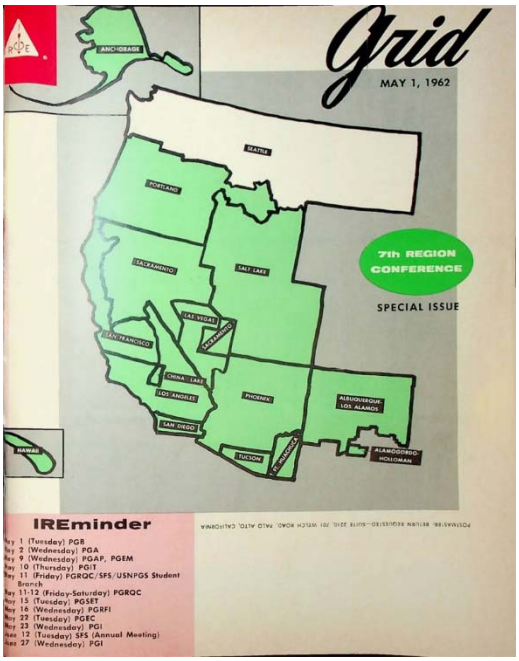
EDITOR'S PROFILE of this issue

from a historical perspective …

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

May 1, 1962:

Cover: We see the geographical breakdown of Region 7 of the IRE, with the various Section boundaries; this is before the merger of IRE and AIEE, to form the IEEE. The IEEE's new Region 6 moves some of the boundaries.



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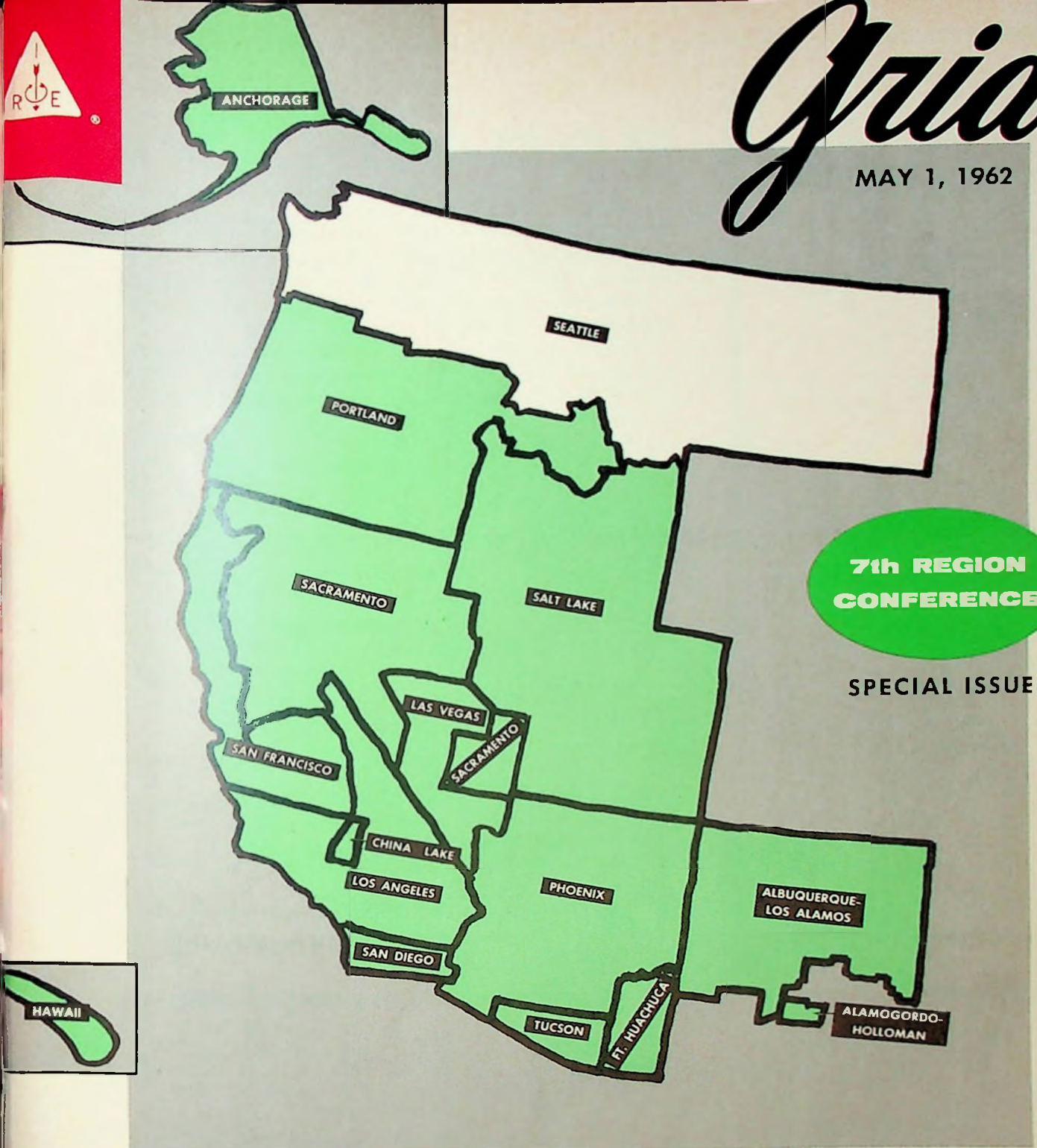
Grid

