

EDITOR'S PROFILE of this issue

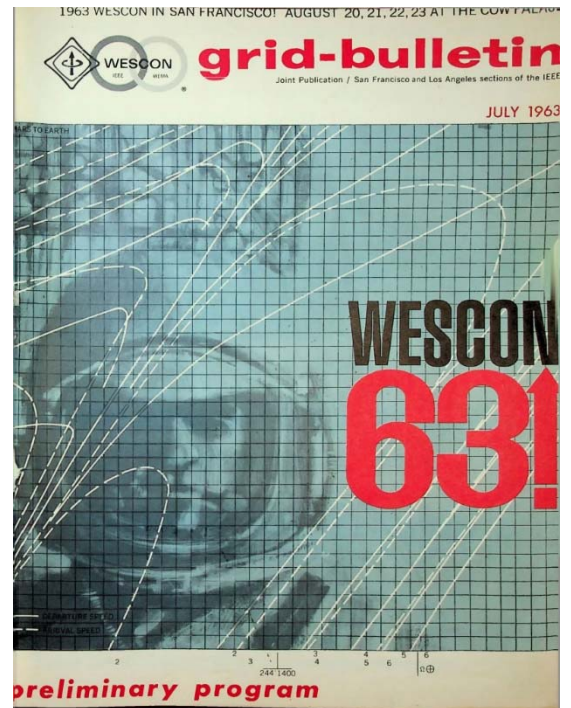
from a historical perspective ...

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

July, 1963:

Cover: WESCON this year will be at the Cow Palace in San Francisco (actually, Daly City). A helmeted astronaut is shown, along with trajectories of an Earth-to-Mars trip. The Cow Palace was named for an earlier livestock pavilion, and has hosted the Grand National Rodeo and several presidential conventions. The Warriors basketball team played here for a while. More recently it was the site for Maker Faire, where IEEE taught kids how to solder. Photo below.

Page 18: Several of the WESCON Tours: A look at the large NASA wind tunnel at the Ames Research Center at Moffett Field, where the Apollo capsule is being tested; A visit to the Stanford Linear Accelerator, under construction; A tour of the TV broadcast facility on Mt. San Bruno, where KPEN (founded and run by Stanford engineer Jim Gabbard) first broadcast FM stereo in California.



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

https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

At time of scanning, the bound volumes are held by Paul Wesling.

July, 2021

Contact p.wesling@ieee.org



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Joint Publication / San Francisco and Los Angeles sections of the IEEE

JULY 1963

MARS TO EARTH



WESCON 63!

2 3 4 5 6 $\Omega \oplus$
244'1400

preliminary program

Gertsch CRB bridges measure both in-phase and quadrature voltage ratios —with high accuracy



MODEL CRB-8



Complex Ratio Bridges are ideal for precision voltage and phase comparisons between signal and reference vectors. Instruments are designed for testing transformers, tach-generators, rate gyros, all types of transducers, AC amplifiers, AC networks, and AC systems. All CRB instruments feature self-contained, phase-sensitive null indicators.

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A wide variety of CRB instruments is available in both cabinet and rack mounted designs. Compact all-transistorized units feature accuracies to $.005\%$. A militarized model is certified per MIL-T-21200 . . . meets stringent environmental requirements. Gertsch also manufactures an automatic complex ratio bridge which displays both in-phase and quadrature ratios on 5-place Nixie readouts.

Write for complete literature on the CRB line.

