statler-Hilton is conveniently located at 33rd St. and 7th Avenue. Besides providing accommodations for the more than 100 technical sessions and committee meetings, the Hilton offers IEEE members guest rooms at significant savings over other midtown hotels. A large block of regular rooms are being held for the IEEE, and these are available at the reduced rate to those registered specifically as IEEE members. Many improvements to make the convention area more convenient and attractive were completed by the hotel management within the last few months.

The IEEE is anxious to extend the benefits of membership to all those who qualify. For this reason, a portion of the registration fee for non-members will be applied toward membership in IEEE both to encourage non-members to attend the Power Meeting and to join the parent organization.

W. C. Hayes
Publicity Chairman, 1970
Winter Power Meeting

The Moon and Beyond

The December 16 meeting of the San Francisco Chapter of the Electron Devices Group will feature an entertaining and informative talk, including movies and still pictures of the Apollo programs' lunar exploration. Ladies and guests of members are cordially invited to attend the talk, presented by Mr. Garth Hull of NASA Ames Research Center, and the dinner preceding the meeting.

A visual presentation will highlight the recent Apollo exploration of the lunar surface. Other flight accomplishments of the program will be described, as well as the Ames' laboratory investigation of the lunar rocks. NASA's plan for eight additional manned flights to the lunar surface will be discussed, emphasizing exploratory sites and scientific objectives.

The initial flights to develop an earth-orbiting space station, the Apollo Applications Program, will be described. In addition, some aspects of future unmanned investigations of the planets, such as the Jupiter/Pioneer flyby and the Mars/Viking life detection mission, will be briefly described.

Garth Hull

Mr. Hull obtained a Bachelor of Arts degree in chemistry from Augustana College in Rock Island, Illinois, in 1953, and his Master of Education degree from Macalester College in St. Paul, Minnesota in 1955. He served as a senior lecturer on NASA's traveling space science demonstration unit, prior to joining the Ames Research Center in 1962, and served in the U.S. Army Medical Corps from 1955 to 1957. Mr. Hull is a member of the National Science Teachers Association and the American Association for the Advancement of Science.

Continuing Education

JANUARY 5-9, 1970. "Control Engineering," five-day course. Yasundo Takahashi, professor of mechanical engineering at Berkeley, will head the instructional staff. The course will include formulation of linear systems and computer solution of state equation; state space trajectory, response pattern, controllability, observability and stability; single and multi-variable feedback control system design; discrete-time system and direct digital control; nonlinear system and adaptive control; optimal feedback control and optimum filtering technique; logic control system. Fee: $325. To register, write Continuing Education in Engineering, University of California Extension, 2223 Fulton St., Berkeley 94720, or call (415) 642-4151.

FEBRUARY 2-6, 1970. "Topics in Quantum Electronics," five-day course. John Whinnery, professor of electrical engineering, and S. E. Schwarz, associate professor of electrical engineering and computer sciences, Berkeley, will head the instructional staff. Topics will include Q-switching and mode-locking of lasers, self-focusing and defocusing of laser beams, laser deflection and modulation, generation and propagation of ultra-short optical pulses, far infra-red sources, non-linear optics and high-power lasers. Fee: $300. For registration information, write to Continuing Education in Engineering, University of California Extension, 2223 Fulton St., Berkeley 94720, or call (415) 642-4151.

MARCH 16-20, 1970. "Geometric Dimensioning and Tolerancing," five-day intensive course. Lecture and workshop sessions will be conducted by an instructional staff headed by Alexander S. Levens, professor of mechanical engineering emeritus at Berkeley, and Edward S. Roth of Sandia Corp. The course is aimed at providing a good working knowledge of and ability to use true position dimensioning, which has been adopted in the past decade by a number of large corporations – particularly those involved in the design, production and assembly of hardware components – owing to its advantages in conveying dimensional design requirements precisely and without ambiguity. Fee: $250. For further details write to Continuing Education in Engineering, Unviersity Extension, University of California, 2223 Fulton St., Berkeley 94720, or call (415) 642-4151.

MARCH 23-26, 1970. "Innovation in Food Engineering," four-day short course. Faculty Member in Charge: C. Judson King, Sc.D., Professor and Vice-Chairman, Department of Chemical Engineering, University of California, Berkeley. Outstanding speakers from industry, government, and universities will report progress in their areas of specialization. Lectures and discussions will cover such topics as equipment and processes for membrane separations, dry material detoxification, minimum water processing techniques to reduce pollution, aseptic processes and clean room technology, new roles of enzymes in manufacturing foods, and new freezing and dehydration processes and hardware. Fee: $295. For further information write to Continuing Education in Engineering, University Extension, University of California, 2223 Fulton St., Berkeley 94720, or call (415) 642-4151.

