

## EDITOR'S PROFILE of this issue

*from a historical perspective ...*

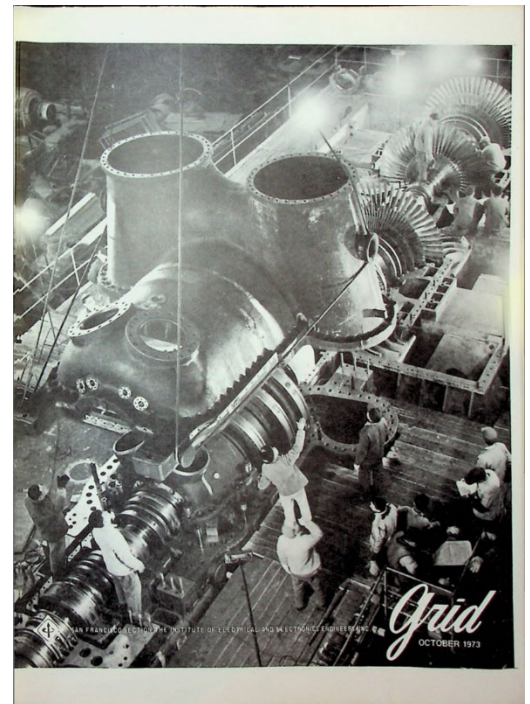
with Paul Wesling, SF Bay Area Council GRID editor (2004-2014)

October, 1973:

Cover: The photo shows a 300 MVA turbine under construction in China.

More on page 2.

Page 5: William Shockley, co-inventor of the transistor and Nobel Prize winner, talks on the prior events leading up to the invention of this device 25 years ago.



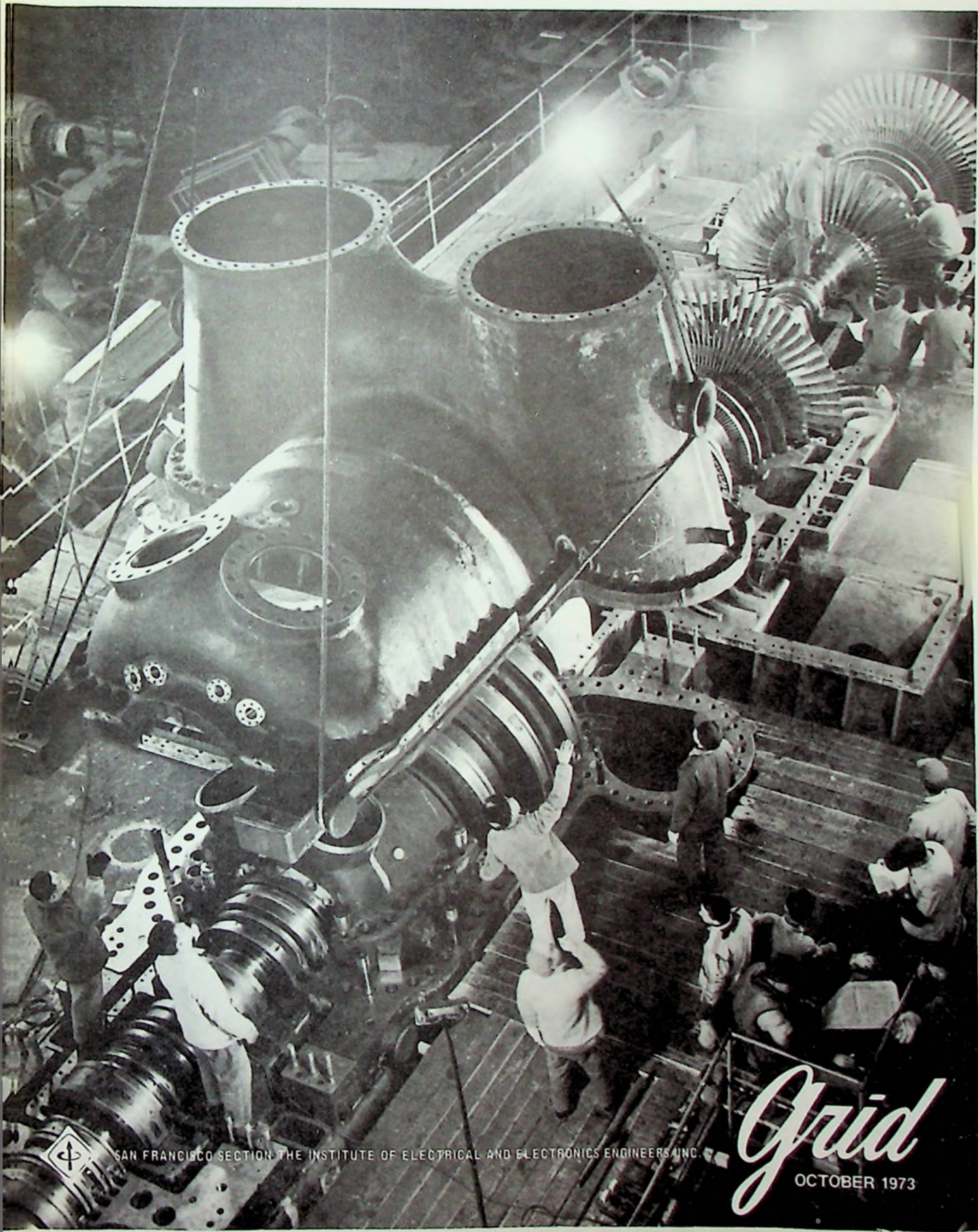
Archive of available SF Bay Area GRID Magazines is at this location:

[https://ethw.org/IEEE\\_San\\_Francisco\\_Bay\\_Area\\_Council\\_History](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](mailto:p.wesling@ieee.org)



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

*Grid*  
OCTOBER 1973

OCTOBER 1973

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- 140. (Signed) E.W. Morris, Editor.  
September 5, 1973

## THE COVER STORY

The cover picture of this GRID issue re-  
lates to the GGSS-IAS joint meeting from  
October. It shows a 300 MVA turbine  
under construction in mainland China.  
The following story and Calendar for de-  
tails of this most interesting meeting told  
by an authority on China and its industrial-  
ization.



## GGSS-IAS JOINT MEETING ELECTRICAL SYSTEMS OF THE PEOPLES REPUBLIC OF CHINA

Mr. Alex Tseng, Chief Electrical Engineer  
of SLAC, has returned from a second visit  
to mainland China where he led members  
of the Chinese-American Institute of  
Engineers in a visit to industrial and elec-  
tric utility installations. His illustrated talk  
will cover nuclear, steam and hydro  
generating plants, transmission and sub-  
station installations, and industrial plants.

Mr. Tseng was born in Peking, China, and  
is a graduate electrical engineer from  
National Central University. He came to  
this country and obtained his BSEE and  
MSEE degrees from Illinois Institute of  
Technology. He also obtained an EE de-  
gree from Stanford.

Mr. Tseng, who worked for both Stone  
and Webster, and Bechtel, is a registered  
Professional Engineer in seven states.  
He is a Senior Member of IEEE, and a  
past Chairman of the San Francisco IEEE  
Industrial Applications Society Chapter.

## EDITORS OVERVIEW

In composing and laying out the GRID for  
October, your editor questions whether  
half of the contributors received his sug-  
gested instructions for preparing copy. If  
you have one, then please read it. If you  
do not have one, then ask Jean Helmke to  
send one to you.

Some important things to remember:

- Do not transmit meeting notices from  
speakers without doing some editing  
yourself, if necessary.
- Meeting notices should approximate  
150-200 words, or less, unless special  
announcement of tutorials, etc.
- Description of the meeting subject is  
more important than the speaker's bio-  
graphy and work experience.
- If possible, use short, eye catching  
titles. Send double spaced copy with  
about 35 to 40 characters per line.
- Get meeting notices to the office  
before the last day of the month.
- Photos - Do not send Polaroid prints.  
They do not reproduce as well as  
regular glossy prints. Do not paper clip.

Many contributors have found that I am  
very willing to cooperate in emergencies.  
I've taken changes and even short an-  
nouncements by phone, and some in long-  
hand. But I surely do not like to edit and  
retype half of the meeting announce-  
ments. A great big "Thank You" to those  
many others who send in good, under-  
standable, clean copy.



## INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY

San Francisco, July 16-18, 1974

### CALL FOR PAPERS

Theme - "EMC Spans the Spectrum"  
Summaries of potential papers, 300  
words, must be submitted by Nov. 30,  
1973. Acceptance by Jan. 15, 1974. Send  
to Alan K. Johnson, 439 Molino Ave.,  
Sunnyvale, Calif. 94086

## REMEMBER DECEMBER

The GRID will not be issued in December,  
so December meetings, if any, should be  
announced in the November issue. Dead-  
line, October 31, or earlier if possible, so  
we will know what to expect.