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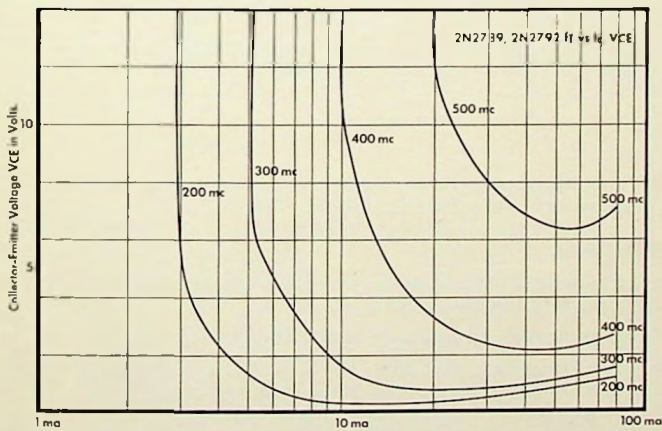
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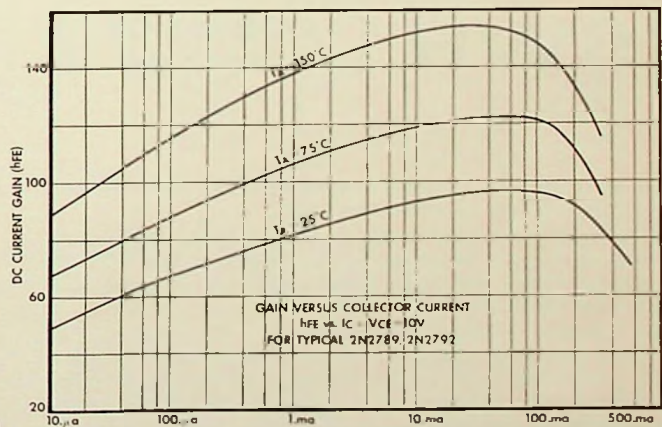
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(TO-18)

**CONTOURS OF CONSTANT
BANDWIDTH PRODUCT (f_T)**



**PULSED DC CURRENT GAIN
vs COLLECTOR CURRENT**

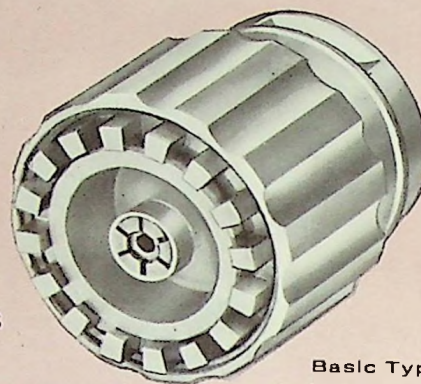
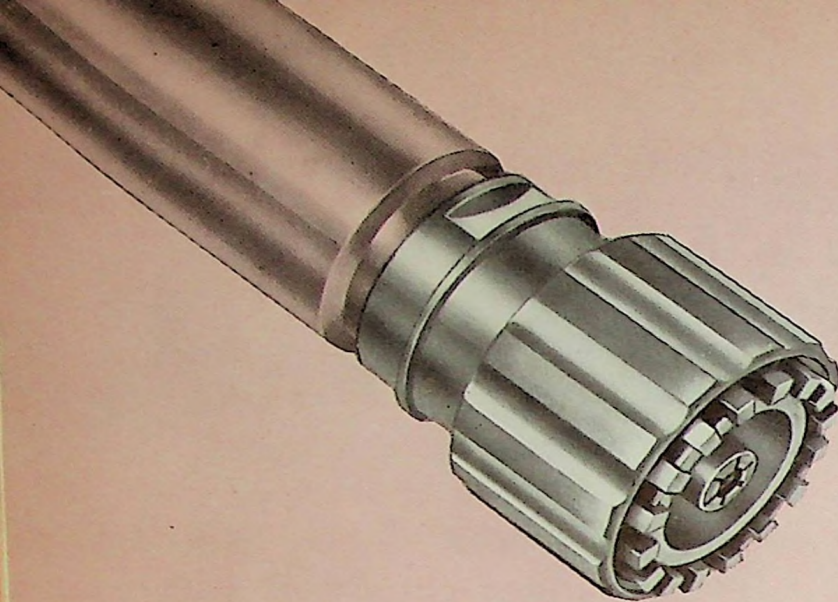


In production quantities, General Instrument's new Interdigitated Silicon Passivated Planar Epitaxial Transistors feature high speed, high gain and excellent gain retention. For further details, call your nearest sales office, authorized distributor, or write to Applications Engineering, General Instrument, 600 West John Street, Hicksville, N. Y.