MAY 1, 1962



7th REGION CONFERENCE

SPECIAL ISSUE

IREminder

May 1 (Tuesday) PGB
May 2 (Wednesday) PGA
May 9 (Wednesday) PGAP, PGEM
May 10 (Thursday) PGIT
May 11 (Friday) PGRQC/SFS/USNPGS Student Branch
May 11-12 (Friday-Saturday) PGRQC
May 15 (Tuesday) PGSET
May 16 (Wednesday) PGRFI
May 22 (Tuesday) PGEC
May 23 (Wednesday) PGI
June 12 (Tuesday) SFS (Annual Meeting)
June 27 (Wednesday) PGI

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PRODUCT LINE
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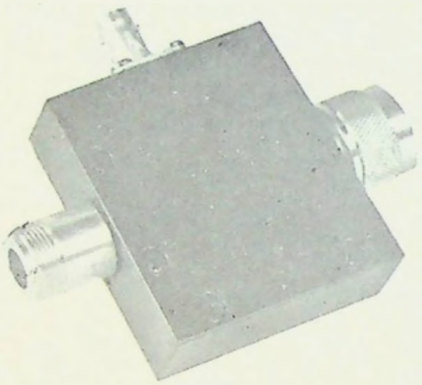
Blocking capacitors are provided in the enclosed transmission line to isolate the biasing or modulation circuitry from the microwave network. Units without blocking capacitors can also be constructed.

CMC Model 108 has typical isolations of:



30 db. min. from 100 to 500 Mc.
20 db min. from 500 to 1250 Mc.
18 db min. from 1250 to 1800 Mc.
14 db. min. from 1800 to 2500 Mc.

Insertion loss from 250 to 2000 Mc is typically less than 2 db.

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volume 8
number 11

Grid

May 1, 1962

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contents

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cover

Educational overtones seep into the **Grid** from all directions. This time, it's geography, a brief refresher on the general configuration of the 7th Region with its various sections and subsections. As noted, this is timed to remind you about going to the 7th Region Conference and the World's Fair. Both a program for the former and a pictorial insert about the latter are included in this issue of the **Grid**.

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ASSOCIATE EDITOR: MARY HAYLOCK

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MEETING CALENDAR

SAN FRANCISCO SECTION

8:00 P.M. • Friday, May 11

(Joint with PGRQC, USNPGS Student Branch, see below)

SAN FRANCISCO SECTION

• Tuesday, June 12*

Annual meeting—details to be announced

*Note change of date

PROFESSIONAL GROUPS

Antennas & Propagation

8:00 P.M. • Wednesday, May 9

"Theory and Design of H-Guide Antennas"

Speaker: George N. Voronoff, microwave design engineer, Dalmo Victor

Place: Room 101, Physics Lecture Hall, Stanford University

Meet-the-Speaker Dinner: 6:30 P.M. (Cocktails 6:00 P.M.), L'Omelette Restaurant, 4170 El Camino Real, Palo Alto

Reservations: Sandra Torrey, DA 1-3300, Ext. 392

Audio

8:00 P.M. • Wednesday, May 2

(Joint meeting with Acoustical Society of America and Audio Engineering Society)

"Acoustic Measurements—What and How"

Speaker: George T. Wilson, Boeing Aircraft Co., Seattle

Place: Pacific Telephone & Telegraph Auditorium, 140 New Montgomery Street, San Francisco

Dinner: 6:30 P.M. (Cocktails 6:00 P.M.), place to be announced

Reservations: Herb Ragle, EM 9-7111, Ext. 596

Broadcasting

6:30 P.M. • Tuesday, May 1

Report and inspection tour of common TV transmitter site and tower of KCRA-TV, KXTV, and KOVR

Place: Tony's, one block from bridge, Walnut Grove. Highway 24 south from Sacramento or north from Oakland and Rio Vista to foot of Sacramento River Levee. (1½ hr from S.F.)

