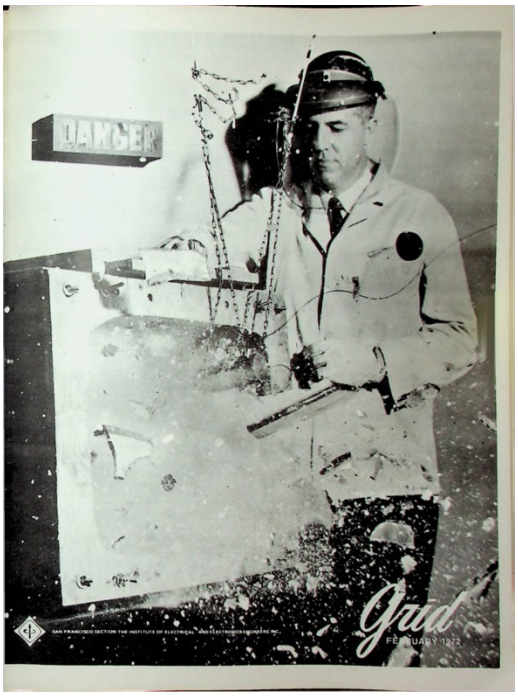
EDITOR'S PROFILE of this issue

from a historical perspective …

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

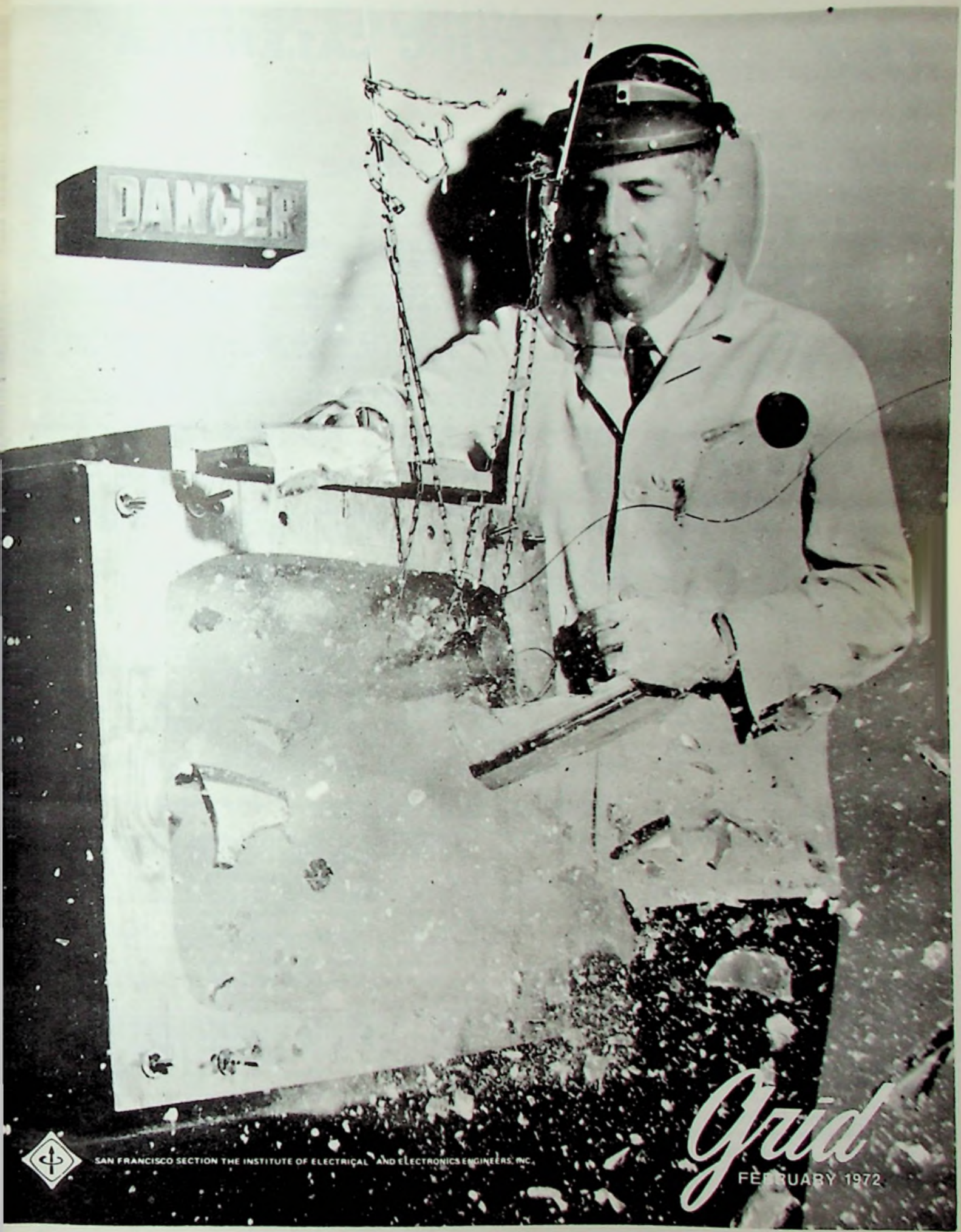


February, 1972:

Cover: A TV picture tube is imploded as part of Underwriters Laboratories testing. A tour is planned for the UL labs in Santa Clara. More on page 3.