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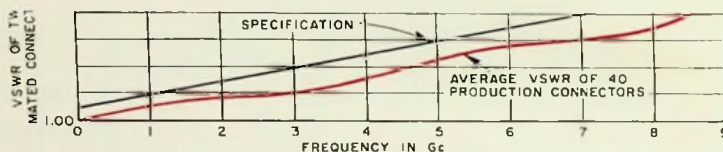


A Precision Connector that's

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you can forget it

Basic Type 900
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Connector... \$35

VSWR < 1.002 to 1 Gc
< 1.01 to 9 Gc



- **High repeatability** . . . consistency of VSWR as connection is broken and remade is better than 0.05%.
- **Gold-flashed, solid silver-alloy inner and outer conductors** . . . insertion loss for mated pair is only 0.002 db at 1 Gc, 0.006 db at 9 Gc; dc contact resistance is typically 0.4 mΩ for inner conductor and 0.04 mΩ for outer.
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- **Electrical reference plane is precisely defined** at the face of the connector.
- **Self-contained** — no separate center-conductor bullets to get lost or cause trouble. Low VSWR Teflon bead provides solid support for inner conductor and prevents entry of dirt and moisture.
- **Extremely low leakage**, a result of triple shielding . . . better than 130-db below signal level.
- **Characteristic impedance is 50 ohms ±0.1%**.
- **Wide Frequency Range** — DC to 9 Gc . . . As useful in low-frequency standardization as at high frequencies.
- $\frac{1}{16}$ " line size . . . length $1\frac{1}{16}$ ", maximum diameter $1\frac{1}{16}$ ".
- A line of precision coaxial components and instruments based on this connector and precision adaptors to other connector systems have been developed and are soon to be available.

The Type 900 Precision Coaxial Connector is the nearest thing to a perfect connector yet developed. It is a far better connector than any existing type. With it on your equipment or system, you can hold VSWR to a few tenths of one percent at microwave frequencies — the Connector is no longer the weakest link, and for all practical purposes, can be forgotten.

GENERAL RADIO COMPANY

WEST CONCORD, MASSACHUSETTS



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Joint Publication/San Francisco and Los Angeles sections of the IEEE

volume 8

july, 1963

number 1

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cover



Saluting space, newest of the "frontiers in electronics," theme of this year's Wescon, the cover features the Mars to Earth space timetable recently developed by scientists at Lockheed Missiles and Space Co., Palo Alto and Sunnyvale. Cover design by West Associates, Palo Alto and Los Angeles.

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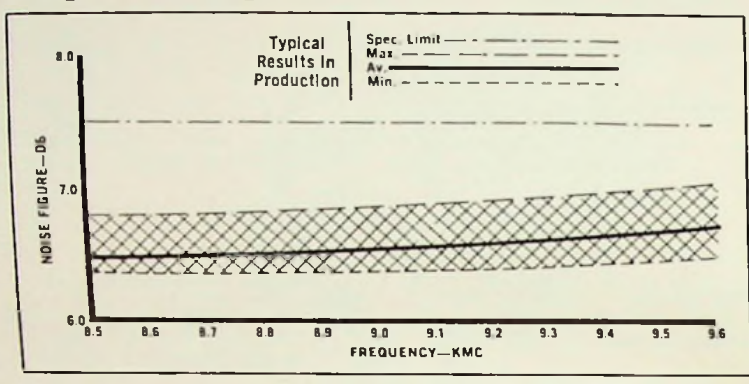
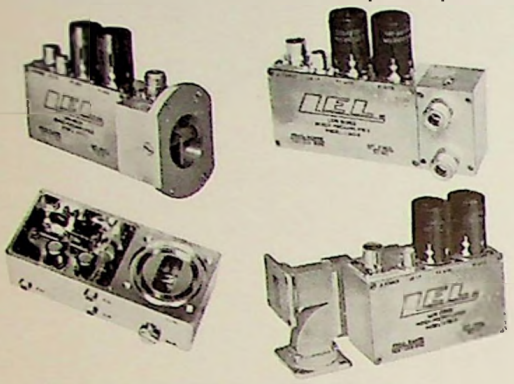
VISIT GUEBROD BOOTH 921 AT WESCON

LEL... FOR SYSTEM COMPONENT RELIABILITY

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LEL, Inc., pioneer developers of matched microwave assemblies, now offers broad availability of Mixer-Pre-amplifiers in varying combinations of center frequency, bandwidth and output impedance. Among the outstanding

characteristics of these highly reliable devices is extremely low noise figure. Measurements of noise figure on typical production models are shown in the following graph.