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# MEETING CALENDAR

- AEROSPACE & ELECTRONIC SYSTEMS**  
OCT. 27  
OCT. 27, Saturday, 10:30 AM. Meet at SLAC Auditorium before 90-minute tour. Reservations: Call Jacqui at (415) 328-3083 before Oct. 24th. No dinner.
- ANTENNAS & PROPAGATION**  
OCT. 11  
OCT. 11, Thursday, 8:00 PM, LMSC Auditorium, Bldg. 202, 3251 Hanover St., Palo Alto. Cocktails at 5:30, dinner at 6:15 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. No reservations required.
- COMPUTER SOCIETY**  
OCT. 20  
OCT. 20, Saturday, 8 AM to 4:30 PM, Daly Science Center, Room 207, University of Santa Clara. Contact: David Crockett, Hewlett-Packard, Cupertino (408) 257-7000 x 2629.
- EAST BAY SUBSECTION**  
OCT. 18  
OCT. 18, Thursday, 9 AM. Bus departs 17th & Clay St., Oakland at 9 AM sharp. Lunch provided following tour. Call Jerry Parker (415) 835-8500 x 327 by Oct. 16th.
- ENGINEERING IN MEDICINE & BIOLOGY**  
OCT. 9  
OCT. 9, Tuesday, 8:00 PM, The Delta Room, Airport Plaza Hotel, 101 Bayshore Freeway, Milbrae. (Use Milbrae turn-off). Dinner: 6:00 PM, Ambassadors Room, Airport Plaza Hotel. Reservations: Karin Carlson (408) 739-8860 x 322 by Oct. 5th.
- ENGINEERING MANAGEMENT**  
OCT. 16  
OCT. 16, Tuesday, 8:00 PM. Room 2224, Royal Coach Motor Hotel, 1770 South Bayshore Blvd., San Mateo. No dinner.
- GOLDEN GATE SS/INDUSTRY APPLICATION SOCIETY**  
OCT. 16  
OCT. 16, Tuesday, 7:00 PM, PG&E Cafeteria, 3rd Floor. Reservations: Art Wells (415) 467-1880 by Oct. 12th.
- INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION/INSTRUMENTATION MEASUREMENT**  
OCT. 17  
OCT. 17, Wednesday, 8 PM, SLAC, East on Sand Hill Road from Interstate 280 turnoff. Gate will give directions to meeting room. No dinner.
- INFORMATION THEORY**  
OCT. 15  
OCT. 15, Monday 8:30 PM, SRI Conference Room B, 333 Ravenswood Ave., Menlo Park. Dinner: 6:15 PM, Des Alpes Restaurant, 201 California Ave., Palo Alto. Reservations: D. Wilson (415) 966-2595 or Mrs. J. Brewer (415) 966-3286 by Oct. 22nd.
- TOUR OF STANFORD LINEAR ACCELERATOR CENTER.** Reservations mandatory. 120 persons maximum.
- HF VEHICULAR DIRECTION FINDING.** Dr. Roy B. Woolsey, Manager of Direction-Finding Systems, TCI, Mt. View.
- SHORT COURSE: MINICOMPUTER TIME-SHARING.** \$25 IEEE members, \$30 non-members, includes lunch and coffee.
- TOUR OF PG&E PITTSBURG POWER PLANT.**
- EE's IN MEDICINE. PANEL DISCUSSION.** MDEE's to be announced.
- MANAGEMENT ASSESMENT.** Clara Redwine, Director AT&T Management Assessment Program, California Regional Center.
- JOINT MEETING. ELECTRICAL SYSTEMS IN THE PEOPLES REPUBLIC OF CHINA.** Alex Tseng, SLAC.
- INSTRUMENTATION & COMPUTER CONTROL FOR THE STANFORD POSITRON-ELECTRON COLLIDING BEAM FACILITY (SPEAR)** - Dr. Adam Boyarski and Bob Melen, Stanford Linear Accelerator Center.
- RECENT UNPUBLISHED IDEAS IN INFORMATION THEORY.** Dr. T. Cover, Associate Professor, Stanford University.
- MAGNETICS SOCIETY**  
OCT. 25  
OCT. 25, Thursday, 8:00 PM, IBM Research Auditorium, Room B, Monterey & Cottle Rds., San Jose. Dinner: 6:30 PM, Green Dragon, 414 Blossom Hill Road, San Jose (by Snell Road). Reservations: Ken Farrier (415) 493-5790 by Oct. 24th. (see map with story).
- PROPERTIES AND APPLICATIONS OF RARE EARTH PERMANENT MAGNETICS.** R.J. Parker, Mgr., Design and Development Hitachi Magnetics Corp., Michigan.
- MICROWAVE THEORY & TECHNIQUES**  
OCT. 25  
OCT. 25, Thursday, 8:00 PM, SRI, Bldg. 44, Laurel Street entrance, Menlo Park. No dinner.
- M.I.C. PACKAGE DESIGN.** Sanford S. Lehrfeld, Pres., Tek-Wave, Inc., Somerville, N.J.
- NUCLEAR AND PLASMA SCIENCES SOCIETY**  
OCT. 16  
OCT. 16, Tuesday, 8:00 PM, Blue Dolphin Restaurant, West of Marina Blvd., San Leandro. Reservations: for dinner and meeting or meeting only - Mrs. Willie Scharff, (415) 843-2740 x 6341 by Oct. 12th. Cocktails at 6 and dinner at 7 PM.
- NUCLEAR POWER PLANT CONTROL AND MONITORING SYSTEMS.** A speaker from the GE Nuclear Energy Div. in Campbell will talk and show color slides. Ladies welcome.
- POWER ENGINEERING AND COMMUNICATION SOCIETIES**  
OCT. 9  
OCT. 9, Tuesday, 8:00 PM, Engineers Club of SF, 160 Sansome St., S.F. Cocktails: 6 PM, dinner 7 PM. Reservations: (SF) Milly Milan (415) 445-2227; Peninsula: Jean Helmke, (415) 327-6622.
- JOINT MEETING. THE INVENTION OF THE TRANSISTOR - AN EXAMPLE OF CREATIVE-FAILURE METHODOLOGY.** Dr. William Shockley, Prof. of EE, Stanford University, and Executive Consultant at Bell Laboratories. Ladies are invited.
- 5-Session Course on WRITING AND SPEAKING SKILLS IMPROVEMENT.** Fee for course: \$7.50 IEEE members, \$10.00 non-members.
- POWER ENGINEERING SOCIETY**  
OCT. 31 - DEC. 5  
OCT. 31 - DEC. 5, Wednesdays, 6:00 PM. Contact: Bryan Baarts (415) 781-4211 x 3371. PG&E Co., 77 Beale St., SF 94106, Room 2523.
- SPECIAL MEETING.** Dr. L.A. Kilgore of Westinghouse, East Pittsburg and Wayne R. Schmus, Chief Planning Engineer, So. Calif. Edison Co., Los Angeles.
- POWER ENGINEERING SOCIETY**  
OCT. 17  
OCT. 17, Wednesday, 8:00 PM, Rick's Swiss Chalet, 4085 El Camino Way, Palo Alto. Cocktails at 6, and dinner at 7 PM. Reservations: Section office: (415) 327-6622.
- NOV. 13, Tuesday, dinner meeting. Watch for further details in the November GRID.**
- RELIABILITY/ELECTRON DEVICES**  
OCT. 17  
OCT. 17, Wednesday, 8:00 PM, SRI Conference Room B, Bldg. 1 333 Ravenswood Ave., Menlo Park. Dinner at 6:15 PM, Red Cottage, 1706 El Camino, Menlo Park. Reservations: Section office (415) 327-6622.
- MANIPULATORS IN ACTION.** Dr. John W. Hill and Antony J. Sword of SRI's Electronics and Bioengineering Laboratory.