Page 4: Charles (Bud) Eldon is nominated to be chair of the Section. He was the founder of my society in 1956 (eventually become the Electronics Packaging Society), and served as its president for three years during the '60's. He guided the merger of the IRE's Product Engineering and Production Group and the AIEE's Component Parts group to form the Parts, Hybrids and Packaging group. He goes on to be Region 6 Director and president of IEEE.

Page 7: Edward Teller of the UC-Berkeley Lawrence Radiation Laboratory, credited as "Father of the Hydrogen Bomb", speaks on the potential for electrical power from nuclear fusion.



Grid

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

FEBRUARY 1972

Grid

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number 5

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Jean Helmke, Office Manager

1971-72 San Francisco Section Officers
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FELLOWS ELECTED – 1972

Look for information in March

FELLOW CHAIRMAN: Hugh E. Webber, 1121 Cotton St., Menlo Park 94025; 324–3055.

Newly appointed Fellow award committee Chairman, Hugh E. Webber, emphasizes that our pride in the election of SF Section Fellows presented in the next issue resulted from thoughtful work done one year ago by members and officers. In order to insure similar recognition of others among us of unusual professional distinction in 1973, your nominations must be in the hands of the committee by Feb. 15, 1972.

For assistance and advice, contact Hugh Webber at (415) 324–3055 or the Section office at (415) 327–6622.

MEETING CALENDAR

AEROSPACE & ELECTRONICS SYSTEMS
FEB. 17

Story on page 5

WATER RESOURCES: OROVILLE–TERMALITO CONTROL SYSTEM. Omparkash S. Bindra, Resident Engineer, State of Calif. Dept. of Water Resources, Sacramento.

FEB. 17, Thursday, 8:00 PM, Philco Ford Auditorium, Bldg. 56, 3825 Fabian Way, Palo Alto. Dinner: 6:30 PM, Rickey's Hyatt House, 4219 El Camino Real, Palo Alto. Reservations: Pat Hoppe, (415) 326–4350 x 6143. by Feb. 15.

ANTENNAS & PROPAGATION
FEB. 10

Story on page 8

AN OVERVIEW OF SPACECRAFT ANTENNAS. John B. Damonte, Manager, Antenna Systems, Lockheed M&S Co., Sunnyvale.

FEB. 10, Thursday, 8:00 PM, Lockheed Research Lab Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Cocktails at 5:30 PM; dinner at 6:15 at Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No Reservations.

CIRCUIT THEORY
FEB. 12

Story on page 7

One day short course on OPTIMIZATION. Les Besser, Course Organizer. See story for names of lecturers.

FEB. 12, Saturday, 9 AM to 5 PM, SLAC Auditorium, 2575 Sand Hill Road, Menlo Park. See story for reservation form and details.

COMMUNICATION TECHNOLOGY/ INFORMATION THEORY
FEB. 17

Story on page 7

JOINT MEETING ON WALSH FUNCTIONS AND SPECTRAL ANALYSIS. Nelson M. Blackman, Senior Scientist, Sylvania Electronic Systems, Mountain View.

FEB. 17, Thursday, 8:30 PM, SRI, Bldg. 1, 333 Ravenswood Ave., Menlo Park. Dinner: 6:00 PM, Ming's of Palo Alto, 1700 Embarcadero, East Palo Alto. Reservations: Paul Shaft (408) 734–2244; Ed Carr (415) 399–5550 by Feb. 16th.

COMMUNICATION TECHNOLOGY
FEB. 15

Story on page 6

THE WIRED NATION IN OUR FUTURE. Dr. E. Bryan Carne, Associate Director of Research, GTE.

FEB. 15, Tuesday, 8:00 PM, Main Auditorium, Philco Ford, 3939 Fabian Way, Palo Alto. Dinner: 6:00 PM, L'Omelette French Restaurant, 4170 El Camino, Palo Alto. Reservation: Ed Carr, (415) 399–5550 by Feb. 14th.

COMPUTER SOCIETY
FEB. 22

Story on page 5

COMPUTER TERMINALS – PAST, PRESENT AND FUTURE. L. C. Hobbs, Pres., Hobbs Associates.

FEB. 22, Tuesday, 8:00 PM, Skilling Auditorium, Stanford. Dinner: 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Reservations: Pat Fleming, (415) 321–3300 x 258.

COMPUTER SYSTEMS
FEB.26

Story on page 5

ONE DAY TUTORIAL SYMPOSIUM ON COMPUTER SYSTEMS. Dr. Frank Greene, Course Organizer.

FEB. 26, Saturday, 9:00 AM to 5:00 PM, Daly Science Center, Room 207, University of Santa Clara. $20 fee includes notes, reading guide and lunch. See story for details.