NOISE FIGURE vs FREQUENCY

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RA-1 • Parametric Telemetry Preamplifier
 The first of a series of stable reactance amplifiers designed to achieve the latest state-of-the-art improvement in low noise receiving systems.
 Preliminary Specifications:
 Passband 225-260mc
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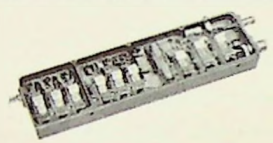
TP-5, 6, 7 Telemetry Preamplifier
 Six models are available in the LEL TP Series featuring:
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WA-2 Low Noise Travelling Wave Amplifier



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FRONTIERS IN ELECTRONICS



welcome to wescon



FLOYD GOSS
Chairman, Los Angeles Section (AIEE)
1962-63

As a result of the merger we are now very much a part of Wescon and interested in doing our share to make this renowned event in 1963 the best ever held. Former members of the AIEE, in particular, will enjoy a new opportunity to increase their awareness of technical problems and progress in their fields of interest.



The 1963 Wescon offers an excellent opportunity for the members of this new organization to become better acquainted with others in the field, and in particular our Wescon partners, the Western Electronic Manufacturers Association. The exhibits, technical sessions, and special sessions will be of great interest and significance to the engineering profession.

VICTOR E. KASTE
Chairman, San Francisco Section (AIEE)
1962-63



RALPH A. LAMM
Chairman, Los Angeles Section (IRE)
1962-63

Our invitation to attend the 1963 Wescon is extended this year with new meaning and emphasis following the successful merging of two great professional societies during the past year. IEEE enthusiasm and effort as a partner with WEMA remain unchanged. The San Francisco Section and WEMA members have assembled a program of unusual quality. The technical program has been carefully planned to cover topics important to our professional interests.

Wescon is our first Western convention under the new IEEE banner, so we warmly hope that many of our new colleagues will attend this outstanding event. In a dynamic, growing industry such as ours, technical advances and products require a continually changing and imaginative presentation. This has always been the goal of Wescon; each year many features change, with the hope that it will be more interesting and useful to those who attend. It is produced by the efforts of hundreds of IEEE and WEMA committee men and women. The sponsors are deeply indebted to them for this tremendous and expert volunteer effort.

PETER LACY
Chairman, San Francisco Section (IRE)
1962-63



TECHNICAL PROGRAM

Special Sessions

SESSION A: August 20, 2:00 to 4:30 PM.
Extraterrestrial Life, Detection, Communication and Exploration

Session Chairman: Elliott Levinthal, Stanford Medical Center, Palo Alto, Calif.

A/1 ORIGINS AND DIRECTIONS OF LIFE, by Joshua Lederberg, Genetics Dept., Stanford Medical Center, Palo Alto, Calif.

A/2 THE DETECTION OF LIFE WITHIN OUR PLANETARY SYSTEM, by Elliott Levinthal, Stanford Medical Center, Palo Alto, Calif.

A/3 THE POSSIBILITIES OF INTERSTELLAR COMMUNICATION, by Bernard Oliver, Vice President, Research and Development, Hewlett-Packard Company, Palo Alto, Calif.

A/4 THE POSSIBILITIES OF INTERSTELLAR FLIGHT, by R. W. Bussard, Senior Staff Engineer, Space Technology Laboratories, Redondo Beach, Calif.

SESSION B: August 21, 2:00 to 4:30 PM

Information Processing in Living Systems

Session Chairman: James Bliss, Stanford Research Institute, Menlo Park, Calif.