The PHP Group of the I.E.E.E. will hold a course on the theory and applications of semiconductor and related technologies as applies to recent advances in consumer electronics.

Entitled: RECENT ADVANCES IN CONSUMER ELECTRONIC TECHNOLOGIES.

The following sessions are scheduled:

- |                             |         |                        |         |
|-----------------------------|---------|------------------------|---------|
| I Electronic Timepieces I   | Oct. 11 | IV Medical Electronics | Nov. 8  |
| II Electronic Timepieces II | Oct. 18 | V Cameras - Polaroid   | Nov. 15 |
| III Calculators             | Nov. 1  |                        |         |

Registration \$15.00 for I.E.E.E. members - \$25.00 for non-members. Contact: Mr. Bill Littell - 245-9100 or Mr. Jim Ostendorf - 941-0336.

A COURSE ON WRITING & SPEECH SKILLS IMPROVEMENT IS BEING OFFERED ONE EVENING PER WEEK FOR FIVE weeks by the Power Engineering Society. Wednesdays at 6:00 PM in Room 1760 P.G.&E. building, beginning October 31. For details see the announcement on page 6 of this issue. Anyone is eligible. Fee: IEEE members \$7.50; non-members \$10.00.

## IEEE NUCLEAR POWER SYSTEMS SYMPOSIUM

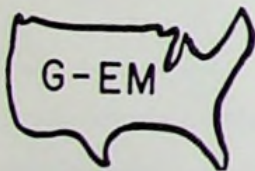
November 14, 15, 16 San Francisco

The fifth Nuclear Power Systems Symposium will be held at the Sheraton Palace Hotel, San Francisco, November 14, 15, 16. Sponsored jointly by PES and NPSS, this conference is for the benefit of electrical engineers in the nuclear power industry.

One session covers operating experience in control instrumentation and electrical systems at Oconee, Surrey, Pilgrim, Indian Point II, and Maine Yankee. There will be a session on control room standardization, operating and construction. The nuclear electrical standards review and interpretation will be by those in the thick of generating standards. A session on design innovation will include such diverse topics as leak detection, surveillance testing, solid state reactor protection systems, cable, multiplexing, and auxiliary power systems. An NSS session on reactor instrumentation will be available. Dr. Chauncey Starr, president of the new Electric Power Research Institute, is guest speaker.

Programs will be mailed on request to J. F. Osborn, 175 Curtner Avenue, m/c 665, San Jose, California 95114. Phone: (408)297-3000, ext. 2374

\*\*\*\*\*



### EM - MANAGEMENT ASSESSMENT

The technique of assessing an individual's ability in a specific area has been used in industry for approximately 15 years. Its use has spread to include several major industries and areas of performance. The earliest use was to identify lower level managerial skills. It is now used to identify higher level managerial skills, sales and engineering ability. It is estimated that over 300 companies now have assessment centers.

The most widespread use of assessment is the identification of managerial ability where it had its beginning in industry. The results have been studied extensively. The method is predictive of effectiveness in management and potential for advancement. Knowledge of the process is helpful to all who supervise, or are supervised.

Clara Redwine, Director of the California Regional AT&T Management Assessment Center, will present the subject and a demonstration of the technique.