CONTROL SYSTEMS SOCIETY
FEB. 15

Story on page 7

TOUR OF THE RINCONADA WATER TREATMENT PLANT OF THE SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT. Ladies welcome. Jack Watkins, Jr. of the District is the host for the tour.

FEB. 15, Saturday, 8:00 PM, Rinconada Water Treatment Plant, 400 More Ave., Los Gatos. Dinner: 6:15 PM, LaHacienda Inn, 18840 Saratoga–Los Gatos Road, Los Gatos. Reservations: none required.

EAST BAY SUBSECTION
FEB. 28

Story on page 6

TELEVISION TRANSMISSION UPDATE. Talk and tour by Gary C. Flieds, Supervisor with Pacific Telephone Co., Tour size is limited.

FEB. 28, Monday, 7:30 PM, Telephone Building at 333 Grant Ave., San Francisco. Reservations: Jim St. Arnaud, (415) 399–4974 by Feb. 25th.

THE ENGINEERING MANAGEMENT GROUP is sponsoring an 8–session seminar on BUSINESS MANAGEMENT. The moderator will be Dr. Roger K. Summit of Lockheed Palo Alto Research Lab. The $30 fee includes handbook, notes and a certificate. The location will be at a mid–peninsula location to be announced. The dates and times are: Feb. 26, Saturday from 9 AM to 5 PM; Feb. 29, Tuesday from 7 – 10 PM; March 7, 14, 21 and 28 and April 4 and 11, (all Tuesdays) from 7 – 10 PM. For information contact John Oblanas, SRI, 333 Ravenswood Ave., Menlo Park; (415) 326–6200 x 3191.

See CALENDAR for Program Arrangements

MEETING CALENDAR

ELECTROMAGNETIC COMPATIBILITY
FEB. 21

Story on page 8

NEW DEVELOPMENTS AND TRANSISTORS AND INTEGRATED CIRCUITS. Ken True, Fairchild Semiconductor.

FEB. 21, Monday, 8:00 PM, Hewlett–Packard Auditorium, 5301 Stevens Creek Blvd., Santa Clara. Dinner: 6:15 PM, Custom House, 20060 Stevens Creek Blvd., Cupertino. No reservations.

ELECTRON DEVICES
FEB. 8

FIELD PROGRAMMABLE BIPOLAR ROM'S. Speakers to be announced.

FEB. 8, Tuesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails at 6:00 PM; dinner at 7:00. Reservations: Section Office, (415) 327–6622 by Feb. 7th.

ENGINEERING MANAGEMENT
FEB. 16

Story on page 5

ENGINEERING IVORY TOWER OR DUNGEON. Donald M. Dible, General Partner, The Entrepreneur Press.

FEB. 16, Wednesday, 8:00 PM, Mariani's Restaurant, 2500 El Camino Real, at San Tomas Expressway, Santa Clara (just south of Moonlight Shopping Center). Cocktails: 6:00 PM; dinner: 6:30 PM. For dinner reservations call Sue Mendell, (415) 321–2300 x 3619 by Feb. 14th. (Beef Sirloin Tips @ $4.75 per person).

GOLDEN GATE SUBSECTION/ POWER ENGINEERING
FEB. 8

Story on page 7

NUCLEAR FUSION ELECTRIC POWER. Dr. Edward Teller, Prof. of Physics at UC Berkeley and Associate Director of the Lawrence Radiation Laboratory. Ladies are invited. JOINT MEETING.

FEB. 8, Tuesday, 8:00 PM, Engineers Club of S.F., 160 Sansome St., San Francisco. Cocktails: 6:00 PM; dinner at 7:00 PM. Reservations: Engineers Club, (415) 421–3184.

MICROWAVE THEORY & TECHNIQUES
FEB. 24

Story on page 6

INTEGRATED X–BAND POWER AMPLIFIER WITH GUNN & IMPATT DIODES. Del Hanson, Hewlett–Packard Co.

FEB. 24, Thursday, 8:00 PM, Hewlett–Packard Auditorium, 5301 Stevens Creek Blvd., Santa Clara. No dinner.

NUCLEAR SCIENCE
FEB. 15

Story on page 8

GAMMA RADIATION APPLIED TO WASTE WATER TREATMENT. Niel E. Nielson, Pres. Aqueonics, Inc., Los Altos.

FEB. 15, Tuesday, 8:00 PM, SLAC Auditorium, 2575 Sand Hill Road, Menlo Park. Dinner: 6:00 PM, Lord Fletcher Inn, 3421 El Camino, Atherton. Reservations: Mrs. L. Burch, (415) 854–3300 x 2401 by Feb 14th.

RELIABILITY
FEB. 16

Story on page 8

BENEFITING FROM PART FAILURES. Warren Gelfer, Space Systems Division.

FEB. 16, Wednesday, 8:00 PM, Stanford University Physics Lecture Hall, PH 104. Dinner: 6:30 PM, Stanford View Restaurant, El Camino & Stanford St., Palo Alto. Reservations; Dick Cornwell, (415) 966–3877 by Feb. 15th.

