

EDITOR'S PROFILE of this issue

from a historical perspective ...

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

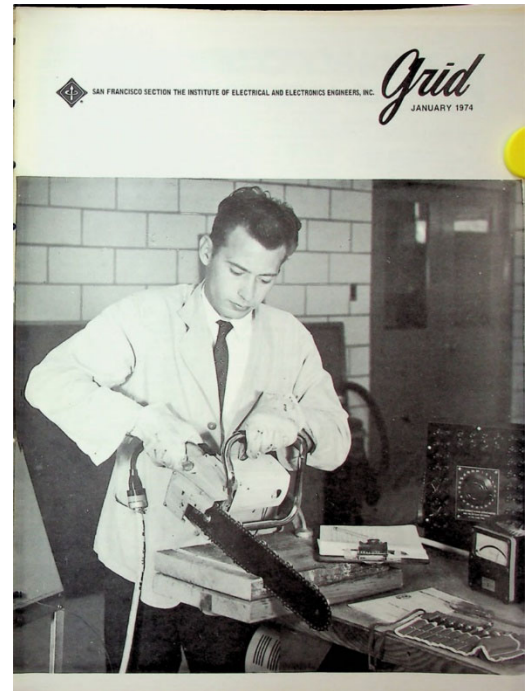
January, 1974:

Cover: A chain saw is tested at Underwriters Laboratories in Santa Clara.

A tour is planned. More on page 2.

Page 2: Charles (Bud) Eldon, past Section chair, convenes a committee to implement the IEEE's recent adoption of a charter to work on professional activities for our members. Included on the team are Frank Lord and Jack Nawrocki, familiar names in our IEEE organizations during the '80's and '90's. Bud himself goes on to be Region Chair, and then president of the IEEE.

Page 6: Al Shugart of Shugart Associates, founded last February, speaks on floppy disks and their potential in computer systems.



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



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

Grid

JANUARY 1974





volume 20

number 4

JANUARY 1974

Published monthly except June, July, August and December by San Francisco Section Institute of Electrical and Electronics Engineers

EDITORIAL BOARD

Dalton W. Martin, Vidar Corp.
E. D. Jackson, PTT Corp.
R. J. Whittier, Intel Corp.
R. W. Anderson, Hewlett-Packard Corp.

EDITOR

E. W. Morris
4050 Valente Court
Lafayette, California 94549
(415) 283-8260

Address all mail except address change to San Francisco Section Office, IEEE
Suite 2210, 701 Welch Road
Palo Alto, California 94304
Telephone: (415) 327-6622

Jean Helmke, Office Manager

1973-74 San Francisco Section Officers
Chairman: Dalton W. Martin
Vice Chairman: E. D. Jackson
Secretary: R. J. Whittier
Treasurer: R. W. Anderson

Members send address change promptly to IEEE, 345 East 47th St., New York, N.Y. 10017
Telephone: (212) 752-6800

Second Class Postage paid at Palo Alto, California

SUBSCRIPTIONS:

\$4.00 per annum

SCVSS - ENGINEERS WEEK

The Santa Clara Valley Subsection and the Engineering Management Society Chapter will be co-sponsors of the SCV Engineers Week dinner to be held on Friday, February 22, 1974. Please watch for details in the February GRID.

MARCH GRID

Please assist in getting copy for the March GRID (deadline January 30) complete and on time. Your editor is required to attend the 1974 Winter Power Meeting the last week of January, returning on February 1. During the following ten days he will have both the GRID and Power Newsletter to edit, get typed and laid out. Early copy, requiring minimum editing, would be appreciated. Thank you all. E.W. (Ed) Morris, Editor.

MESSAGE FROM THE CHAIRMAN

Dalton W. Martin

A new feature appears in this month's GRID. The Section's very active PAC (Professional Activities Committee) will be communicating to you through a regular column, the first of which is in this issue.

Following the recent amendment to the IEEE constitution, a great many professional activities have been started on the national level. These include studies or legislative influence in area ranging from pension reform to advising on environmental and energy matters.

On the Section level we also have been active. Last year Chairman Eldon appointed an ad hoc PAC to start in with PAC activities as well as to define its operating charter as a permanent part of the Section structure. Section Bylaws were amended to include the PAC as one of the Section committees and to provide that the PAC chairman be elected each year by membership ballot.

Each PAC member has contributed a great deal to the San Francisco Section membership. PAC would welcome any help it can get. Those of you who complain about the professional status of Engineers now have a vehicle through which to volunteer your efforts to work for change. Accept the challenge. Call a PAC member today.

The Cover Story

The cover picture relates to the EM/AES visit to the Underwriters Laboratories. Operating temperatures of the tool are obtained during actual use of the saw.