GRID - 4

## NPSS - NUCLEAR POWER PLANT CONTROL AND MONITORING SYSTEMS

Currently 31 nuclear reactors are operating in the U.S. producing 4% of our power requirements. By 1985 it is estimated that 300 million kW of power, representing 32% of the U.S. capacity, will be produced by nuclear reactors. Power plant control systems of the '60's will be woefully inadequate to the demands of the 1985 nuclear power generators. In addition to the technological advances that will be required to control the fast breeder reactors and other advanced nuclear power generators, there will be additional monitoring and controls necessitated by safety and environmental considerations. The myriad of indicators and control switches/levers that this portends when today's control techniques and manual operator requirements are projected boggles the mind. Clearly, innovative control and monitoring techniques are needed.

General Electric's Nuclear Energy Division in Campbell, CA. is one of the companies that are moving toward sophisticated systems for nuclear reactor control and monitoring. A G.E. representative will describe, with a color slide presentation, computerized NUCLENET control console that is a "first step" in this direction.

### INFORMATION THEORY RECENTLY UNPUBLISHED IDEAS

Although you may not learn how to "Beat the Bank at Monte Carlo", you will hear some interesting facts about a gambling scheme that could double a gambler's money "n - k" times whenever a binary sequence of length "n" can be compressed to length "k". (The secret must be to have enough "k".)

Optimal data compression schemes will be discussed, also a multi-access Gaussian Channel with several senders and one receiver. Other considerations; optimal cooperative strategies for senders; how even if the entire bandwidth and power are used by the first sending at capacity, a new sender can come in and still get full utilization of the channel.

Dr. Thomas Cover, the speaker, is Associate Professor in the Department of Electrical Engineering, Stanford. In addition to teaching, he does research in the areas of machine learning, communication and information theory, and pattern recognition. He is President of the IT Group, and editor of three publications on Information Theory.

See CALENDAR for Program Arrangements

## IEEE 1973 NUCLEAR SCIENCE SYMPOSIUM

November 14-16, 1973

Sheraton Palace Hotel, San Francisco

Keynoter: Dr. Chauncey Starr, Pres. Electric Power Research Institute

Plenary "kickoff session":

"Significance of Ecological analysis in the Interpretation of Environmental Release of Radionuclides," by Dr. Stanley Auerback, Oak Ridge Labs.

"Key Issues in Setting Priorities for New Energy Technology Research and Development," by Dr. Glenn C. Werth of Lawrence Livermore Labs.

"Gas Cooled Fast Breeder Reactor," by Dr. Peter Fortescue, Gulf General Atomics.

"Scientific Objectives of Space Exploration," by Dr. Hans Mark, NASA Ames Research Center.

Technical Program includes 130 papers in 16 sessions. Two sessions on Biomedical Instrumentation.

Two sessions on "Requirements and Methods for Environmental Radiation Measurements." One session on "Environmental Gamma Ray Analysis."

Seven sessions on "Nuclear Instrumentation Technology", 63 papers.

Chemical and Computer industries also covered with 17 papers.

For registration information and full program contact H. W. Van Ness, Lawrence Livermore Laboratory, P.O. Box 808, Livermore, Calif. 94550.

Tel. 415-477-1100 x 8053. \$5 saving for registration in advance.



### NUCLEAR UTILITIES PLANNING METHODS SYMPOSIUM

January 16-18, 1974  
Chattanooga, Tenn.

Sponsored by The Joint Systems Analysis Study Group and co-sponsored by The Chattanooga Section of ANS. For further information, contact Philip Kazemsky, 415 Power Building, Tennessee Valley Authority, Chattanooga, Tenn. 37401

OCTOBER 1973

**COM-PES JOINTLY SPONSOR  
"INVENTION OF TRANSISTOR"  
TALK BY DR. WM. SHOCKLEY**



"A device called a transistor, which has several applications in radio where a vacuum tube ordinarily is employed, was demonstrated for the first time yesterday at Bell Telephone Laboratories... where it was invented." New York Times, July 1, 1948.

Now, on the twenty-fifth anniversary of that event, the New York Times news release seems like the understatement of the century.

Dr. William Shockley, one of the three co-inventors of the transistor and now Professor of Electrical Engineering at Stanford University and Executive Consultant at Bell Laboratories, will speak on an aspect of the invention no less fascinating than the cascade of research, development and application which followed it, namely the combination of prior events, prior knowledge, stimulus, working environment and people which produced it. Title of Dr. Shockley's talk is "The Invention of the Transistor -- An Example of Creative-Failure Methodology."

This meeting will be sponsored jointly by the Power Engineering Society and the Communications Society Chapters. It will be a dinner meeting at the Engineers Club of San Francisco, 160 Sansome St., Tuesday, Oct. 9, 1973, Cocktails at 6, Dinner at 7, Program at 8. Ladies are invited. For reservations phone: (S.F.) Molly Milan 445-2227; (Peninsula) Jean Helmke 327-6622.



**PES-SPECIAL MEETING**

Rarely any more does a new and unforeseen power system technical problem cause a major failure at a large fossil generating plant. It happened recently at the Mohave plant of Southern California Edison Co. The shaft of a 483 MVA generator failed not once but twice as a result of a phenomenon now known as "subsynchronous resonance".