Region Six Papers

Dr. Peter R. Metz, Technical Program Chairman, invites papers for possible presentation at the IEEE Region Six Conference at the Washington Plaza Hotel in Seattle, May 26-28, 1970. Sessions will be held on the following subjects: Ocean Engineering; Power; Bioengineering; Applications of Optimal Control Theory; Industry & General Applications; Computer Applications; Laser Applications; Communications Technology Area; Electro Magnetic Compatibility & Radio Frequency Interference.

Contact Dr. Metz, University of Washington, EE Dept., Seattle, Wash. 98105.

1970 Telemetering Conference

The IEEE National Telemetering Conference and Exposition for 1970 will be held April 27-30, with exhibits scheduled for April 28-30, at the Los Angeles Hilton Hotel. For exhibit space information, contact: Robert D. Rankin, Exposition Manager, c/o WESCON, 3600 Wilshire Blvd., Los Angeles, Calif. 90005; phone (213) 381-2871.

Lynch Communications Names Donald Oestreicher as President

Donald L. Oestreicher has been named president and general manager of Lynch Communication Systems Inc. replacing Donald E. Campbell, who has been named to the newly-created office of Chairman of the Board.

Campbell submitted his resignation as president and general manager at a special meeting of the board of directors and was subsequently named Chairman of the Board. Campbell has been general manager of the Company since 1951 and president since 1955, during which time the Company has grown to be a significant supplier of telephone transmission equipment to the telecommunication industry.

Oestreicher joined Lynch in 1959 as assistant to the general manager. Subsequently he held the positions of: manager of engineering, assistant general manager, vice-president and was named to the board of directors in 1969. Previously he was assistant vice-president of Central Western Telephone Company in California and was an administrative telephone engineer for Citizens Utilities Company in Stamford, Connecticut. In addition he has seven years of engineering experience with the New York Telephone Company, Bell Telephone Laboratories and the Western Electric Company. He is an electrical engineering graduate of Yale, performed graduate work at Columbia University and is a member of the Institute of Electrical Engineers and the Yale Engineering Association.

The appointment of Oestreicher as president contemplates the continuation of the existing sales, engineering and business policies which have led to Lynch's growth and success in the past.

Lynch Communication Systems is a manufacturer of telephone transmission systems serving primarily the Telephone Industry and also private users of telecommunication systems such as power utilities, the pipeline and petroleum industry, railroads and the local, state and national governments. Lynch operates four factories in the San Francisco Bay Area and in Reno, Nevada.

A Page From The History of Countermeasures

Before the Battle of Jutland the British detected changes in the direction of radio signals coming from the opposing German forces. The differences were slight, but the British dared to move their fleet successfully on the basis of the information.

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Your Section office is located at 701 Welch Road, Suite 2210, Palo Alto, opposite the Old Stanford Barn. A full-time staff is on hand to serve you from 8:30 AM to 5:00 PM Monday through Friday.

We maintain a supply of IEEE stationery, membership applications, IEEE Insurance brochures, lapel cards for use at meetings, and various materials needed by the officers of our 23 Group Chapters and 3 Subsections. These can be picked up at the office or mailed on request. As there is no local representative for the IEEE Group Insurance Program, questions concerning the nature of the program should be directed to the office in Washington, D.C.

We have a Directory of all IEEE members and a roster of our own 8000-plus Section members, from which we can look up information on individual members. We answer questions on IEEE publications and conferences, Headquarters personnel, and miscellaneous items and will help you with communicating your problems to Headquarters regarding publications, address changes, and other questions regarding your membership.

Supplies which can be ordered from New York Headquarters include striplists, No. 10 addressed envelopes, and Avery labels. Delivery time is approximately three weeks. The shipment can be ordered sent to the office for later pick-up or it can be ordered sent directly to the individual. The office can also assist in procurement of items for special needs such as manuals and bylaws.

Office services available upon request and sufficient advance notice include a Xerox for limited copies and a Mimeograph for multiple copies. We will cut and/or run stencils if given a few days notice in order to avoid conflict during busy days such as the GRID deadlines. The office Postage Meter Machine can be used for bulk mailings of 200 or more identical pieces at the non-profit rate of 1¾ cents per ounce. We will help with mailings. If the work is brought to the office in the morning, one of us can take it to the post office during the noon hour. Otherwise the person doing the mailing should plan to deliver it to the Palo Alto post office if it must go out the same day.