SANTA CLARA VALLEY SUBSECTION
FEB. 9

Story on page 3

TOUR OF UL's TESTING LABORATORY – "TV SPECTACULAR". Jack Hogg, Tour Coordinator.

FEB. 9, Wednesday, 7:00 PM, Underwriters' Lab, 1655 Scott Blvd. (near El Camino) Santa Clara. No dinner.

SYSTEMS, MAN & CYBERNETICS/
FEB. 14

Story on page 8

JOINT MEETING WITH HUMAN FACTORS SOCIETY. TOPICS IN COLOR PERCEPTION – – 1972. Dr. Arthur Karp, Sr. Research Engineer, SRI, Menlo Park.

FEB. 14, 8:00 PM, Monday, Ness Auditorium, International Bldg., SRI, 333 Ravenswood Ave., Menlo Park. Dinner: 6:00 PM, International Bldg., SRI. Reservations: Section Office, (415) 327–6622 by noon, Feb. 11th.

VEHICULAR TECHNOLOGY
FEB. 28

Story on page 8

SOPHISTICATED AMATEUR REPEATER SYSTEM COVERS CALIFORNIA. Ralph Green, Sr. Engineer, Pacific Telephone Co. Radio Systems Division.

FEB. 28, Monday, 8:00 PM, Holiday Inn, South San Francisco (E. Bayshore). Cocktails: 6:00 PM; dinner 7:00 PM. Reservations: Ben Wright, (415) 588–5315 by Feb. 25th.

ENGINEERS WEEK – February 20–26. Banquet will be held on Feb. 24th at Goodman's Hall, 10 Jack London Square, Oakland. A BART preview ride will be held on Feb. 25th. The topic is ENGINEERING – – A BETTER TOMORROW THROUGH TECHNOLOGY. Banquet speaker will be Dr. Glenn T. Seaborg. For information contact the Chairman: Arthur H. Frye, Jr., c/o S.F. Water Dept.; (415) 558–3616.

See CALENDAR for Program Arrangements

THE COVER STORY
SCVSS TO VISIT UNDERWRITERS' LABS

The implosion of a television picture tube is certainly spcetacular, It is not due to chance that such "TV Spectaculors" seldom occur in our homes. For 77 years Underwriters' Laboratories has been testing and evaluating consumer, commercial and industrial equipment in an effort to reduce injuries and losses to the lowest, practical level.

Two of the most commonly encountered potential hazards are electricity and automobiles. They are both deadly but annually in the U.S. fifty times more people are killed by automobiles than by Electricity. Electrical deaths per million citizens have been reduced from 19 per million in 1900 to 7.6 per million in 1940 to 5.5 per million in 1965. This enviable safety record can, to a large degree, be attributed to the efforts of Underwriters' Laboratories.

An informative tour of UL's Santa Clara testing lab is planned for the February 9 meeting. The tour will include an introduction to the Labs organization and practices and a tour of the laboratory and displays of equipment and typical tests, and will be conducted by Jack Hogg of Underwriters Laboratories.

ADDITIONS and CORRECTIONS
1971–72 SECTION DIRECTORY

SECTION PROGRAM CHAIRMAN: Ken Walters, Pacific Telephone, 140 New Montgomery St., San Francisco 94105; 399–3583.

SAN FRANCISCO BAY AREA ENGINEERING COUNCIL DELEGATE: J. J. McCann, PG&E Co., 77 Beale St., San Francisco 94106, Room 2639; 781–4211 x 2865.

Address of CHARLES BITMAN, Secretary of ELECTRON DEVICES Chapter is: Hewlett–Packard Co., 1501 Page Mill Road, Palo Alto 94304; 493–1501 x 3170. The Treasurer of this Chapter is ALBERT YU, Fairchild R & D, 4001 Miranda Ave., Palo Alto 94304; 231–7250 x 2084.

Vice Chairman for INSTRUMENTATION MEASUREMENT Chapter is: Neal Mulvihill, Lockheed M & S Co., Dept. 85–85, Bldg. 153, Sunnyvale 94088; 742–6868.

1972-1973 SECTION NOMINEES

CHARLES A. ELDON
FOR CHAIRMAN

Present Vice Chairman, received a BS degree in physics in 1948 and an MBA in 1950, both from Stanford. He was employed by HP from Jan. 1951 until Dec. 1969 in a broad range of manufacturing and systems management positions. Since 1969, he has been a management consultant to HP and to a number of small electronics companies. Mr. Eldon is a Senior Member of IEEE. In 1956 he organized the SF Chapter of the Product Engineering and Production professional group, subsequently served in all offices and was national Chairman from 1963 to 1965. From then until 1968 he was on the national administrative committee of PMP Group (now PHP), which was created by a merger he guided between PEP and CP groups of the Institute.