EM-AES JOINT MEETING TORTURE TESTERS TOUR

The Engineering Management and Aerospace and Electronics System Chapters will join in a tour of the Underwriters Laboratories, Inc., testing laboratory in Santa Clara. UL is an independent, not-for-profit corporation dedicated to public safety. The operations are primarily in two phases; New Work Engineering and Factory Follow-Up Services.

The engineering departments, by test and examination of submittal products, ascertain conformity or non-conformity with established requirements for safety and report the results to the submitter. The Factory Follow-Up Service is for the purpose of auditing the procedure followed by the manufacturer in remaining in conformance with the established requirements.

Reservations should be made as there is a limitation on the number who may attend.

SAN FRANCISCO SECTION PAC BECOMES STANDING COMMITTEE

The Professional Activities Committee (PAC), San Francisco Section, has become a new standing committee. During the past year, this committee has been functioning on an ad-hoc basis under the temporary chairmanship of Grant Heninger. The Bylaws of the San Francisco Section of the IEEE have now been amended to define the activities of this new committee. The Bylaws amendments were approved at the July 25, 1973, meeting of the Executive Committee.

Passage of the Bylaws amendments culminates several months of efforts by J.E. Barkle, C.A. Eldon, and L.G. Fitzsimmons of the Executive Committee and all the current members of PAC. It was under the leadership of Junior Past Chairman C.A. Eldon that the effort to establish a PAC in the San Francisco Section was initiated. Current members of the new committee are as follows: Grant Heninger (Chairman), Rick Beich, Frank Lord, Neville Morley, Jack Nawrocki, Bill Raukko, Hermann Schmid, Joe Wakabayashi, and O.J. Ziemelis.

The PAC is authorized by the Bylaws to undertake activities, at the Section level, consistent with the new dedication of IEEE to the professional interests of its members; these interests were defined in the policy statement of the IEEE Board of Directors appearing in the January issue of Spectrum. In the past year, the PAC has been engaged in a number of activities in addition to the preparation of the Bylaws amendments. These activities included participation in a national survey of young engineers, coordination with the California Legislature on revisions in the Engineers Licensing Act, and support of the IEEE National Pension Committee. Future efforts will include a continuation of the support in the above areas as well as the undertaking of new efforts consistent with the goals of the PAC, such as the forecasting of engineering manpower requirements, a study of company/employee patent agreements, the establishment of a quick-response network in the Bay Area to alert IEEE members of pending legislation and other subjects of interest, etc.

IEEE members who would like to join the PAC roster or would like to contribute to the committee's efforts should contact Hermann F. Schmid, telephone (415) 364-6756, or any of the other committee members.

Above all, make it a habit to write your Congressmen on a person-to-person basis, especially about issues in which you have a personal interest and factual knowledge. It pays! The Editor

MEETING CALENDAR

ANTENNAS & PROPAGATION JAN 10

Story on page 7

THE DNA-002 WIDEBAND SATELLITE BEACON. Dr. Edward J. Fremouw, Senior Physicist, SRI, Menlo Park.

JAN. 10, Thursday, 8:00 PM, LMSC Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Cocktails at 5:30 and dinner at 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No reservations required.

COMMUNICATION SOCIETY JAN. 8

Story on page 8

SEMINAR AND DEMONSTRATION: DELTA MODULATION TECHNIQUES. Dr. Frank Boxall, PhD, Consultant, Woodside.

JAN. 8, Tuesday, 8:00 PM, Holiday Inn, El Camino, Palo Alto. Dinner 6:30 PM in Justin's Room. Reservations: Lee Stephens, (415) 961-1000 x 213 by Jan. 7th.

COMPUTER SOCIETY JAN. 16

Story on page 6

FLOPPY DISCS. A. Shugart, Shugart Associates, Sunnyvale.

JAN. 16, Wednesday, 8:00 PM, University of Santa Clara, SDaly Science Hall Room 207. Dinner: 6:15. University Faculty Club on Campus. Reservations: Pat Rubin, (415) 965-6349 by noon Jan. 16th.

EAST BAY SUBSECTION JAN. 28

Story on Page 8

U.S. ENERGY SUPPLIES: PAST, PRESENT AND FUTURE. Dr. James Kane, Lawrence Livermore Laboratory

JAN. 28, Monday, 7:30 PM, Lawrence Berkeley Lab, Bldg. 70A, Room 3377. No dinner - no reservations required.

ELECTRON DEVICES JAN. 15

Story on page 7

ION IMPLANTATION APPLICATIONS IN HIGH SPEED BIPOLAR TRANSISTORS. James F. Gibbons, Stanford University and Stephen Ludvik, Hewlett-Packard Co.

JAN. 15, Tuesday, 8:00 PM, SRI, Conference Room, Bldg. Laurel St., Menlo Park. No dinner.