B/1 UNIT PROPERTIES IN NERVOUS INTEGRATION, by Donald Kennedy, Dept. of Biological Sciences, Stanford University, Stanford, Calif.

B/2 ROD AND CONE RECEPTOR POTENTIALS FROM MONKEY RETINAS, by Kenneth Brown, Dept. of Physiology, School of Medicine, University of Calif. Medical Center, San Francisco, Calif.

B/3 METHODS USED BY A SIMPLE EYE TO IMPROVE ITS SPATIAL AND TEMPORAL RESOLVING POWER, by Charles F. Stevens, Dept. of Physiology and Bio-physics, University of Washington, Medical School, Seattle, Washington

B/4 TACTILE PERCEPTION WITH ELECTRICAL STIMULI, by Robert H. Gibson, Dept. of Psychology, Carnegie Institute of Technology, Pittsburgh, Pa.

B/5 SENSORY PERCEPTION—FOCAL POINT OF INTERDISCIPLINARY RESEARCH BY BIOLOGISTS AND ENGINEERS, by G. D. McCann, Director, Computing Center, California Institute of Technology, Pasadena, Calif.

SESSION C: August 22, 2:00 to 4:30 PM

Recent Advances in Lasers

Session Chairman: Anthony Siegman, Stanford University, Stanford, Calif.

C/1 RECENT ADVANCES IN LASER DEVICES, by Glen Wade, Raytheon Company, Burlington, Mass.

C/2 WHAT, IF ANYTHING, ARE LASERS GOOD FOR? by George Dacey, Sandia Corporation, Albuquerque, New Mexico

C/3 COMMUNICATIONS APPLICATIONS OF LASERS, by R. C. Fletcher, Bell Telephone



Executive committee of the Wescon board for 1963 in northern California are (seated) Calvin K. Townsend, chairman of the board; John V. N. Granger, chairman of the executive committee; Edward W. Herold, convention director; and (standing) John A. Chartz, show director. Standing at right is Don Larson, Wescon manager

Wescon background

ONE OF THE BIGGEST

The Western Electronic Show and Convention (Wescon) is the largest event of its kind held annually in the West, and one of the major meetings of the industrial and professional society interests in the nation. Wescon operates under a joint contract between the Western Electronic Manufacturers Association and the San Francisco and Los Angeles Sections representing the North Region (eleven Western states, including Alaska and Hawaii) of the Institute of Electrical and Electronics Engineers.

Wescon occurs the third week of August each year, alternating between San Francisco on odd years and Los Angeles on even years. The 1963 Wescon will be held August 20-23 at the Cow Palace in San Francisco.

The governing body is an eight-man board of directors, to which are elected four members each by the com-

sponsoring organizations. Four men from the host area comprise the executive committee. The 1963 executive committee is composed of Calvin K. Townsend, chairman of the board and chief executive officer of Jennings Radio Manufacturing Corporation, San Jose, chairman of the board; Dr. John V. N. Granger, president of Granger Associates, Palo Alto, chairman of the executive committee; John A. Chartz, vice president and general manager of Dalmo Victor Company, Belmont, show director; and Dr. Edward W. Herold, vice president, research, of Varian Associates, Palo Alto, convention director.

Board members from southern California are S. H. Bellue, director, corporate procurement, of Packard-Bell Electronics, Los Angeles; Edward C. Bertolet, vice president of Behlman-Invar Electronics Corporation, Santa Monica; Hugh P. Moore, president of Computer Equipment Corporation,

(Continued on page 8)

mittee chairmen and vice chairmen—Exhibits: Berkley J. Baker, Litton Industries; Harry Lewenstein, Hewlett-Packard Co.; Technical Program: Jerre D. Noe, Stanford Research Institute; John G. Linvill, Stanford Electronics Lab; Future Engineers Show: Alan T. Waterman, Stanford Electronics Lab; Charles H. Merritt, Ampex Corp.; Registration: Fred J. Macziszewski, Stanford Research Institute; Thomas A. Christiansen, Hewlett-Packard Co.



laboratories, Murray Hill, New Jersey
 1/4 THE LASER ROTATION RATE SENSOR, by
 Warren Macek, Sperry Gyroscope Company,
 Great Neck, Long Island

SESSION D August 23, 2:00 to 4:30 PM.

edice Communication Satellites

ession Chairman: H. Richard Johnson,
 Watkins-Johnson Company, Palo Alto, Calif.