DALTON W. MARTIN
FOR VICE CHAIRMAN

Present Secretary, received a BSEE from Stanford University in 1954 and an MSEE from Stanford in 1956. He was associated with Stanford Research Institute from 1953 to 1959 in the Radio Systems Laboratory, Low–Frequency Navigation Systems, and Direction Finding Systems. He was co–founder of VIDAR Corporation in 1960 and served as Vice President–Engineering from 1960 to 1968. He is presently Vice President of VIDAR Corporation. He has been an IEEE member since 1955 and served as Technical Program Chairman for WESCON/69.

ED JACKSON
FOR SECRETARY

Present Treasurer, served in US Navy as an electronics technician in WW II and in the Korean War. Between wars, he attended UC, Berkeley. He joined the Bell System in 1952 and is currently employed as a staff engineer heading a group responsible for coordinating all major projects in Central Counties area of Pacific Telephone Company. He was active in East Bay Subsection for four years. After serving as chairman of the subsection in 1969, he advanced to Senior Member, IEEE, and became active in the Section, serving two terms as Group Chapter Coordinator.

ALAN B. GRENBENE
FOR TREASURER

Present Chairman of the SF Chapter of the Circuit Theory Group. Received his BSEE from Robert College, Istanbul, Turkey, his MSEE from UC Berkeley and Ph.D from Rensselaer Polytechnic Institute. He was employed as a research engineer at Fairchild, was a member of the technical staff at Sprague Electric Co., a member of the electrical engineering faculty at Rennselaer, & with EXAR Integrated Systems, Inc., Sunnyvale, as Vice President of Engineering.

Dr. Grebene has authored over twenty–five papers and holds several patents. He is a lecturer in the Graduate School of University of Santa Clara, a Member of IEEE, Sigma XI, Eta Kappa Nu, the American Society for Advancement of Science and the American Society of Engineering Education.

RONALD J. WHITTIER
FOR TREASURER

An officer of the SF Chapter of the Electron Devices Group during 1969–1971. Received BS degree from UC Berkeley in 1960 and the Ph.D degree from Stanford University in 1965, after which he joined Fairchild Camera & Instruments Corporation's Research and Development Laboratories, where he was involved in investigations of high current effects and noise in semiconductor devices. He became Manager of the Physics Department in 1970. He joined Intel Corporation, where he currently directs new technology development activities.

JACK L. MELCHOR
FOR SECTION DIRECTOR

Dr. Melchor is Chairman of Palo Alto Investment Company (PAIC), a local venture capital firm specializing in start–up financing. Prior to founding PAIC in 1969 he was with Hewlett–Packard Company for eight years. As General Manager of the Palo Alto Division, he was responsible for transforming an acquisition and computer development activity into H–P's Data Products Group. In 1961 he co–founded Hewlett–Packard Associates (hpa) to produce semiconductor, photoconductor and microwave components; which later became a division of H–P. A Fellow of IEEE, and former Section Chairman, Dr. Melchor is the author of various publications and the holder of six patents. He has BS and MS degrees in Physics from the University of No. Carolina and a Ph.D in Physics from University of Notre Dame.

IVORY TOWER or DUNGEON

Under the present depressed conditions of engineering employment, a prophet bearing a panacea to remedy this problem as well as solving the nation's economic ills, is a welcome sight indeed. Donald M. Dible, general partner of the Entrepreneur Press has recently published a book, titled "Up Your OWN Organization".

Mr. Dible will discuss the motivations of technically trained and professionally qualified entrepreneurs. He will also review many of the frequently overlooked problems one may encounter as an entrepreneur.

Don Dible has a BSEE from MIT and MSEE from Stanford, and has worked for three small electronic firms. He has participated in numerous seminars on the subjects of "Venture Capital" and "How to Start and Operate a Small Business." He is now in a documentary film with Robert Townsend to be released in early 1972. In addition to his primary duties as the founder of the Entrepreneur Press, Mr. Dible maintains a consulting service for entrepreneurs.

ONE DAY TUTORIAL – COMPUTER SYSTEMS

The Office of Continuing Education, University of Santa Clara, and the IEEE Computer Society will present a tutorial symposium covering State of the Art Developments and indicated trends in computer systems technology at Daly Science Hall, Rm. 207. This is the first of a series of one day symposia designed for the practicing engineer interested in current practical applications and design techniques in digital systems. An Engineering or Science degree or equivalent background is assumed.

The first session will cover computer systems, including: CPU Architecture; Memories, Central and Auxiliary; and I/O Peripherals.

Speakers: Prof. Harold Stone, Stanford, Dr. Frank Greene, of Technology Learning Corp. (Course director), and others.

Fees: IEEE members $20. Student members $15. Non–members $25. Cost includes symposium notes, reading, guide, luncheon.

For information, write of telephone IEEE Symposium, Division of Continuing Education, University of Santa Clara, Calif. 95053. (408) 984–4518.

Subsequent Symposia topics will include one day courses on: COMPUTER SYSTEMS, DIGITAL COMPONENTS, DIGITAL DESIGN TECHNIQUES, and APPLICATIONS.