Dinner: 6:30 P.M. (Cocktails 6:00 P.M.), Tony's ($4.50)

Reservations: James Gabbert, KL 2-1013; Paul Gregg, LY 3-0800; or Hugh Granberry, EM 8-4681, by April 26

Electronic Computers

8:00 P.M. • Tuesday, May 22

"Error-Correcting Codes and a Particular Physical Realization"

Speakers: Dr. Bernard Elspas and William K. English, SRI

Place: Lockheed Auditorium, 3251 Hanover Street, Palo Alto

Dinner: 6:00 P.M., The Red Shack Hofbrau, 4085 El Camino Way, Palo Alto

Reservations: None required

Engineering Management

8:00 P.M. • Wednesday, May 9

"Management of a Research Activity"

Speaker: Dr. Herbert Trotter, president, GT&E Laboratories

Place: Room E-6 Education Building (corner of Escondido Road and Lasuen Street), Stanford University

Dinner: 6:00 P.M., L'Omelette Restaurant, 4170 El Camino Real, Palo Alto

Reservations: IRE office, 321-1332

MEETING CALENDAR

Information Theory — 8:00 P.M. • Thursday, May 10
"Mind, Machine, and Soul"
Speaker: Dr. Louis Fein, consultant
Place: Talisman Room, Caravan Inn, 4375 El Camino Real, Mountain View
Dinner: 6:00 P.M., Talisman Room, Caravan Inn
Reservations: Mrs. Beryl Lelo, DA 6-6200, Ext. 2944

Instrumentation — 8:00 P.M. • Wednesday, May 23
Lecture No. 3
"Storage: Processing and Printout"
Speakers: Robert N. Flanders, Dymec, and Douglas Wilcox, Precision Instruments
Place: Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto (main lobby)
Meet-the-Speaker Dinner: 6:00 P.M., L'Omelette Restaurant, 4170 El Camino Real, Palo Alto
Reservations: None required

Instrumentation — 8:00 P.M. • Wednesday, June 27
Lecture No. 4
"System Programmers and Summary"
Speakers: To be announced
Place: Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto (main lobby)
Meet-the-Speaker Dinner: 6:00 P.M., L'Omelette Restaurant, 4170 El Camino Real, Palo Alto
Reservations: None required

Radio Frequency Interference — 8:00 P.M. • Wednesday, May 16
"Radio Frequency Interference Measurements in the Microwave Spectrum—Power Density and Field Intensity Concepts"
Speaker: Robert Friedman, manager, applications engineering, Polarad Electronics Corp., Long Island City, New York
Place: Lockheed Auditorium, 3251 Hanover Street, Palo Alto
Meet-the-Speaker Dinner: 6:30 P.M., Rickey's Studio Inn, 4219 El Camino Real, Palo Alto
Reservations: Mrs. Pat Hanson, DA 1-2280

Reliability & Quality Control — 8:00 P.M. • Friday, May 11
(Joint with San Francisco Section and Student Branch U. S. Naval Postgraduate School)
Dinner Meeting
Speaker: Dr. Royal Weller, director of engineering, space-systems division, Lockheed Missiles and Space Co., Sunnyvale, Calif.
Place: Officers' Club, U. S. Naval Postgraduate School, Monterey, Calif.
Cocktails: 6:30 P.M. Dinner 8:00 P.M. prime ribs or lobster, $3.50 in adv.
Reservations: J. M. Alderman, Arinc Research, 467 Hamilton Ave., Palo Alto, DA 1-0390

Reliability & Quality Control — • Fri., Sat., May 11, 12
Third Annual Bay Area Reliability Seminar
Seminar: "Today's Reliability Challenge"
Program: See page 7
Place: U. S. Naval Postgraduate School, Monterey

Space Electronics & Telemetry — 8:00 P.M. • Tuesday, May 15
Subject and speaker: To be announced
Place: Lockheed Auditorium, 3251 Hanover Street, Palo Alto
Dinner: 6:30 P.M., Camino Bowl, 2025 El Camino Real, Mountain View
Reservations: Cynthia Chaney, DA 6-4350

seventh region

YOU'RE INVITED

This year's 7th Region Conference is being held in the World's Fair city of Seattle. Starting with the magnetic nature of that event, the Conference committees have considered several other factors that should help to make the affair one of the best in the Region's history.

For example: the 50th Anniversary of IRE makes this a special year for electronic people everywhere; the IRE board of directors is meeting there during the event, a fact that provides distinguished speakers for the luncheons; and finally, the governor of Washington has proclaimed May 25 Electronics Day.