ENGINEERING MANAGEMENT/ AEROSPACE & ELECTRONIC/ SYSTEMS SOCIETIES JAN. 15

Story on page 2

JOINT MEETING. TOUR OF UNDERWRITERS LABORATORIES, INC. TESTING LABORATORY.

JAN. 15, Tuesday, 8:00 PM, UL, 1655 Scott Blvd., Santa Clara. For reservations call Mrs. Scott (408) 243-3600 x 365. No dinner. Attendance limited.

ENGINEERING IN MEDICINE & BIOLOGY JAN. 8

Story on page 7

ELECTRONIC TECHNOLOGY IN TREATMENT OF CHRONIC PAIN. Burton B. Rutkin, Electronic Specialist, University of California in San Francisco.

JAN. 8, Tuesday, 8:00 PM, Airport Plaza Hotel, 101 Bayshore Hyway, Millbrae. Dinner: 6:00 PM. Reservations: Karin Carlson (408) 739-8880 x 322 by Jan. 4th.

GOLDEN GATE SUBSECTION JAN. 9

Story on Page 4

COMMUNICATIONS & SIGNAL CONTROL OF THE NEW S.F. MUNI RAILWAY SYSTEM. Ivan Lutz, Project Eng., Wismer & Becker.

JAN. 9, Wednesday, 12:00 noon, PG&E Cafeteria, 3rd floor, room 303 for lunch and meeting. Reservations: Art Wells (415) 467-1880.

INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION /INSTRUMENTATION MEASUREMENTS JAN. 16

Story on page 6

AUTOMATED TEST EQUIPMENT - FLEXIBLE SYSTEMS ARCHITECTURE - THE KEY TO SOLVING THE APPLICATIONS PROBLEM. Bill Kehert, Systems Eng. Supervisor, John Fluke Co., Seattle.

JAN. 16, Wednesday, 8:00 PM, University Room, Rickey's Hyatt House, 4219 El Camino, Palo Alto. Cocktails at 6:00 and dinner at 6:30 PM. Reservations: Istvan Nagradi, (415) 591-8461 x 375

INDUSTRY APPLICATION SOCIETY JAN. 7

Story on Page 4

APPLICATION & PROBLEMS WITH POWER FACTOR CORRECTION CAPACITORS. Myron Zukor, Myron Zukor, Inc. Detroit, Mich.

JAN. 7, Monday, 7:30 PM, Four Seas Restaurant, 731 Grant Ave., San Francisco. Hospitality at 6:00 and dinner at 6:30 PM. Reservations: Wes Fenner, (415) 894-4022 or Ted Bubb (415) 574-1581 by noon Jan. 7th.

INFORMATION THEORY JAN. 21

Story on Page 4

CRYPTOGRAPHY AN INFORMATION THEORETIC APPROACH. Prof. Martin Hellman, Stanford University.

JAN. 21, Monday, 8:30 PM, SRI, Conference Room B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, The Refectory, 1906 El Camino, Menlo Park. Reservations: D. Wilson, (415) 966-2595 or Mrs. J. Brewer (415) 966-3286 by Jan. 21st.

MAGNETICS SOCIETY JAN. 24

CODING FOR DIGITAL MAGNETIC RECORDING. Dr. Paul Hodges, IBM General Products Division.

JAN. 24, Thursday, 8:00 PM, Hewlett-Packard Auditorium, 5301 Stevens Creek Blvd., at Hyway 280 and Lawrence Expressway. No dinner.

NUCLEAR & PLASMA SCIENCES SOCIETY JAN. 15

Story on page 7

FUSION POWER AND THE ENVIRONMENT. Dr. T. Kenneth Fowler, Associate Director for Controlled Thermonuclear Research Program, Lawrence Livermore Lab. Dr. John T. Holdren, Assistant Professor in the Energy and Resources Program at UC, Berkeley.

JAN. 15, Tuesday, 8:00 PM, Blue Dolphin Restaurant, West end of Marina Blvd., San Leandro. Cocktails at 6:00, dinner at 7:00 PM. Choice of entree (includes salad, coffee, desert, tax & tip): 1. Boneless Stuffed Breast of Chicken \$6.50; 2. Prime Rib \$7.25; 3. Lobster Thermidor \$7.50. Reservations: For dinner and meeting or meeting only: Mrs. Willie Scharff, (415) 843-2740 x 6341 by Jan. 11th.

POWER ENGINEERING SOCIETY JAN. 14

Story on Page 5

JOINT MEETING WITH THE ELECTRIC CLUB OF SAN FRANCISCO. THE ELECTRIC POWER RESEARCH INSTITUTE. Dr. Chauncey Starr, Pres., Electric Power Research Institute, Palo Alto.