1/1 TELSTAR, by Irwin Welber, Bell Tele-
 phone Laboratories, Murray Hill, New
 Jersey

1/2 RELAY, by Warren Schreiner, Radio
 Corp. of America, Hightstown, New Jersey

1/3 SYNCOM, by Harold A. Rosen, Hughes
 Aircraft Co., Culver City, Calif.

1/4 COMSAT, by Wilbur L. Pritchard, Aero-
 space Corp., El Segundo, Calif.

1/5 COMMERCIAL COMMUNICATIONS SATEL-
 LITES, by Beardsley Graham, Spindletop
 Research, Inc., Lexington, Kentucky

Tuesday, August 20

SESSION 1: PATTERN RECOGNITION

10:00 am - 12:30 pm

ession Chairman: Philip E. Merritt, Stan-
 ford Research Institute, Menlo Park, Calif.

1 THE ELECTRONIC INSTRUMENTATION OF
 PHOTOGRAMMETRIC SYSTEMS, by P. M. Salo-
 mon, Librascope Division, Information
 Systems Group, General Precision, Inc.,
 Glendale, Calif.

2 THE USE OF THRESHOLD LOGIC IN PAT-
 TERN RECOGNITION, by S. B. Akers, Jr. and
 Harry H. Rutter, Electronics Laboratory,
 General Electric Company, Syracuse, N. Y.

3 ADAPTIVE PATTERN RECOGNITION, by A.
 Bishop, North American Aviation, Inc.,
 Columbus, Ohio

4 AN ITERATIVE DESIGN TECHNIQUE FOR
 PATTERN CLASSIFICATION LOGIC, by J. A.
 Daly, R. D. Joseph and D. M. Ramsey, Astro
 Power, Inc., Newport Beach, Calif.

5 A PATTERN RECOGNITION METHOD BASED
 ON THE LINEAR SEPARABILITY OF THE SIG-
 NAL SPACE, by Gabriel E. Lowitz, Data Sys-
 tems Division, Litton Systems, Inc., Canoga
 Park, Calif.

SESSION 2: FEEDBACK SYSTEMS

10:00 am - 12:30 pm

ession Chairman: George N. Ornstein,
 North American Aviation, Inc., Columbus,
 Ohio

1 INTERACTING DEMAND IN MULTIVARI-
 ABLE CONTROL SYSTEMS, by Lou Birca, Case
 Institute of Technology, Cleveland, Ohio

2 ENHANCED RESOLUTION IN A POTENTIAL
 PLANE ANALOG THROUGH A VARIABLE CHANGE
 IN ORIGIN TRANSLATION, by Otto J. M.
 Smith, University of California, Berkeley,
 Calif. and Edward Swenson, Electro Scien-
 tific Industries, Inc., Portland, Ore.

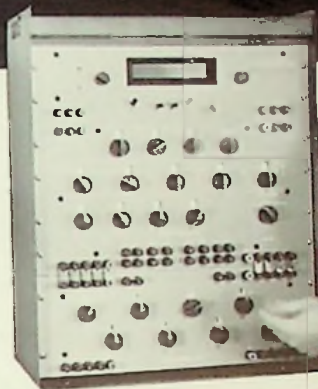
3 ON-LINE IDENTIFIER FOR SYSTEM EQUA-
 TION IN THE PRESENCE OF NOISE, by Richard
 M. Baker, 1708 Euclid No. 7, Berkeley, Calif.

WESCON BOOTHS 2317-2320

6 NEW

MEASURING SYSTEMS

from esi



Talk to the men in the esi BLAZERS...

demonstrating the newest in matched instrumentation from the
 company that pioneered the system concept.