In the formulation of the program, which is outlined on a following page, the intent announced by the committee has been to seek a generally high standard by concentrating on invited papers. Thus, an international program has resulted, representation from Europe being included.

No technical exhibits have been organized because of the availability of the World's Fair, which will have excellent scientific and technical displays. Information on Century 21 will be found in an insert included in this issue.

IRE personnel responsible for organization of the Conference have included: D. K. Reynolds, 7th Region director; L. C. Perkins, Conference chairman; W. J. Siddons, Seattle Section chairman; Tom Dalby, technical program chairman; Rush Drake, arrangements chairman; Burt Porter and Michael Seidl, special activities co-chairmen; and Mrs. J. K. Schloss, women's events chairman.

All have extended a warm welcome to visit Seattle May 24, 25, and 26.

Mt. Rainier, one of the peripheral attractions accessible to 7th Region Conferees

7th region conference

THE PROGRAM

Wednesday, May 23, 1962
1-9 P.M.—Registration
Olympic Hotel, mezzanine. (All papers to be presented at the Olympic Hotel)
Thursday, May 24, 1962
9 A.M.-12 Noon

2A (Spanish Ballroom)
ANTENNAS
Moderator: Nicholas Yaru
Speakers: C. J. Sletten, P. Blacksmith, Jr., C. A. Barthalomew, P. A. Jensen, and E. D. Burnett

3A (Georgian Room)
ELECTRONICS IN EDUCATION
Moderator: T. L. Martin
Panel: W. W. Harman, D. K. Weaver, A. V. Eastman, and D. O. Peterson

12:15 P.M.
WORLD'S FAIR LUNCHEON
Grand Ballroom, Olympic Hotel
ELECTRONICS, MACHINES, & MAN
Patrick E. Haggerty, president, IRE

2-5 P.M.

1A (Pacific Evergreen Room)
PROPAGATION & IONOSPHERIC PHYSICS
Moderator: R. A. Helliwell
Speakers: R. W. Knecht, T. W. Flowerday, D. D. McKibbin, R. L. Smith, L. H. Rorden, R. A. Helliwell, and John J. Nisbet

1B (Georgian Room)
SATELLITE COMMUNICATION
Moderator: G. H. Keitel
Speakers: S. H. Reiger, Ralph L. Clark, and Robert T. Haviland

2C (Spanish Ballroom)
ADVANCED CIRCUIT-PACKAGING TECHNIQUES
Moderator: J. K. Schloss
Speakers: Steward S. Flaschen, G. J. Selvin, Ernest C. Singletary, and John McKinley

6-8 P.M.
COCKTAIL PARTY
Spanish Ballroom, Olympic Hotel

Friday, May 25, 1962
9 A.M.-12 Noon

2B (Evergreen Room)
DEVICES
Moderator: W. G. Shepherd
Speakers: C. M. Veranda, Robert W. DeGrasse, Guy Convert, and James C. Axtell

3C (Georgian Room)
ELECTRONICS IN BUSINESS
Moderator: H. W. Haynes
Speakers: Warren Hume, Norman Ream, H. Reinoud, John H. Moller, and John Diebold

3E (Spanish Lounge)
STUDENT PAPERS
Moderator: I. J. Sandorf

L. C. Perkins, 7th Region Conference chairman

12:15 P.M.
LUNCHEON
Spanish Ballroom, Olympic Hotel
SALUTE TO THE 50TH ANNIVERSARY OF IRE STUDENT PRIZE-PAPER AWARD
Speaker: Lloyd V. Berkner, past president, IRE

2-5 P.M.

1D (Pacific Evergreen Room)
SPACE EXPERIMENTS & COMMUNICATION
Moderator: S. H. Reiger
Speakers: R. C. Heyser, M. H. Brockman, D. W. Swayze, R. W. Waller, and Douglas Jones

2D (Spanish Lounge)
SECONDARY POWER
Moderator: W. C. Scott
Speakers: James A. Rudy, A. Klammer, Jr., G. H. Rohrback, and Robert T. Carpenter

3D (Georgian Room)
ELECTRONICS IN 2012 A.D.
Moderator: Lester M. Fields
Speakers: Nathaniel Rochester, Daniel E. Noble, and W. D. McGuigan

8 P.M.
PUBLIC LECTURE
World's Fair Playhouse
TODAY'S SCIENCE—TOMORROW'S TECHNOLOGY
Lee Alvin DuBridge, president, California Institute of Technology

Saturday, May 26, 1962
9 A.M.-12 Noon

1C (Georgian Room)
RADIO ASTRONOMY
Moderator: R. S. Lawrence
Speakers: J. D. Warwick, G. W. Swenson, J. M. Chisolm, and J. W. Findlay

2E (Colonial Room)
RADIATION EFFECTS ON ELECTRONIC EQUIPMENT
Moderator: W. L. Brown
Speakers: S. F. Singer, J. M. Denney, J. C. Lee, and G. L. Keister

— END —

meeting ahead

PICKING THE TIME

For an early May meeting, PGEM will present Dr. Herbert Trotter, president of GT&E Laboratories, who will speak on the subject, "Management of a Research Activity." See the Calendar for particulars—page 4.