JAN. 14, Monday, 12:00 noon, Sheraton Palace Hotel, Market at New Montgomery, San Francisco. Luncheon at 12:00 noon, Gold Ballroom. No reservations required but early arrival is suggested.

RELIABILITY JAN. 23

Story on page 4

PANEL PRESENTATION: A CONSULTANT CAN SAVE YOU MONEY? (see story for speakers).

JAN. 23, Wednesday, 8:00 PM, Stanford University Physics Lecture Hall - PH 104. Dinner: 6:30 PM. (Happy hour at 6:00) Stanford View Restaurant, 1921 El Camino, Palo Alto. Reservations: Section office (415) 327-6622 by Jan. 23rd noon.

SYSTEMS MAN & CYBERNETICS SOCIETY JAN. 9

Story on Page 6

OPTIMIZING MODELS FOR URBAN PLANNING. Prof. Pravin Varaiya, UC, Berkeley.

JAN. 9, Wednesday, 8:00 PM, SRI, Conference Room B, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, Red Cottage, 1706 El Camino, Menlo Park. Reservations: Section office (415) 327-6622 by noon Jan. 9th.

UC - CIC TAX SEMINAR, Saturday, Jan. 12, 8:45 AM at the Kaiser Auditorium, Kaiser Center, Oakland. \$30 fee includes lunch and parking at the Kaiser Garage. For additional information call Norman Parrish, Program Coordinator (415) 642-4151. See story on page 5.



REL - A CONSULTANT CAN SAVE YOU MONEY ?

Four consultants in the San Francisco Bay Area will discuss their role and life as consultants. Represented will be specialists in Reliability, Industrial Relations, Component Technology, and Technical Market Analysis.

Whether YOU are starting a new company, bringing out a new product, attempting to increase yields, trying to understand why a product failed, developing equitable compensation programs, trying to measure an unknown contaminant, expanding your operations, worrying about program management and many more YOU will find this program helpful in achieving your goal(s).

Or maybe you want to become a consultant, too!

The Panel

Rolfe A. Folsom, Jr., has been a Principle Consultant since 1966 with Walter B. Sterling. Mr. Folsom is a Sr. Member of the IEEE and a founder of BAMA. He received his BSEE and MSEE from MIT.

Cy Kaufman is the Director of Electronic Technology for Quantum Science, Palo Alto. Mr. Kaufman has earned a BSEE (NYCC), MSEE(San Jose State) and the MBA(Santa Clara U).

O.D. "Bud" Trapp founded Technology Associates in 1972. Bud has degrees from Westmar College (BA) and Iowa State U (PhD). He has been active in the organization of the IEEE Reliability Physics Symposiums.

George Vaccaro is a founder of The Advisory Group, Consultants in personnel development and relation for the past two years. George received his BSIR from San Jose State.

Non-members are always welcome.



IT - CRYPTOGRAPHY AN INFORMATION THEORETIC APPROACH

The development of remote and time-shared computing networks has created a need for unclassified knowledge of cryptographic systems. Concurrently, the low cost of hardware makes encryption of sensitive material economically feasible on a large scale.

This talk will review and extend the information theoretic approach to cryptography developed by Shannon, whose basic result was that there exists a critical amount of intercepted text which is necessary for successful cryptanalysis. New results will concern the concept of global versus local uncertainty and the concept of a cypher being matched to a language. It will be shown that good cryptographic codes are in a sense duals of good error correcting codes.

Dr. Martin Hellman is an assistant professor in the Electrical Engineering Department at Stanford University. Dr. Hellman's background includes employment with industry at IBM's Yorktown Heights complex and with the academic community on the faculty at MIT and in his current position at Stanford.



GGSS - COMMUNICATION & SIGNAL CONTROL NEW SAN FRANCISCO MUNICIPAL RAILWAY SUBWAY SYSTEM

The new street cars for the San Francisco muni subway have provisions for speed limitation, signals for the operator, and automatic speed control and braking systems. The subway track system is divided into many signal blocks and coded signals are sent through the rails in accordance to maximum speed limitation allowed in each signal block. The cars have pick-up coils which sense the coded signals, and transmit information to the operator. The signal block track circuits also are used for detecting the presence of cars in the section.

A computer is used to monitor the track circuits and thus keep record of all cars in the subway. This information can be used for master control console display, and lighting train destination signs at stations to tell passengers destination of next train arriving at station.

The speaker is Ivan C. Lutz, project engineer, Wismer and Becker, Sacramento. He received his BSEE degree from the University of California, where he also did graduate work with the Lawrence Radiation Laboratory. He is a past chairman of the East Bay Subsection, IEEE.