To register, complete and mail the accompanying form:

IEEE Computer Society
February 26 Symposium on
Computer Systems Technology

(Must be received by February 21, 1972)

Enclosed is check (Payable to University of Santa Clara) in amount of $_____

Name: _____

Address: _____
(Street)

_____
(City, State, Zip)

Telephone: _____

Check One: ___Regular Member

____Student Member____ Non–member

Mail this form and payment to:
IEEE Computer Society Seminar
Division of Continuing Education
University of Santa Clara
Santa Clara, California 95053

AES – WATER RESOURCES CONTROL SYSTEM

Water Resources Control is a field where Aerospace Industry trained engineers might transfer their technical knowledge. The basic control and display, data handling, telemetering, and computer systems are very similar for both types of applications.

The Oroville–Thermalito Control System consists of three major sub–systems. These are the Master Supervisory Subsystem, the Data Logging and Alarm Events Subsystem and the Load Control Subsystem. The Master Supervisory Subsystem controls and monitors various facilities of the power complex.

The Data Logging and Alarm Events Subsystem is a data acquisition system which inputs about 1400 alarm events and status changes plus about 150 analog quantities, providing (a) print–out of alarm and status changes (b) periodic log of analog data (c) output (analog) to various strip recorders and (d) digital output to displays. The load Control Subsystem is a computerized model of the power complex.

Omparkash S. Bindra has a BSEE from Fresno State College and a BA (Mathematics) from Punjab University, India, and presently is a part–time graduate EE student at Sacramento State College. He has worked for the last seven years on design and construction of electrical features of power and pumping plants for the State Water Project.

COMPUTER TERMINALS
PAST, PRESENT AND FUTURE

Trends in computer systems and applications are increasingly favoring on–line, real time, and interactive uses of computers ever the earlier batch–processing systems. The increased on–line application has given rise to requirements for a number of types of terminals. This talk will cover the system design and application trends that have led to increased uae of terminals, the major types of terminals now in use, and terminal characteristics anticipated for the future. Particular emphasis will be placed on smart terminals which include processing capabilities in the local terminal.

Linder C. Hobbs received the BEE degree from Georgia Tech. in 1948, and MSEE degree in 1962 from University of Pennsylvania. He has been associated with RCA and UNIVAC. He also was associated with the Aeronutronic Division of Ford as manager of Data Processing Engineering. In 1962 he orhanized the consulting firm of Hobbs Assoc., and has served as President and Senior consultant since that time.

See CALENDAR for Program Arrangements

TELEVISION TRANSMISSION UPDATED

Television Transmission has come of age. In the early fifties the telephone companies established a nationwide television transmission system to serve the network broadcasters. A Television Operating Center (TVOC) was built in major cities to provide video switching and quality monitoring. Now with the increased use of these facilities and the stringent signal requirements for color TV, the Bell System is updating their video equipment. One result is Pacific Telephone Company's new operating console and video switch at the San Francisco TVOC.

On February 28, the East Bay Subsection will sponsor a talk and tour of the new facility. The speaker, Mr. Gary C. Fields, of the Pacific Telephone Company is in charge of the cut–over of the new operation. He formerly was an engineer with the Chief Engineer's Department, responsible for the design of some of the many circuits used in the console. See Calendar for details.

INTEGRATED X–BAND POWER AMPLIFIER UTILIZING GUNN AND IMPATT DIODES

A two–stage injection locked power amplifier has been developed for the 10.7–13.2 GHz range having integral input, output and interstage isolators and an "out–of–lock" monitor, The gain is 33 db at one watt output power. The overall locking bandwidth is more than 200 MHz and is electrically adjustable over more than a 250 MHz range.

This talk will describe the design and performance of this integrated power amplifier for communication system applications. Emphasis will be on describing the circuit design–system performance trade–offs of this TWT type replacement.

Dr. Hanson received BSEE, Univ. of Wisconsin 1959; MSEE, NYU 1961; MS Physics U. of Michigan 1966; Ph. DEE, U. of Michigan 1967. His employment experience includes Bell Telephone Labs. 1954–1964, and Hewlett–Packard, 1967–present.

WESCON

West'n Electronic Show & Convention
September 19–22, 1972
Los Angeles Convention Center
Information: Don Larson
WESCON General Manager
3600 Wilshire Blvd., Suite 1920
Los Angeles, Calif. 90010

EXPO ELECTRONEX

Los Angeles, Sept. 27–Oct. 1, 1972
Los Angeles Convention Center
Home and office electronics exposition for trade and public.
Information: Don Larsen, Manager
EXPO ELECTRONEX
3600 Wilshire Blvd., Suite 1920
Los Angeles, Calif. 90010

SANTA CLARA VALLEY ENGINEERS COUNCIL

Dr. William Shockley will speak to the SCVEC Friday, Febr. 25 at 7:30 p.m. The topic will be "Research Taboos on Geneticity of IQ". This is to celebrate National Engineer's Week.