The rapid technological progress in the 1960's and 1970's puts an increased burden on corporations working in the frontiers of science. The rate of change in products and services means that the corporate research, development, and engineering efforts have to be tightly coupled to provide good new products to keep the company competitive.

According to Trotter, doing research alone is not an answer, and the payoff comes from being able to work on the right things in research at the right time with the right men, and then taking them out of research again at the right stage of development and pushing them through engineering into production and sales.

As he will point out, it is this technical continuity of effort, with a singleness of purpose, that will give a profitable operation in our changing technical environment.

meeting ahead

DIGITS ALL THE WAY

Lecture No. 3 in the current instrumentation systems seminar of PGI, featuring Messrs. Flanders and Wilcox, is scheduled for late May. See page 5 for details in the Calendar. The scope of this lecture will be restricted to digital data processing and recording.

Analog information, monitored by a transducer and made available in digital form by an analog-to-digital converter, has frequently to be recorded in a semi-permanent storage media. The most common forms of storage utilize printed, punch-card, perforated-paper-tape, and digital-magnetic-tape techniques.

Data in these forms may be stored and later reproduced with no degradation for processing, normalizing, computing, translating, graphical recording, or any combination of the above. Supplementary data may be simultaneously recorded with the measurement for identification or system control.

Basic system elements that perform these functions, and will be covered, are: Analog-to-digital converter (covered in previous lecture), output coupler, output device, storage media, read-in device, input data processor, translator converter, command recognition/system control, output accessory, and output device.

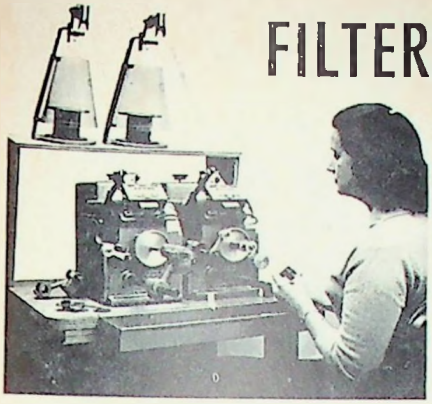
meeting ahead

ERROR-CORRECTING CODES

Meeting later in May (see Calendar, page 4) PGEC will contemplate "Error-Correcting Codes & a Particular Physical Realization," a two-part discussion with Dr. Bernard Elspas and William K. English of SRI as speakers.

Recent advances in the theory of error-correcting codes have made it possible to implement fairly sophisticated error-correction schemes with relatively simple encoding and decoding equipment. A versatile encoder/decoder for studying these codes was designed and built at Stanford Research Institute. The machine, in its realization, is a self-contained unit capable of performing the encoding and decoding (correction)

(Continued on page 8)



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Aboard the re-entry monitoring aircraft, a battery of photographic, photoelectric, and radiometric devices captures the dramatic end of the flight. A P.I. instrumentation tape recorder, operated by an Avco-Everett Research Laboratory monitoring team, is used to preserve on magnetic tape a precise record of important radiometric and time-sequence information... data which is essential in the development of advanced re-entry vehicles and in the country's anti-missile program.

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Above — Photo of Titan missile re-entry. Below — Recorder installation aboard the monitoring aircraft. Photos courtesy of Avco-Everett Research Laboratory.

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functions for any cyclic codes up to 63 bits in length, with up to 16 check bits per word.

The talk will consist of two parts—in the first, Elspas will give an introductory survey of the theory and properties of cyclic codes for the detection and correction of error bursts and random errors. The general principles of encoding and decoding equipment for such codes will be described.

The second part will be a discussion by English of the type of all-magnetic logic circuitry used in the machine and a brief description of the machine itself, followed by a demonstration of its capabilities.

meeting ahead

H-GUIDE ANTENNAS

Next week, PGAP will meet to hear from George N. Voronoff on the "Theory & Design of H-Guide Antennas." Details are in the Calendar, page 4. Voronoff will provide a general discussion of H-guide and its properties, followed by a coverage of the theory of slot radiators in the H-guide and application to the synthesis of two-dimensional arrays having pencil beams, shaped beams, and monopulse patterns.