Sentor Barry M. Goldwater (R. Ariz.), a leading member of the Senate Armed Services and Aeronautical and Space Sciences committees, will be honored during the 15th Annual Winter Convention on Aerospace and Electronics Systems (WINCON 74), to be held March 12-14 at the Los Angeles Marriott Hotel. The Sentor will be recognized for his "dynamic leadership in support of a strong American aerospace and defense posture" at the convention's formal black tie banquet Wednesday, March 13, at 6:30 p.m.

WINCON '74 will focus on lasers, satellites, and defense systems and specifically how they relate to future aerospace and defense requirements. Classified sections will be conducted with the support and participation of the U.S. Air Force.

The program will include:

Lasers - both classified and unclassified sessions.

Satellites - both classified and unclassified sessions.

Aerospace defense systems, classified sessions only.

Luncheons are scheduled for March 12 and 14, each with prominent guest speakers.

For information, contact G.W. Little, Northrop Corporation, One Research Park, Palo Verdes Peninsula, CA 90274. Phone (213) 377-4811 x 386.



IAS - APPLICATION AND PROBLEMS WITH POWER FACTOR CORRECTION CAPACITORS IN COMMERCIAL & INDUSTRIAL INSTALLATIONS

Application of power factor correction capacitors is being given increased consideration, not only for economic reasons, but for improving voltage conditions and unloading of electrical apparatus.

Myron Zukor will give us the benefit of his twenty years experience in the application of capacitors, as president of Myron Zukor, Inc., Detroit. He will discuss problems with codes, capacitor locations, relations with loads such as rectifiers, power supplies and variable speed drives. Mr. Zukor received his EE degree at Cornell University, and Masters at Union University, Schenectady. He is national vice chairman of the IAS Chapters Department.

**If, after all those years of becoming
a professional you find that the
rewards are still down the road, listen:
National believes in paying for work
done now. Now.**



Some of our very best talent has come to us from competitors because they found here what they weren't getting there: Immediate recognition for engineering talent; rewards now, when they're earned. Not down the road.

Working on new products at National will give you the chance to use your imagination, your education, and your experience. All of which will keep National ahead of the competition by a country mile.

National believes in paying for work done now. If it has been a long, long time since you were last offered a real challenge, solved a problem your own way, got a raise and a pat on the back, or had the satisfaction of seeing your own ideas put into practice, then you'd better check us out. Now.

Make it easy on yourself.

Complete the resume form on the attached pull-out sheet, fold and mail it to us postage-free. You'll be happy you did, we'll be happy you did. We are an equal opportunity employer male and female.

**NS National
Semiconductor**

RESUME

Name: _____

Address: _____ Phone: _____

(City)

(State)

(Zip)

Career Objective: _____

Education:	College	Major	Degree	Graduation Date	Academic Standing
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Special Qualifications: _____

Additional Information: _____

Work Experience: _____

Military Service and/or Status: _____

Personal: Date of Birth _____ Height _____ Weight _____ U. S. Citizen Yes No

Marital Status _____ Dependents _____ Relocate (out of state) Yes No

Fold here

Fold here

First Class
Permit No. 409
Santa Clara,
California

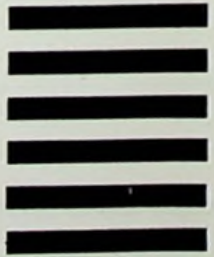
BUSINESS REPLY MAIL

No Postage Stamp Necessary If Mailed In The United States

Postage Will be Paid By

National Semiconductor

Dennis Lyon
Professional Employment Manager
2900 Semiconductor Way
Santa Clara, California 95051



Staple or Tape closed

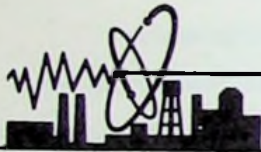
**IECI - AUTOMATED TEST EQUIPMENT
FLEXIBLE SYSTEMS ARCHITECTURE
THE KEY TO SOLVING
THE APPLICATIONS PROBLEM**

The goal in automated test equipment design is to provide an economic solution to a measurement problem. The application is seen to impact both the ensemble of Instrumentation and the system architecture which controls the Instrumentation.

One approach to modularity of stimulus and response Instrumentation has been achieved through an interface processor which simplifies instrument interface requirements. Programming languages are classified as procedure or problem oriented.

Division of labor between system switching and test fixture design is considered from the perspective of fidelity, cost and user convenience.

Bill Kehret is Systems Engineering Supervisor for ATE at the John Fluke Co. He has a B.S. in Physics from the College of Wooster, Wooster, Ohio. He participated in an MSEE Program from Oregon State University and is currently finishing a doctoral program in General System Theory at Portland State University.