For further information or assistance, call us at (415) 327-6622.

Jean Helmke, Office Manager
Faith Minetor, Office Assistant

International Symposium on Circuit Theory

We certainly have no dearth of technical conferences in this country these days. As a matter of fact, we hear a crescendo of complaints from both academic and industrial circles alleging that there are too many technical meetings and that the quality of many papers presented in these conferences falls far short of the desirable. In these circumstances, the IEEE Group on Circuit Theory engaged in a rather controversial and risky undertaking when it decided, about two years ago, to add another one to the long list of technical conferences in the United States, namely our "own" annual "International Symposium on Circuit Theory."

Arthur P. Stern

THE FIRST SYMPOSIUM

Actually, we did not intend to just contribute our bit toward increasing the proliferation of conferences. On the contrary, our motivation was quite the opposite: The Group on Circuit Theory, one of the oldest (No. 4 out of 31!), most mature, and we feel most prestigious of the IEEE Groups, has for many years "sponsored," "co-sponsored," "supported," and "participated in" numerous conferences all over the country and at all times of the year. Some of these events are excellent and of broad interest, others of limited scope, and again others questionable as to their real value. We decided to establish our "own" Symposium in order to attract to it gradually the most valuable ingredients of some other conferences and in order to, hopefully and ultimately, contribute to the reduction of the number of conferences dealing with various aspects of circuit theory. The International Symposium on Circuit Theory was and is intended as the principal technical event in the field of circuit theory each year in the United States. (It may ultimately be complemented by another parallel event overseas.)

THE SECOND SYMPOSIUM

The first Symposium was held in Miami Beach in December, 1968. It was an unqualified success. Even though first of its kind, and experience of other annual conferences shows that it takes many years for a conference to be "accepted," it was attended by several hundred professionals, including most leading circuit theorists of the United States with a generous sprinkling of visits from foreign countries. The quality of the papers was uniformly high. (This was not really surprising, in view of the tough review procedure: each paper was subjected to the standard review procedure of the Transactions on Circuit Theory, a rather exacting process.) As happens with each "first" we committed numerous errors but we recognized at least some of these and we are correcting them this year.

OUR "OWN" SYMPOSIUM

The Second International Symposium on Circuit Theory will be held December 8-10, 1969, in San Francisco. We feel that this is an appropriate choice of location, not only because San Francisco's charm is particularly effective in wintertime (when other parts of the country are covered with various crystalline and amorphous forms of solid water), but also because San Francisco is the home of the largest and most active Chapter of the Group on Circuit Theory. We hope that the choice of San Francisco will lead to increased attendance and we are confident that the selection process applied to the submitted (incidentally rather numerous) papers will insure uniformly high technical quality.

I wish to invite all readers of the GRID most cordially to attend the Symposium and I can assure you that you will participate in a first-class technical meeting.

Arthur P. Stern
Chairman, Circuit Theory Group
Magnavox Research Laboratories

(See November Grid for Symposium Program)

PG&E to Show New Energy Control Center

IEEE Power Group members and their guests will have a rare opportunity December 9th. The Pacific Gas and Electric Company's new electric power dispatch facilities at 245 Market Street will be opened for a tour following a discussion of their features at the Engineers Club of San Francisco, 160 Sansome Street.

Robert H. Miller, Assistant Manager of Power Control, PG&E, will be the speaker and tour director. He is in immediate charge of these dispatch facilities and has been involved in the coordination of their design.

In the design, PG&E has applied advanced control technology to ensure reliability and economy of power system operations. Digital and analog data comes in mainly via microwave and is stored and processed in a large computer. In addition to its 24,576-word core memory, the computer has two 750,000-word memory discs operating in parallel. Dispatchers can instantly call up information on monitors before them. A lighted dynamic board automatically indicates circuit breaker status

P.G. & E.'s Electric System Dispatch Office at the new Energy Control Center in San Francisco showing the "Power Broker's" Computer Console and Telemetering Display Panel.

Robert H. Miller

everywhere on the 500 kv transmission system from John Day on the Columbia River to Lugo Substation near Los Angeles. Reliability has been a primary consideration in design and back-up facilities are provided for all critical functions.