He will cover measured performance of X-band and K$_a$-band antenna models, launching methods and efficiencies, 180-deg H-guide bend, and general problem areas.

Elspas *Voronoff*

Voronoff is presently a microwave design engineer with the antenna-research group at Dalmo Victor Co. He holds a 1958 BSEE degree from the University of California at Berkeley.

meeting ahead

ACOUSTIC MEASUREMENTS

Early in May, at a time and place listed in the Calendar, page 4, there will be a joint meeting between PGA, the newly formed chapter of the Acoustical Society of America, and AES. Attendees will be exposed to a perennially fascinating subject: "Acoustic Measurements—What & How."

The speaker, George T. Wilson, associated with Boeing in Seattle, is also an associate professor at the University of California, Berkeley, doing research on sound transmission.

grid returns

LETTERS TO THE EDITOR

120 Main St.
Erdeni Dzuu
Gobi Desert
Mongolia

Editor, the Grid
Dear Sir:

Don't you think that having the Sigmund Freud Award emblazoned on a tortilla is just a little corny?

Miriam Taco-Taco

We think you must be kidding.—Ed

Manager, the Grid
Dear Sir:

Thank you for your letter of March 20 and the copies of the March 1 and March 15 issues of the **Grid**. Once again, these issues are up to the usual high standard of quality of the **Grid** and everything else that seems to go on in IRE's Region VII.

You will be happy to know, I am sure, that prior to the two boards' voting to submit the question of merger to the two memberships, the proposed name of the society was changed to "Institute of Electrical and Electronic Engineers." This is the name that will appear in all the documents being sent to our membership as a Supplement to the April Proceedings . . .

P. E. Haggerty
President, IRE

Architects' drawing of new Granger Associates plant

grid swings

IT IS REPORTED:

Excavation and grading have begun in Stanford Industrial Park for **Granger Associates'** new engineering laboratories, assembly plant, and general offices. The two-story, 65,000-sq-ft building by Palo Alto architects Clark, Stromquist, Potter, and Ehrlich, will be erected on an 8½-acre plot leased from the university on the southeast side of California Avenue at Amherst Street.

Varian Associates and **Compagnie Francaise Thomson-Houston** of Paris, France, have announced plans to create in France a jointly owned company to supply microwave tubes principally to the European market.

Among all American universities, **Stanford** now ranks fourth nationally in the total number of advanced degrees conferred annually in engineering, according to a survey by the U. S. Office of Education reported in the current Journal of Engineering Education. The **University of California** at Berkeley also ranks in the top 10 nationally.

Precision Instrument Company has established district sales offices to cover six western states in Palo Alto, Los Angeles, and Albuquerque, New Mexico. **William H. Butler** has been named sales manager of the San Francisco district sales office, located in Palo Alto.

Vega Electronics Corporation has appointed a separate, newly formed sales company to market its Vega-Mike wireless microphone systems.

C. Arthur Foy, previously marketing manager for Vega, heads the new company, named Vega Microphone Sales Company, located in Los Altos, Calif.

A major reorganization of the research laboratories of **Lockheed Missiles & Space Company** was announced recently. The new organization, known as research and engineering, is being headed by **J. P. Nash.**

Research area of the new organization will be headed by **Wayland C. Griffith** and the engineering area will be headed by **Frank J. Bednarz.**

events of interest

IRE MEETINGS SUMMARY

May 8-10 — **Electronic Components Conference.** Marriott Twin Bridges Hotel, Washington, D. C. No exhibits. Program: Henry A. Stone, Bell Tel Lab, Murray Hill, New Jersey. Proceedings: $7, order from IRE Headquarters.

May 14-16—**NAECON** (National Aerospace Electronics Conference), Biltmore Hotel, Dayton, Ohio. Exhibits: Robert J. Stein, 19 Beverly Place, Dayton 19, Ohio. Program: George A. Langston, 4725 Rean Meadow Dr., Dayton, Ohio. Proceedings: $6, order from IRE Office, 1414 E. Third St., Dayton 3.

May 14-17—**Symposium on Thermionic Power Conversion.** Antlers Hotel, Colorado Springs, Colorado. No exhibits. Program: V. C. Wilson, General Electric Co., Schenectady, N. Y.

May 24-26—**Seventh Region Conference.** Olympic Hotel, Seattle, Washington. Exhibits: Century 21 Fairgrounds. Program: T. G. Dolby, 3220 99th N.E., Bellevue, Washington.