**SMC - OPTIMIZING MODELS
FOR URBAN PLANNING**

How credible and how useful are the results of analysis of urban dynamics using simulation models? Dr. Oravin Varaiya, who has been exploring such models for years, believes that explicit mathematical planning models that have been recently developed are much better than simulation models in two major respects: (1) their data requirements are much easier to meet; and (2) their theoretical base is sounder. A further advantage of these planning models is illustrated by the fact that transportation demand is generated internally by the model, rather than being obtained from an external forecast. In his talk at the January SMC meeting, Professor Varaiya will describe the development of these planning models, and will illustrate their utility with realistic examples of their application.

Dr. Varaiya, a Professor of Electrical Engineering and Computer Sciences at U.C. Berkeley, received his Ph.D. there in 1966. He is currently building a functioning information retrieval system for the San Francisco Bay Area for use in urban planning, and continuing his research in urban economic systems.

FELLOW NOMINATIONS

Nominations for award of Fellow grade for next year now are being solicited. The San Francisco Section Fellow Committee is organizing its efforts to propose for Fellow, prominent members of the engineering community. Assistance of all members, Group/Society Chapters and present Fellows are welcome in identifying IEEE members of unusual professional distinction with "outstanding and extraordinary qualifications and experience". Please note that this year the requirement is that all nominees for Fellow grade *must be presently a Senior Member* and must have been IEEE members for *five years*. There will be a list of all Senior Members and one of all Fellows in the San Francisco Section, available at the Section Office, for your convenience and reference.

Nominations will be processed for submission in April, 1974 and should be in the Section office by February 15, 1974. For forms and instructive packets, contact Mrs. Jean Helmke at the Section office (phone 415 327-6622). Preliminary biographical information may be sent in by letter to the Section office for committee assistance in preparing the proposal.

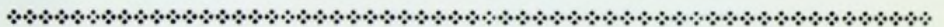
The Fellow Committee Chairman is Hugh Weber, who may be reached daytime at (408) 255-6200 or evenings at (415) 324-3055.

COMPUTER - FLOPPY DISCS



"Floppy discs" are also referred to as diskettes and are expected to cause a major revolution to the mini - and micro - computer industry much like the large discs did for the large systems a few years ago. With a diskette attached to it, a mini - or micro - computer, all of a sudden, becomes an extremely versatile and powerful system. The floppy disc industry is emerging very rapidly. Some of the characteristics and capabilities of currently available devices will be presented and future trends will be discussed. Actual hardware will also be available for inspection.

Alan Shugart is president of Shugart Associates which was founded in February, 1973. They developed and have recently started manufacturing the SA900/901 Diskette Storage Drive.



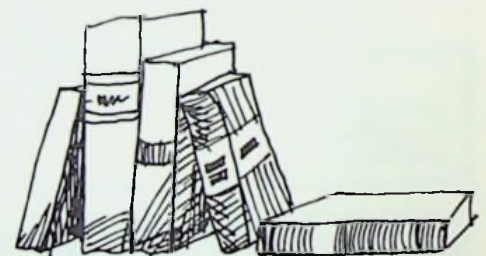
**MATERIALS SCIENCE OF
SEMICONDUCTORS - I**

Processes and Technology

San Jose State University - San Jose Thursdays, Feb. 14 thru May 30, 7-10 p.m. The problems of materials technology is of prime importance both to the manufacturer and user of electronic materials. The Dept. of Materials Science at San Jose State University has brought together an outstanding group of scientists and instructors in a series of three courses of importance to the semiconductor industry. Subsequent courses to the above will concentrate on "Devices and Material Problems" and "Thin Film Technology".

Prerequisites: Basic chemistry and physics courses, or on approval of the instructor.

Fee: \$78. 3 semester units credit
Information: Carole L. LaCombe, Continuing Education Coordinator. (408) 277-2182 or Dr. K.S. Sree Harsha (408) 277-2446, or Dr. R.A. Rao, Dept. of Elec. Engineering.



NEW LASER BOOK

"Laser Devices and Applications" edited by Ivan Kaninow of Bell Labs and Anthony Siegman of Stanford is available from IEEE Order Dept., also John Wiley & Sons. 504 pages, priced at \$7.50 paper bound, \$11.20 clothbound, to IEEE members only. Clothbound edition \$14.95 to non-members. Includes 29 reprinted technical papers of tutorial review type from Proceedings, plus three articles from SPECTRUM. Also includes extensive bibliography. Sponsored by ED and MTT Groups of IEEE.

NPSS - FUSION POWER AND THE ENVIRONMENT

Are we at the crossroads? Are the energy demands of our society fundamentally at odds with other life support components of our biosphere? Fusion power is touted by some as the unexpendable and ideal energy source of the future. But, have the potential environmental issues been realistically appraised?