The Power Group meeting will begin at 7:30 PM on December 9. Call 421-3184 by December 8 to make reservations for dinner served at 6:30 PM.

PMP Offers Microelectronic Course

The Parts Materials and Packaging Chapter will offer a 6-session course on Microelectronics Engineering. Weekly sessions will start on Tuesday, January 27, 1970 at 7:30 PM. All sessions will be held at Varian Associates Research Department (building 7) Palo Alto.

The course is designed for career engineers and managers involved in development of microelectronics in equipment and systems applications. It will be organized and directed by Dr. Don McWilliams, Director of Research, California State College, Los Angeles.

His broad experience both in industry, the academic field and as a consultant in microelectronics devices and circuits makes him eminently suited to present a comprehensive and stimulating series.

Those attending the program will be required to have a copy of "Micro-Electronics" by Max Fogel, published by REA of New York. Work and reading assignments will be given from this text. In addition, there will be a registration fee of $10.00 per person. Further details concerning the course will be provided in next month's Grid.

Material to be covered in the 6 sessions of the course is as follows:

A practical introduction to microelectronics includes a review of the semiconductor device fabrication procedures used in bipolar integrated circuit production. Examples of modern practice, including mask making, diffusion and oxidation, epitaxy, and metallization, will be included to provide an appreciation of the factors of reliability, performance and cost, which are related to the use of microelectronic devices. Techniques of quality control and failure analysis also will be evaluated and discussed.

Hybrid microelectronics is an increasingly powerful engineering application, which provides the most flexible technique for obtaining compact discrete part performance or quick turn-around complex functions. Thick and thin film technology and the metallurgy of wire bonding and die attach in production quantities are important concepts for many demanding applications including radiation hardened systems. These procedures, with packaging and encapsulation practice, will be the subjects of two meetings. In addition, recent reliability data in hybrids will be discussed.

A fourth evening will be devoted to resource management in order to provide the audience with an understanding of the investment required for several continuing levels of internal capability. Off-the-shelf design will be compared with a mix of custom circuitry and standard parts. After several typical semiconductor manufacturer organizations have been analyzed, techniques for schedule prediction, contract definition and multiple sourcing will be presented.

A trip with small guided groups to a new microelectronics facility will be the subject of the fifth evening. Area requirements, air conditioning trade-offs, general work flow, and personnel training approaches will be compared with the results obtained in the local area.

The last session will emphasize MOS insulated gate field effect device technology and its impact in information-handling systems. These LSI devices will provide a large reduction in the cost of digital processing in the next two years, and their advantages and disadvantages must be considered in any trade-off study. These advances and others at the new horizon of technology will be discussed.

At several points in this course, guest lecturers representing individual specialties will participate, offering to the audience several viewpoints from competitive production environments.

EM Chapter to Hear Three Speakers

The Professional Group-Engineering Management Chapter is pleased to present three speakers for its December 10th meeting who will discuss pros and cons of technical organization forms regarding project progress and results.

Jean G. Goppert, Colonel, USAF, Assistant Deputy Director, Air Force Special Projects, will speak on "Projectized Organization from the Customer's Point of View."

Tom J. Harvey, Manager of Space Technology, SSD, Lockheed M&S Co., will discuss "Functional Organization."

John P. Sackinger, Product Line Manager, Advanced Development Division, Link-Singer Corp., will contribute "Theoretical Aspects of both Project and Functional Organizations."

Following the talks, the meeting will be opened to the floor for discussion and full participation.

The meeting will start at 8:00 PM sharp at a location to be announced by a PG-EM Chapter mailing on or about December 1, 1969.

Land Mobile Frequency Assignment and Utilization Problem Studied

The Vehicular Technology Chapter will host two speakers from Stanford Research Institute at its Monday, November 15 meeting. T. I. Dayharsh and W. R. Vincent will discuss an extensive study of the land mobile frequency assignment and utilization problem which was made by SRI under contract to the Federal Communications Commission.

This study included the design and construction of an advanced spectrum monitoring system with a data acquisition rate of 1.25 million channel samples per hour. The spectrum monitoring system was used in Detroit and New York to obtain channel occupancy statistics on all 1854 channels that are assignable to private land mobile users. An analysis of the data collected in those two cities revealed that a maldistribution of users existed at every level of the land mobile spectrum – the individual channels, the three frequency bands, the services, and the urban areas. This analysis showed that the current frequency assignment system lacks the data, resources, and mission to rectify this maldistribution.