NON-IRE LOCAL EVENTS

May 28-30—First Annual Convention of the **American Association for Contamination Control.** Jack Tar Hotel, San Francisco. Registration and exhibits: Donald M. Petersen, Central Vacuum Corporation, 3008 E. Olympic Blvd., Los Angeles 23, California.

May 27-June 2—**University of California Extension,** fifth annual leadership laboratory in human relations and supervisory skills. Ojai Valley Inn, Ojai. Information: University of California Engineering and Physical Sciences Extension, UCLA, Los Angeles 24.

PAPERS CALLS

May 15 — 800-word abstracts, ten copies, and biography of author for 9th National Symposium on Reliability and Quality Control (San Francisco; Jan. 22-24, 1963). Send to: Leslie W. Ball, Boeing Co., P.O. Box 3707, Seattle 24, Washington.

June 1—50 word abstract for 15th Annual Conference on Engineering in Biology and Medicine (Chicago, Nov. 4-7). Send to: Program Committee, P.O. Box 1475, Evanston, Illinois.

June 1 — 350-word summary with subject, title, and biographical note, all in triplicate, for 2nd Canadian IRE Symposium on Communications (Montreal, Nov. 16-17). Send to: Allan B. Oxley, chairman technical program, Box 802, Montreal, Quebec.

June 11—400- to 500-word abstracts in triplicate and 50-word summaries for NEREM (Boston; Nov. 5-7). Send to: I. Goldstein, Raytheon Co., Box 555, Hartwell Road, Bedford, Mass.

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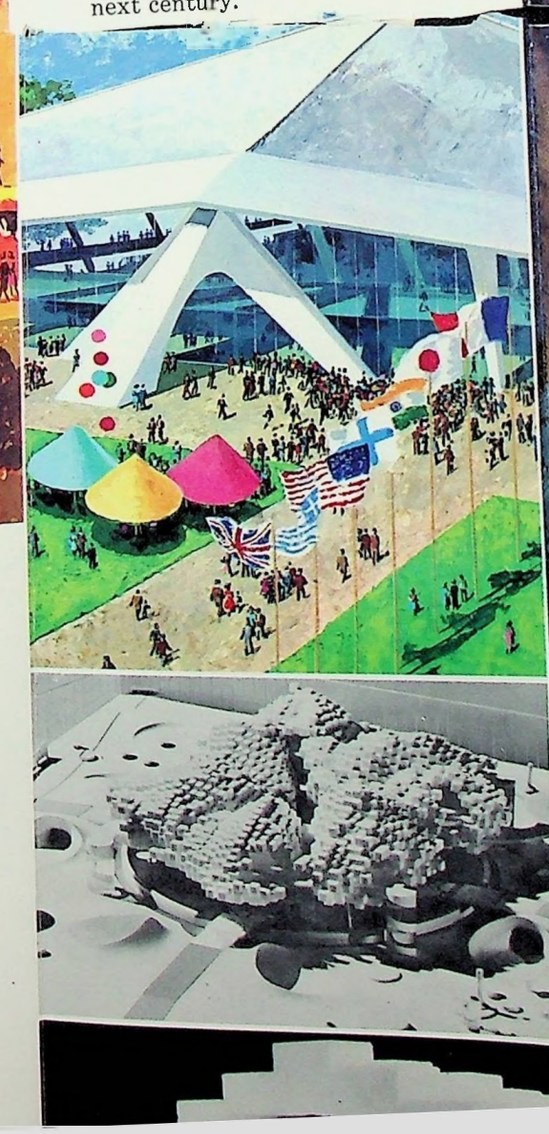