Dr. T. Kenneth Fowler, Associate Director of the Lawrence Livermore Laboratory for the Controlled Thermonuclear Research Program, is eminently qualified to describe Fusion Power programs on an international scale, to assess the prospects for success of Fusion Power, and to compare Fusion and Breeder Reactor Programs.

Dr. John T. Holdren, Assistant Professor in the Energy and Resources Program at the University of California, Berkeley, is uniquely qualified to present the environmental arguments with technical credence. Formerly a staff physicist in the Theory Group, Controlled Thermonuclear Fusion Program at LLL, and subsequently a Senior Research Fellow at CIT in the Environmental Quality Laboratory with joint responsibilities in the Division of Humanities and Social Sciences, he can speak with candor on the issue.



ED - Ion Implantation Techniques in High Speed Bipolar Transistors

Ion implantation techniques have found a wide range of applications in MOS technology. But ion implantation and proton enhanced diffusion can have a significant effect in improving the performance and reproducibility of current state-of-the-art high speed microwave transistors. These technologies will be described by two leading area researchers and recent results in improved transistor performance will be presented.

James F. Gibbons is Professor of Electrical Engineering, Stanford University and is a member of the Board of Directors, Avantek, Inc. Stephen Ludvik is a member of the technical staff, Microwave Technology Center, Hewlett-Packard Co., Palo Alto, Calif.

EDUCATIONAL OPPORTUNITIES

Univ. of Calif. - Berkeley Extension

Berkeley Campus

"System Design Using Digital and Linear Integrated Circuits", 7 p.m., once weekly, February 7 thru May 2, '74. Fee \$70. 155 Barrows Hall. Instructors Narpat Bhandari and Frederick Kirsten.

"MOSFET Device and Memory Design", beginning Feb. 5 at 7 p.m., once weekly, 126 Barrows Hall. Fee \$70. Instructor Mangal Verma.

Menlo-Atherton High School

"Advanced Sensor Technology", once weekly beginning February 4, Room E-2, Fee \$70. Instructor Frank Stucki. 7 p.m.

"Microwave Electronics", 7 p.m. once weekly beginning Feb. 5, Room C-8, Fee \$70. Instructor Allan Scott.

"Machine Perception, Understanding and Artificial Intelligence", 6:30 p.m., once weekly beginning Feb. 5, Room E-2. Fee \$65. Instructors Martin Fischler and Oscar Firschein.

Information - Continuing Education in Engineering, Univ. of Calif. Extension, 2223 Fulton Street, Berkeley, CA 95720. phone: (415) 642-4151.

To register, write to Department B, University Extension, University of California, 2223 Fulton Street, Berkeley, California 94720

Information: Norman Parrish, Program Coordinator, (415) 642-4151.



NUCLEAR POWER WORKSHOP CAL POLY STATE UNIVERSITY

March 7-9, '74 San Luis Obispo

Participants from Westinghouse, General Electric, Atomics International, Gulf General Atomics and AEC. Information: Dr. Saul Goldberg, Calif. Poly State University, San Luis Obispo, CA 93407. Phone (805) 546-2315

APS -- DNA-002 WIDEBAND SATELLITE BEACON



For propagation through a structured plasma, such as the disturbed ionosphere, the useful bandwidth is limited not only by classical dispersion but also by scattering. Statistically, the latter effect is a reduction in the coherence bandwidth of the transplasma communication channel. Scattering, through disruption of spatial coherence, may also set limits on useful employable aperture.

Complex-signal statistics under these and other more commonly occurring conditions will be assessed with a beacon being developed at SRI. The beacon will transmit ten mutually coherent frequencies ranging from VHF through S-band from a high-inclination satellite to be launched in 1974. Analysis of observations with ground-based antennas hopefully will lead to parameterization of ionospheric scattering, which in turn will be useful for channel modeling.

Dr. Edward J. Fremouw holds degrees in EE, physics, and geophysics. Please join us for this change of pace.



EMB - ELECTRONIC TECHNOLOGY IN TREATMENT OF CHRONIC PAIN

The recent advances in the treatment of chronic pain provide striking example of electronic applications in medicine.

These applications are divided into two areas; (1) electronic dependent neurophysiology technique as guides to surgical intervention; (2) pain control through electronic stimulation. The second area may additionally subdivided as follows: (a) stimulation through electrodes on the skin; (b) direct stimulation of the central nervous system through implanted electrodes. The speaker, Mr. Rutkin, will describe these applications and the engineering problems involved.

AES - BROADCAST SATELLITE SYSTEMS



The technical and economic aspects of broadcast satellite systems are analyzed on the basis of a decision analysis model. Signal quality resulting from minimizing cost and optimizing performance is discussed in terms of system operating cost, satellite transmitter power and ground terminal figure-of-merit. A working model ground station operated in the 12 GHz will also be presented.