- **MODEL 791 RATIO MEASURING SYSTEM**
 Measures both in-phase and quadrature components of ac ratio. State-
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 and capacitors. 7-place resolution.
- **MODEL 121 DOUBLE-RATIO RESISTANCE COMPARISON SYSTEM**
 One tenth ppm resolution. Circuit eliminates lead and contact resis-
 tance. No calculations necessary. Certified correction set on separate
 dials before making measurements. All switch contact resistance in
 the bridge suppressed by a factor of 100 or more.
- **MODEL 242 RESISTANCE MEASURING SYSTEM WITH AUTOMATIC
 DATA RECORDING**
 The Model 242 adapted to supply input to a Friden Flexowriter. Rec-
 ords resistance measurements as typed numbers or on punched tape.
 Convertible to other data logging systems.
- **MODEL 1071 AC RATIO MEASURING SYSTEM**
 Measures in-phase component of ac ratio and provides for quadrature
 balance. Highest accuracy calibration of both resistive and transformer
 dividers can be accomplished quickly and easily.
- **MODEL 721 DC RATIO MEASURING SYSTEM**
 Compares unknown dividers to a part-per-million standard. Lead com-
 pensation and well-matched generator-detector give maximum flexibili-
 ty and accuracy.
- **MODEL 701 CAPACITANCE MEASURING SYSTEM**
 Continuous one ppm per dial division resolution. Separate capacitance
 value and deviation dials provide maximum flexibility and convenience
 for capacitance comparison. Continuously tunable, self tracking, line
 operated, wide-voltage-range generator and one microvolt detector
 provide more than enough sensitivity for fractional ppm comparison.

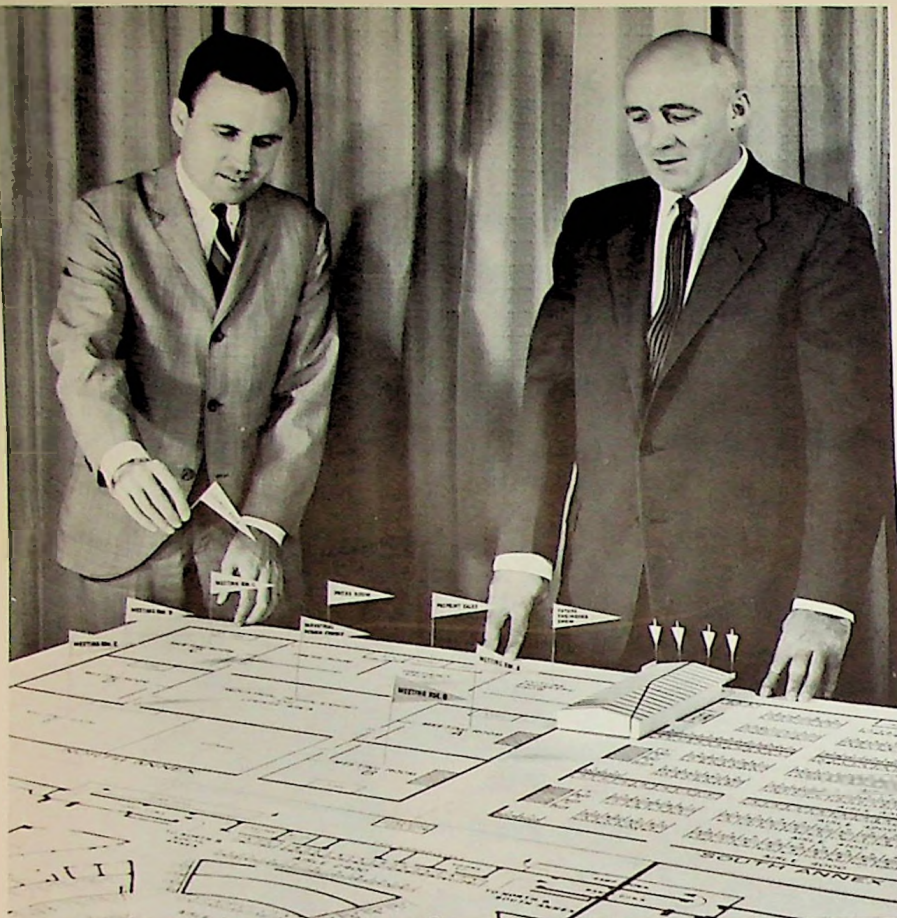
ALSO—NEW unit-packaged resistors, NEW Milliohm Bridge plus gen-
 erator-detector, NEW shielded cable connectors for all systems.