Dr. Shockley, IEEE Fellow, is best known as the inventor of the junction transistor. For this and other contributions to transistor physics, he received the 1956 Nobel Prize in Physics, jointly with two colleagues at Bell Telephone Laboratories. He has presented several controversial papers on the relationship of heredity to IQ. Dinner at 7:30 PM, San Jose Hyatt House. Reservations: Phil Simpson 291–4215 by Feb. 18.

THE WIRED NATION IN OUR FUTURE

By the mid–1980's continental America may have a quarter billion telephones (250,000,000), including 5 million video telephones served by transmission and switching facilities worth a quarter trillion dollars.

In addition, some 60 percent of the country will be connected to twenty billion dollars worth of cable systems. Overhead, in synchronous orbits, a half–dozen privately owned satellites will provide long–haul connections between important traffic centers on the East and West coasts, for an investment of half–billion dollars. Other satellites will interconnect the Continents. On the ground, a half–dozen new companies will compete with existing carriers to serve industry by providing long–haul microwave routes. The wired nation will be implemented by solid–state electronic modules which will shrink the size of equipment.

Dr. Carne has been affiliated with GTE Laboratories as associate Director of Research since August, 1969. From the University of London, England, he received his PhD. degree in Electrical Engineering in 1952.

See CALENDAR for Program Arrangements

(CSS) TO TOUR SANTA CLARA WATER PLANT FACILITIES

The Automatic Control Chapter will tour the Santa Clara Rinconada Water Treatment Plant on February 12. Water supplied to much of the County is treated at this plant, which is operated via supervisory control andtelemetry and a central computer system. Information on conditions are continually odisplayed on the operator's console.

Jack Watkins, Deputy Director of Engineering for Santa Clara County Flood Control and Water District, will act as host and tour leader. He is a registered professional engineer in California, earned his BSCE at Nebraska in 1953, MSCE at USC in 1963, and MBA at U. of Santa Clara in 1970.

Wives are invited to both the dinner and tour, as this subject and tour of modern facilities will be of interest to everyone.

CT and IT – WALSH FUNCTIONS and SPECTRAL ANALYSIS

Although invented in 1923, Walsh functions have only recently been considered for such uses as multiplexing, redundancy reduction, pattern recognition, and waveform analysis, These orthonormal functions, which take only the values ±1, often seem unnecessarily mysterious because os a failure to define them explicitly. However, their many interesting properties are readily derivable from Walsh's explicit representation.

The use of a Walsh function as a kernel of a linear transformation leads to "sequency" analysis, which can be carried out extremely rapidly by means of the "fast–Hadamard–transform" algorithm.

Dr. Nelson M. Blachman, senior scientist at Sylvania Electronic Systems, Mountain View, will discuss these related topics at the joint Communication Technology–Information Theory Group meeting,

COURSE ON OPTIMIZATION

A one–day short course on optimization will be offered by the Circuit Theory Group on Saturday, Feb. 12, 1972 (9:00 am – 5:00 pm) at the S.L. A.C. main auditorium. The purpose of the course is to familiarize the practicing engineer with practical computer oriented optimization techniques and available algorithms. The topics discussed will include a wide variety of engineering problems and will concentrate on the following areas: Principles of Optimization; Approximation Techniques; Least p–th and Minimax Objectives: Derivatives and Sensitivities; Simultaneous and Sequential Search; Multidimensional Algebra; Direct -, Gradient -, and Random–Search; Constraints; Problem Formulation Strategies.

Lecturers for the seminar are:
Dr. J. W. Bandler, McMasters University
Les Besser, (course organizer) Fairchild
Dr. L. P. Huelsman, Univ. of Arizona
Dr. G. C. Temes, U.C.L.A.
Dr. S. Weissenberger, U. of Santa Clara
Dr. D. J. Wilde, Stanford University

Fee: $15.00, including lunch and material. Students and unemployed engineers, fee $10.00.

Indications predict a large turnout for the course. Luncheon facilities are limited, and the registration will be closed on February 7. To register, use the accompanying form. Information, contact Les Besser, 493–3100 Ext. 319.

GGSS/ POWER ——— NUCLEAR FUSION ELECTRIC POWER

Dr. Edward Teller, University Professor of Physics at the University of California and Associate Director of the Lawrence Radiation Laboratory, will be guest speaker at a joint meeting of the IEEE Power Engineering Society and Golden Gate Subsection at the Engineers Club of San Francisco, 160 Sansome Street, on Tuesday, February 8, 1972. He will speak on the subject Nuclear Fusion Electric Power.

Dr. Teller's contributions in the fields of chemical physics, molecular physics, nuclear physics and quantum theory are well known to residents of the Bay Area. He frequently extends his activities beyond the scientific community and concerns himself with the teaching of elementary science and applied science on the graduate level. He has often appeared on local television in that role.

Nuclear fusion electric power, although not yet a practical reality, offers one of the major hopes for meeting the future power needs of the world. As one of the early researchers in studies of thermonuclear reactions and as one who now dedicates most of his efforts toward the peaceful uses of nuclear energy, Dr. Teller is most highly qualified to speak on this subject. Moreover, his thoughts and views will be presented in a manner comprehendible to all.