Dr. Han received his Ph.D. degree from Stanford University. At Philco-Ford, he is now a technical leader on the NATO Phase III Communication Satellite Program. He has wide interests in the field of microwave components, antennas, satellite communication systems, jungle communication systems and millimeter wave atmosphere propagation. He is also a member of the Technical Review and Planning Committee on Satellite Communication Systems, Aerospace and Electronics Society of the IEEE.

APS -- ONE DAY LECTURE SERIES "REFLECTOR ANTENNAS"

The IEEE Antennas and Propagation Chapter will present a one-day tutorial lecture series, "Reflector Antennas", at Philco-Ford Auditorium, Bldg. 3, 3825 Fabian Way, Palo Alto, on Sat., Feb. 9, from 8:30 am to 4:00 pm.

Introductory remarks
Dr. Samuel Silver, UC Berkeley

"Aperture Theory"
Dr. W.A. Edson, SRI

"Horn Feeds for Reflector Antennas"
Dr. A.F. Sciambi, Philco-Ford

"Radio Astronomy Applications of Reflector Antennas"
Dr. W.J. Welch, UC Berkeley

"Reflector Antennas for Communications via Satellites"
Dr. A.E. Smoll, Philco-Ford

Mail form with payment to:

COM - DELTA MODULATION TECHNIQUES

The application of delta modulation to digital transmission of telephone speech will be discussed by Dr. Frank Boxall. The basic coding mechanisms and resulting channel characteristics, and the use of digitally controlled companding - both syllabic and quasi-instantaneous, will be reviewed. Delta modulation will be compared versus conventional PCM and differential PCM. Discussions of delta modulation customarily include a magnetic tape playback of processed speech, of which several samples will be available.

Frank Boxall, now an independent consultant, began his interest in communications during WWII as a ship's radio officer in the Canadian Merchant Navy. He then obtained a BS degree in Engineering from the University of British Columbia, and a PhD at Stanford in 1955. He is a member of Sigma Xi, holds U.S. patents, and has published several technical papers. He has taught engineering classes at a number of universities.

INSURANCE CLAIM FORMS

The Section office now has IEEE medical insurance claim forms available.

EBSS - U.S. ENERGY SUPPLIES PAST, PRESENT AND FUTURE

If you've been wondering about the facts behind the myriad proposals for conserving energy, then the East Bay Subsection's January meeting is for you. Jim Kane, head of the Lawrence Livermore Laboratory's Chemistry and Materials Science Department, will present a talk on the past, present and future of energy flow in the United States. His graphic slides, developed by the Energy Studies group at LLL, will help to illuminate some of the sources of the nation's energy crisis; and why the solution will surely be as complex as the problem.

Technical and social approaches for both the short and long terms will be described, as well as the impact on our everyday lives. Of particular interest to the engineers in attendance will be Doctor Kane's discussion of the role of materials in supplying the nation's future energy needs.

The meeting is scheduled for Monday, January 28 at 7:30 p.m. at the Lawrence Berkeley Laboratory, Building 70A. Stop at the guard gate on Cyclotron Road (east end of Hearst Avenue) for detailed directions.

FUTURE MEETINGS OF INTEREST IN 1974

Jan 14-16	Winter Simulation Conference	Washington D.C.
Jan 16-18	Nuclear Utilities Planning Methods Symposium	Chattanooga
Feb 13-15	Int'n'l. Solid State Circuits Conf.	Philadelphia
Feb 26-28	COMPCON	San Francisco
Mar 25-29	Intercon (Exhibits Mar 26-29)	New York
Apr 2-4	Int'n'l. Reliability Physics Symposium	Las Vegas
Apr 9-11	Int'n'l. Optical Computing Conf.	Zurich
Apr 21-24	Int'n'l. Symposium on Circuits and Systems	San Francisco
Apr 22-26	Eurocon '74	Amsterdam
Apr 23-25	Communications Satellite Sys. Conference	Los Angeles
Apr 23-27	Nat. Computer Conference	Chicago
June 16-19	Int'n'l. Conf. on Communications	Minneapolis
July 16-19	EMC International	San Francisco
Sep 10-13	Comcon (Fall)	Washington D.C.
Sep 10-13	WESCON	Los Angeles

Dr. Anthony G. Jennetti
ESL Inc.
495 Java Drive
Sunnyvale, Ca. 94086

Enclosed is check (payable to G-AP) in the amount of \$_____, for the February 9, 1974 APS Lecture Series on Reflector Antennas.

Name: _____
Address: _____
no. _____ street _____
city _____ state _____ zip _____
Phone: _____

Check one: Member Non-member

Deadline for preregistration: Jan. 20.
Fees: IEEE member \$10, non-member and post-deadline registration \$15. Fees include notes and lunch (lunch guaranteed for preregistrants only).