SRI, as a result of this study, has recommended the establishment of a national/regional spectrum management system using a combined intra- and inter-service sharing concept. All functions involved in the actual assignment of the frequencies would be performed at the regional level. The national center would develop and quantify the necessary policy (in the form of standards, criteria, and guidelines) for implementation at the regional level, plus performing spectrum research and development programs designed to improve the utilization of the spectrum.

Thomas Dayharsh joined SRI in 1956. His fields of specialization include frequency management, data processing and analysis, ionospheric phenomena, system effectiveness analysis, and multi-discipline studies. He is the author or co-author of twelve SRI reports. Mr. Dayharsh is presently a research engineer in the Communication Systems Department, Engineering Systems Division.

Wilbur Vincent joined SRI in 1955. His specializations include communication network analysis, optimum utilization of large imperfect communication networks, high-frequency radio systems, radio spectrum utilization, radio propagation problems, meteor-burst communication, and auroral zone communication. A member of IEEE, Mr. Vincent belongs to the Circuit Theory, Communication Technology, and Antennas and Propagation Groups. He is presently a special assistant in the Communication Studies, Engineering Systems Division.

Laryngeal Activity and Speech Production

At the December 16th meeting of the EEMB Chapter, Dr. Thomas Shipp will discuss laryngeal activity during speech and voice production. Data from four intrinsic laryngeal muscles have been obtained simultaneously with data on subglottal air-pressure and air-flow in normal human subjects producing various types of speech. These data have led to insights concerning laryngeal activity associated with voiced-voiceless distinctions, fricatives, stops and methods of terminating phonation.

Dr. Shipp is Chief, Speech Research Laboratory in the Audiology department at Veterans Hospital in San Francisco. His electromyographical studies have generated considerable insight concerning the mechanisms of speech production.

Norman Epstein Named Chief Engineer

Norman Epstein has been named chief engineer of Lynch Communication Systems.

Epstein was assistant director of manufacturing at Lynch. Previously he was chief engineer at Lenkurt Electric Company in San Carlos, California, and program manager at Lockheed Missile and Space Company in Sunnyvale, California.

Epstein is a senior member of IEEE and the National Committee on Space Communications. He has published many technical papers and articles related to communications technology. He earned his BSEE in 1949 and his MBA in 1950 at the University of California in Berkeley.

Conservation: The Whole Picture Reviewed

Mr. Pete Zars of the Sierra Club will be the guest speaker for the Golden Gate Subsection's Christmas Meeting at the Engineers Club of San Francisco. He will review the conservation movement and its importance to the public particularly with respect to the San Francisco Bay Area. A short film will be shown and questions are welcome.

Mr. Zars will touch upon such things as the Peripheral Canal, salt water intrusion, sewage disposal, auto exhaust, industrial wastes, and other problems. He will discuss the result of diminishing the oxygen-supplying vegetation and mention the application of a digital computer in analyzing some of these effects.

With conservation and pollution becoming household words and the topics for serious discussion in state and national legislatures, it seems appropriate that we have a representative from one of the oldest and best-known conservation groups in the United States, the Sierra Club. Mr. Zars is a member of the Conservation and Executive Committees of the Sierra Club's Bay Chapter, Chairman of both the Air and Water Quality Committees, and is eminently qualified to speak on conservation.

This December 15 dinner meeting at the Engineers Club is open to members and non-members with ladies welcome. Dinner ($5) is at 7:00 PM with cocktails before and the meeting at 8:00 PM. See calendar for full details. If after making reservations, you are unable to attend, please phone in your cancellations by noon, December 15.

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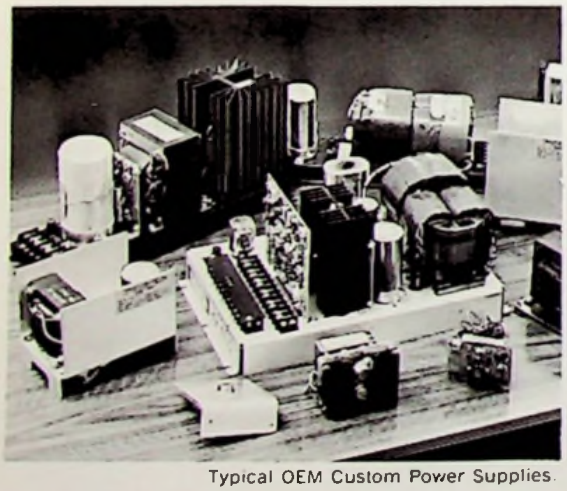

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