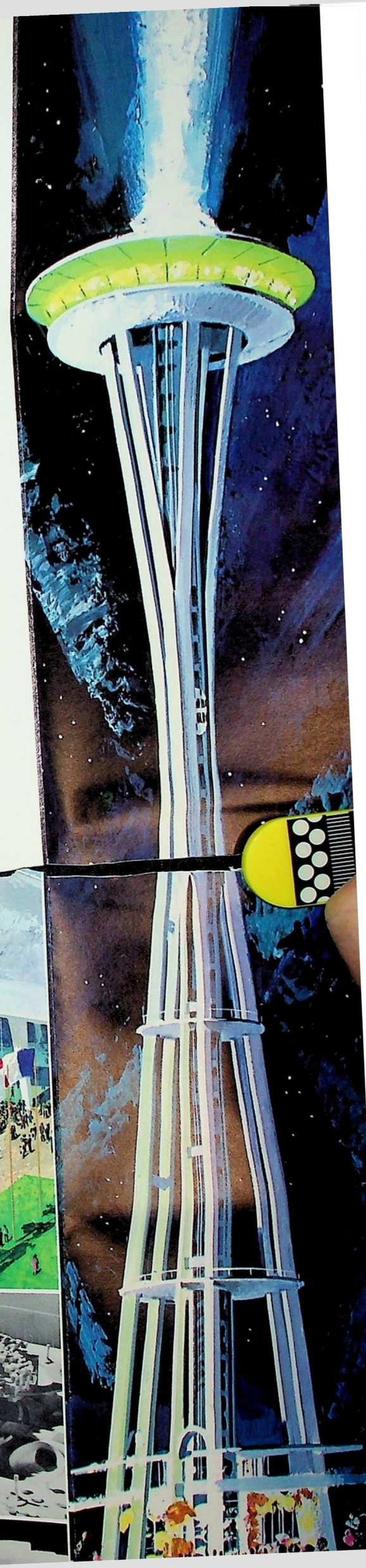

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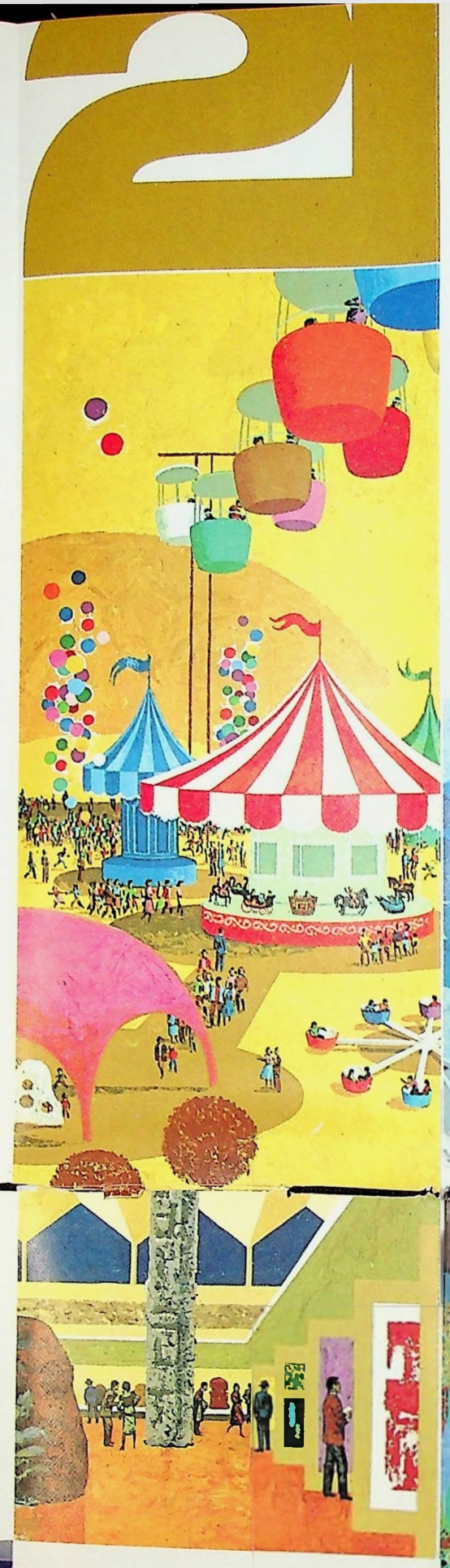

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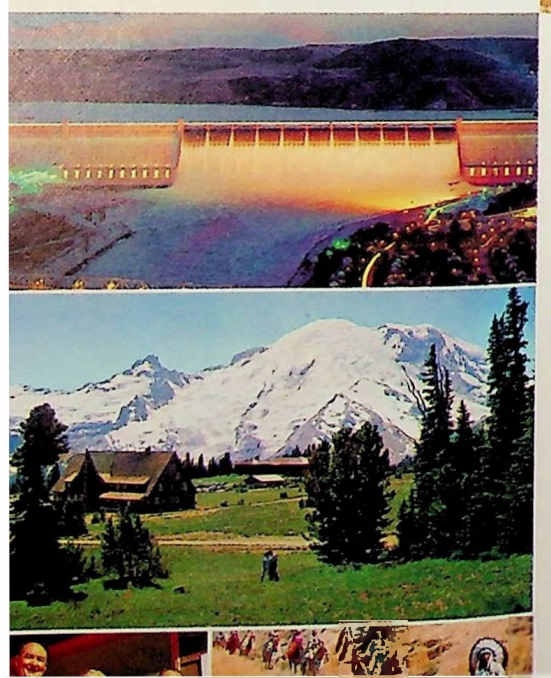

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