Ladies are cordially invited to this meeting.

See CALENDAR for Program Arrangements

CIRCUIT THEORY GROUP OPTIMIZATION COURSE REGISTRATION

(Should be received before February 7, 1972)

Mail to William Dunn, c/o IEEE San Francisco Section Office, 701 Welch Road – Suite 2210 Palo Alto, Calif. 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_____ Non–Member

IEEE Memb. No._____

TOPICS IN COLOR PERCEPTION

Dr. Arthur Karp, Senior Research Engineer, Stanford Research Institute, will present a discussion and demonstration of interesting and important topics in the perception of color. Color perception is considered from the viewpoint of the artist, historian, phychologist, also the engineer, physicist and photographer.

Two main themes are that light rays are not colored and that this basic notion has been with us since the time of Newton.

This ever–popular presentation using three synchronized carrousel projectors is of interest as much to laymen as professionals. Wives are invited.

Dr. Karp received his Batchelor's Degree in EE in 1948 from CCNY, his Masters from MIT in 1950, and PhD from Cambridge University in 1962. His interest in the psychology of color perception has been a sideline for the past thirteen years.

DIGITAL INTERFACE DEVICES

Mr. Ken True, Applications Engineer, for the Fairchild Semiconductor Division will discuss the characteristics and application of digital line drivers and receivers at the February 21 meeting of the Electromagnetic Compatibility Group. The discussion will cover grounding, shielding, signal characteristics, and application of the devices.

Mr. True graduated from the University of California at Davis in 1968. Since that time he has been employed at Fairchild Semiconductor where he provides technical assistance on digital interface applications. Mr. True is a member of the EIA Committee, TR 30.1.

AN OVERVIEW OF SPACECRAFT ANTENNAS

The emergence of satellite communications systems has opened the way for vovel and unusual approaches to antenna design. Unfurlable paraboloids up to 30 feet in diameter are being designed to operate up to 8 GHz. Multiple beam feeds are being devised to optimize ground coverage and permit frequency reuse in adjacent areas. Shaped beams and orthogonal polarization are being employed to reduce adjacent beam overlap and improve beam–to–beam isolation. Several models of unfurlable antennas will be demonstrated. A prediction will be made of what will happen in space antenna development over the next ten years.

John B. Damonte received the B.S. in Engineering in 1948 and M.S.E.E. in 1962 from the University of California, Berkeley. His experience includes 16 years with Dalmo Victor and five years with Lockheed Missiles and Space Co., where he is manager of Antenna Systems.

John Damonte will be the chairman of the Antennas and Propagation Group for 1972.

GAMMA RADIATION TO WASTE WATER TREATMENT

When those who are deeply interested in the correction of man's prectices of polluting his natural environment review the voluminous fundamental research in the field of irradiation of water and waterborns matter, they find the concept of employing radiation in the correction and elimination of pollution very exciting!

Water treatment using Ionizing radiation becomes practical when all of the elements advance to the proper level of understanding. The speaker will review the general principles of the employment of radiation in water treatment.

Late in 1969, Mr. Nielson founded Aqueonics, Inc. with the initial objective of developing a wastewater refining system to meet operating and quality criteria that were indicated to be badly needed for the future.

Prior to founding Aqueonics, Inc., Mr. Nielson was the president of International Nutronics, Inc., and demonstrated the first operational sewage irradiator established at a municipal wastewater treatment facility.

WANTED: PART FAILURES

It can be said that part failures are needed in order to develop more reliable parts. Techniques used at Lockheed Missile and Space Company for controlling the reliability of parts include: selecting sound designs, documenting requirements including an efective testing program in a procurement specification, and assuring that the materials, processes, and configurations of the selected types are not later degraded by changes.

Mr. Warren Geller will discuss the methods developed there for their Parts Characterization Program. Information systems developed within the aerospace industry for the dissemination of parts failure experience will be described. Mr. Geller is responsible for the Parts Reliability Engineering Organization in the Space Systems Division of Lockheed. He received the BSEE degree, Newark College of Engineering, 1949, the MS degree in Systems Management from USC, 1971.

VHF AND UHF MOBILE RELAY STATIONS

A comprehensive series of VHF and UHF Mobile Relay stations extending from San Diego to Southern Oregon is in operat ion and available for use by amateur radio operators. Operating in the 50, 150, and 450 MHz amateur bands, coverage and control of these stations rival the most sophisticated commercial systems. At least one repeater in each major area is active on a 24 hour basis; primary control is typically by AFSK, with a small group of highly competent and dedicated amateurs responsible.

Ralph Green, a Senior Engineer in PT&T's Radio Systems Division will describe some of the systems in use. Emphasis will be on control circuitry. Mr. Green majored in Mathematics at the University of California. He has a Master's License in the Merchant Marine, and has been with PT&T since 1947.

See CALENDAR for Program Arrangements