Dr. Lee A. Kilgore of Westinghouse, East Pittsburgh, one of the world's foremost authorities on large rotating machines, and Mr. Wayne R. Schmus, Chief Planning Engineer Generation, Southern California Edison Co., Los Angeles, will relate this story at a Power Engineering Society Dinner Meeting in San Francisco Tuesday, Nov. 13, 1973. Mark this date on your calendar now and watch for further details in the November GRID.



**EMB - E E'S IN MEDICINE  
A PANEL DISCUSSION**

The modern physicians have increasingly been employing electronic instrumentation - including computers to assist them in providing health care for their patients. Would an EE degree in addition to having an MD degree help them in understanding these instrumentation so they can be more accurate in their judgement? Or would a physician-engineer be spending more time in research? Come to the meeting and talk to them. Find out how the EE degree affected their career as physicians. Do they experience a communication gap between the two highly specialized disciplines? What kind of opportunities are installed for EE's in the medical field? This panel discussion should be quite interesting for all who attend our KICK-OFF meeting for 1973-1974. This year's meetings will be held in the Delta Room of the Airport Plaza Hotel, located on Bayshore Freeway (101), Milbrae, California. (At the Milbrae turn-off). A no host dinner will precede the meeting at 6:00 pm. Dinner prices from \$2.00 dollars.

**PES - OFFERS 1973 FALL COURSE ON  
WRITING & SPEECH SKILLS IMPROVEMENT**

A course on writing and speaking skills for engineers will be offered this Fall by the Power Engineering Society. It will consist of five Wednesday evening sessions starting at 6:00 p.m. and lasting from one to two hours. The subjects, speakers, and dates are listed below. The order of the sessions may change but the dates should remain firm. The course will be held in Room 1760 of the P.G. and E. Building, 77 Beale Street, San Francisco.

- I. FUNDAMENTALS OF GOOD COMMUNICATION, October 31, J.M. Shulman, District Engineer, Westinghouse
- II. LETTERS, TELEGRAMS & TELEPHONE November 7, J.M. Shulman, District Engineer, Westinghouse.
- III. TECHNICAL PAPERS and REPORTS, November 14, W.R. Johnson, Chief Electric Generation & Transmission Engineer, P.G. and E. Company.  
(Omit Thanksgiving Week)

- IV. PREPARED TALKS AND EXTEMPORANEOUS SPEAKING, November 28, J.H. Wickert, Supervising Electrical Engineer, Bechtel Power Corp., J.E. Palmer, Jr., Senior Electrical Engineer, Bechtel Power Corp.
- V. ORGANIZING & CONDUCTING MEETINGS, December 5, T.A. Betterworth, Chief Electric Distribution Engineer P.G. and E

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Dr. Roy D. Woolsey, Manager of Direction Finding Systems for TCI, will discuss a novel technique for HF signal acquisition and direction finding from irregular vehicles, a technique demonstrated aboard ...ant vessels and has given eleva- ...azimuthal accuracies on the order ...ree.

...d of the well-known ...he rad- ...in ir- ...puter a- ...use radiation ...ates the DF bear-

...turn a ...e

**STUDENT BRANCH COUNSELORS  
1973-1974**

Cogswell Polytechnical College: 3000 Folsom St., S.F. 94110; (415) 647-1474. Counselor: DENIS J. KIELY.

Fresno State University: Division of Engineering, Fresno, 93710; (209) 487-2500. Counselor: DR. JAMES H. SMITH.

Heald Engineering College: 1215 Van Ness Ave., S.F. 94109; (415) 771-9192. Counselor: M. A. TZYTOVITCH.

San Francisco State University: 1600 Holloway Ave., S.F. 94132; (415) 469-1529. Counselor: BYRONE E. THINGER.

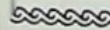
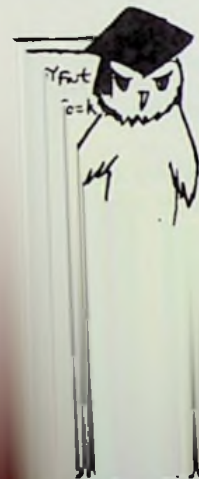
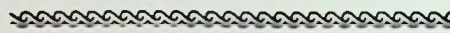
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University of Santa Clara: EE Dept., Santa Clara, 95053; (408) 984-4482. Counselor: FREDRICK W. CLEGG.



**JOSE OFFERS  
PART TIME TEACHING OPPORTUNITIES**

The Electrical Engineering Department of California State University, San Jose frequently has part-time teaching opportunities for qualified individuals. Interested professionals are invited to submit resumes and to indicate their areas of interest, courses they are qualified to teach, and their time available.

Staffing assignments often cannot be completed until time of student registration each semester. CSU,SJ is an equal opportunity employer and invites all qualified professionals interested in part-time teaching to contact E.P. Anderson, Chairman of the Electrical Engineering Department.

Phone: (408) 277-2452

See CALENDAR for Program Arrangements



At the SMC meeting in October, latest developments of the Teleoperator Program at Stanford Research Institute, including Prosthetic Control, Computer-Augmented Teleoperator Control, and Industrial Manipulation will be discussed, and some short films presented. The approach to all three of these tasks is based on closed-loop control by computers, from micro-to "mighty." In prosthetics, a solution to multi-degree of freedom control is based on a micro-computer; in tele-operation, a semi-automatic master-slave control system allows man to call on automatic-control modes to help him; and in industrial manipulation, the sense of touch provided to an otherwise-senseless robot enables a maxi-computer to carry out new types of tasks.

The speakers describing their recent work will be John W. Hill and Antony J. Sword, both of SRI's Electronics and Bioengineering Laboratory. Dr. Hill, who holds a PhD from Stanford and M.S. from the University of Illinois (both in EE), has worked in experimental psychology and man-machine systems at SRI since his graduation from Stanford in 1967. Mr. Sword, who holds degrees in both Biological Sciences and Mechanical Engineering from Stanford, has developed software and mechanical systems for manipulator control at both Stanford University and SRI.



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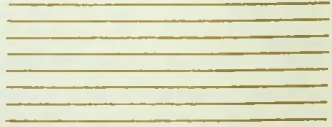
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**REL-ED - THE SX-70  
PHOTOGRAPHIC SYSTEM**



Over the past few years amateur camera systems have become more sophisticated including various forms of electronic circuitry. By removing exposure adjusting concerns, the camera operator is free to spend his time, in what Polaroid's Dr. Land describes as, "composing and selecting the instant at which he wants to go from viewing to having."

The SX-70 is a single lens reflex camera which employs many state-of-the-art technologies and utilizes an advanced electronic camera control system. This hybrid system of over 400 transistors not only provides exposure and flash controls, but also programs the entire operation of the camera

The speaker, Mr. Richard E. Howard, is Program Manager, Electronics Manufacturing, Polaroid Corporation, responsible for both electronics/vendor development and electronic manufacturing engineering. He has been a member of the part-time faculty, Northeastern University, Graduate School of Engineering for the past six years. He is a Senior Member of IEEE, has served on national symposium committees, as Boston Reliability Group chairman, and has presented and published many papers.

**AES - STANFORD LINEAR  
ACCELERATOR CENTER TOUR**

One of the wonders of the world of physics in our very own backyard -- and yet the least visited by people in the industry or related industries.

SLAC is a large research laboratory devoted to theoretical and experimental research in high energy physics and to the development of new techniques in high energy acceleration and particle detectors.

SLAC was conceived, designed, built and is being operated by Stanford University.

Tour will begin promptly at 10:30 a.m. on Saturday, October 27. Meet at SLAC Auditorium for orientation before 90-minute tour of 480 acre facility.

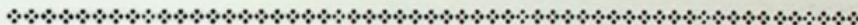
Reservations are mandatory -- 120 people is the maximum. Call Jacqui for reservations at (415) 328-3083 before October 24th.

**IECI-IM INSTRUMENTATION & CONTROL  
SYSTEM FOR THE STANFORD POSITRON-  
ELECTRON COLLIDING BEAM FACILITY**

The subject will be covered by Dr. Adam Boyarski and Bob Melen of SLAC. Following the discussion, a brief visit will be made to the SPEAR Control Room to observe and experiment in progress.

Although applied to a High-Energy Physics Facility, the techniques in both hardware and software are applicable to many processes. The XDS Sigma-5 Computer is operated in time-sharing. The control program is traded off with other time-shared jobs. Time-critical, interrupt driven tasks are not swapped, and remain resident in the core.

Dr. Adam Boyarski received his PhD from MIT in 1962 and has been involved with computer control and instrumentation of SLAC experiments. Bob Melen is the engineer-in-charge of instrumentation at SPEAR, and is doing his PhD in EE at Stanford.



**C - ONE DAY SHORT COURSE -  
MINICOMPUTER TIMESHARING**

The IEEE Computer Society and the Division of Continuing Education, University of Santa Clara, jointly present a one day short course on "Minicomputer Time-Sharing" at Daly Science Hall, Room 207, Univ. of Santa Clara, on Oct. 20, 1973, from 8:30 AM to 4:00 PM.

Fees: IEEE or ACM members \$25.00. Non-members \$30.00. Fees include notes and lunch on campus. Student Members or Unemployed Members \$4.00 without lunch, or \$6.00 with lunch.

Time-sharing originally was thought to be the sole domain of large computers. Time-sharing on Minicomputers has become an attractive alternate for scientific, business and educational users. The course is to give the professional an overview of Minicomputer Time-sharing; its components, design, applications, future, and user reports.

IEEE Computer Society  
Oct. 20 Symposium on  
Minicomputer Time-sharing  
(Must be received by Oct. 16, 1973)

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

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IEEE Computer Society Seminar  
Division of Continuing Education  
University of Santa Clara  
Santa Clara, California 95053

- Introduction, Definitions and Overview presented by David Crockett, Hewlett-Packard.
- Structure, Components, Design by Jerry Smith, Hewlett-Packard.
- Overview of User Applications, by James Candlin, Hewlett-Packard.
- Impact on Public Education, by Bruce Keepes, Palo Alto Unif. School Dist.
- Management Science Applications, by Charles Bonini, Stanford University.
- Views of Users and Proprietors, by Gerald Seehof, Pres., RAIR, Inc.



ANNOUNCING...



**TENTH IEEE PHOTOVOLTAIC SPECIALISTS CONFERENCE**

Rickey's Hyatt House and Stanford University - November 13-15, 1973

This Conference serves for exchanging recently-generated data and news of late developments in this branch of solar energy conversion. Silicon photovoltaic devices were first developed in the mid-1950's. They have since undergone extensive development and optimization, resulting in their near-exclusive use as long-term spacecraft power sources. Much attention has recently been given to their potential use on the earth's surface as a means of supplementing our national energy resources.

This year's Conference has: A short tutorial session on photovoltaic device theory, and an open session at Stanford on terrestrial applications. Also included: Basic studies on materials other than silicon; New Solar Cell and Array Measurements; Solar Cell Technology and Development; Environmental and Radiation Effects, and Solar Array Technology. Over eighty high-quality papers have been submitted.

Registration Fees: \$20 for IEEE members and \$25 for non-members, including cost of Proceedings. For information, contact Duncan Reynard, Conference Local Arrangements Chairman, 326-4350, Ext. 4417.



**IEEE INTERCON ANNOUNCES 1974 EXPO-CONVENTION PLANS**

Plans for the 1974 IEEE Intercon convention and exposition in New York next Spring have been formally announced to the industry. In an exhibit prospectus mailed to about 6000 manufacturing organizations, the big event was announced for Tuesday through Friday, March 26-29. Exhibits will occupy two floors of the New York Colliseum, and technical program sessions will be held at the Statler Hilton Hotel.

"Getting down to Business" is the theme of the 1974 Exposition. Frederick T. Van Veen, who is Director of Corporate Relations, Teradyne Inc. and IEEE Intercon exposition director, noted that the theme for 1974 is an accurate reflection of what we all know to be true - that the electronics industries are in the business of designing and producing systems for all kinds of applications that few people envisioned even a couple of years ago.

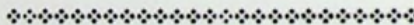
**MAG. "PROPERTIES AND APPLICATIONS OF RARE EARTH PERMANENT MAGNETS"**



Rare earth magnetic properties promise to have major impact in changing the parameters, function and feature of many electromagnetic devices and equipments. Examples and applications will be shown. The critical relationships and rearrangement of magnetic circuit elements to show the properties to maximum advantage will be discussed.

A brief description of the properties, property interrelationships, physical concepts and trend in property development will be presented by R.J. Parker, Manager Advanced Design & Development, Hitachi Magnetics Corp., Edmore, Michigan. Mr. Parker has extensive experience in the area of magnetic materials, research, magnetic measurements, and magnetic circuit design and development. He is currently the chairman of the IEEE S-Mag Committee of permanent magnetism, and has been active in promoting interaction between the areas of material science, measurements, and device technology in IEEE.

Editor's note: See notice of 1973 Nineteenth Annual Conference on Magnetism and Magnetic Materials, Page 6, September 1973 GRID.



**NATIONAL ELECTRONICS CONFERENCE**

Mini/Micro Computer Institute  
Week of November 4, 1973

Signal Processing Institute  
Week of November 11, 1973

Pheasant Run Lodge, St.Charles, Ill.  
Information - NEC, Inc.

Oakbrook Exec. Plaza #2, Suite 629  
1211 West 22nd Street, Oakbrook, Ill.

Phone (312) 325-5700

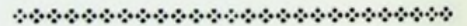
**EBSS - TOUR PG&E PITTSBURG POWER PLANT**



The East Bay Subsection will sponsor a tour of the PG&E Pittsburg Power Plant on Thursday, October 18, 1973. This will be a complete tour of an operating thermal power plant including their recently completed 750 MW Unit #7 equipped to use either natural gas or low sulfur oil.

Of special interest will be the 2.4 mile long U-shaped spray cooling canal providing cool water for the Unit #7 steam condensers. This is the largest self-contained cooling system of its kind yet built and incorporates 135 sprays modules similar to a giant sprinkling system.

The tour will leave PG&E building at 17th & Clay Street, Oakland at 9 am by bus (no charge) and return at approximately 2:30 pm. Public parking is available in the area or take BART to the 19th St. Station. PG&E will host lunch to include a question and answers period. As bus space is limited please call Jerry Parker, 835-8500 Ext. 327 for reservations.



**MTT-M.I.C. PACKAGE DESIGN**

Reliability and performance of Microwave Integrated Circuits (MIC) often depends as much on the "Packaging" of the circuit as upon the circuit itself. Framing is needed for rigidity, for heat sinking, to provide a means for attaching connectors, for environmental protection and for minimizing EMI/RFI.

The essential considerations when designing packaging for MIC modules are:

- Frame Design & Materials
- Methods and Mounting Substrates
- Connector Selection and Attachment
- Cover Sealing and Gasketing

The speaker, Mr. Sanford S. Lehrfeld, is President, TekWave, Inc., Somerville, New Jersey. He attended Mercer County College, Newark College of Engineering, and Rutgers, The State University.