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Berkley J. Baker, chairman of the exhibits committee (left), and John A. Chartz, Wescon show director, inspect a dimensional layout of the new meeting rooms area which will contain all the technical sessions of Wescon under one roof and in close proximity. The new arrangement represents a model of convenience for convention-goers. Also in this area will be the Industrial Design show and the Future Engineers show

Los Angeles; and Ralph A. Lamm, plant manager of the Bendix Pacific Division Electronics Center, Sylmar.

Manager of Wescon since the fall of 1956 is Don Larson of Los Angeles. He is an ex-officio member of the Wescon executive committee, supervises year-around business operations, and is in charge of Wescon's public relations program.

The main business office of Wescon is at 3600 Wilshire Boulevard, Los Angeles. The northern California office is at 701 Welch Road, Palo Alto.

Wescon is greatly dependent on volunteers from the industry and from the profession it serves to put on its gigantic undertakings. Immediately upon the conclusion and the aftermath of a Wescon, preparations start for the succeeding event.

There are 14 standing committees involving almost 350 people on a volunteer basis to plan and execute convention and trade show responsibilities. This includes area representatives assisting with the Distribution-Manu-

(Continued on page 10)

Committee chairmen and vice chairmen—Public Relations: Charles Elkind, IBM Corp.; Thomas D. Boyd, Stanford Research Institute; Technical Tours: Robert E. Miller, Stanford Research Institute; John W. Summers, Varian Associates; Facilities: E. N. Phillips, Motorola Semiconductor Products, Inc.; Henry W. Schroeder, Melabs, Inc.; Cocktail Party: Phillip L. Gundy, Technical Systems, Inc.; A. George Ewing, Lenkurt Electric Co.



SESSION 3: COMPONENT RELIABILITY

10:00 am — 12:30 pm

Session Chairman: Bruce Clark, Stanford Research Institute, Menlo Park, Calif.

3/1 TEMPERATURE SENSITIVE FLUORESCENT PAINTS, A GRAPHIC DISPLAY OF TEMPERATURE DISTRIBUTION, by H. D. Frazier, Research and Development, Pacific Semiconductors Inc., Lawndale, Calif.

3/2 CONNECTOR RELIABILITY BASED ON ACTUAL FIELD MEASUREMENTS, by James E. Atkinson and Hugh C. Edfors, Amphenol Borg Electronics Corporation, Chicago, Ill.

3/3 USE OF CONDUCTIVE EPOXIES FOR ELECTRICAL INTERCONNECTIONS, by J. M. Okada, Douglas Aircraft Co., Santa Monica, Calif.

3/4 A PROGRAM OF QUALITY ASSURANCE FOR WELDED ELECTRONIC CIRCUITRY by F. A. Lally, Aero-Space Division, The Boeing Company, Seattle, Wash.

SESSION 4: MICROWAVE COMPONENTS

10:00 am — 12:30 pm

Session Chairman: Richard C. Honey, Stanford Research Institute, Menlo Park, Calif.

4/1 THE GROOVE GUIDE, A LOW-LOSS WAVE GUIDE FOR MILLIMETER WAVES, by F. J. Tischer, Research Institute, University of Alabama, Huntsville, Alabama

4/2 BROADBAND STRIP-TRANSMISSION LINE Y-JUNCTION CIRCULATORS, by J. W. Simons, Sperry Microwave Electronics Company, Clearwater, Fla.

4/3 A SINGLE JUNCTION 4-PORT COAXIAL CIRCULATOR, by D. H. Landry, Sperry Microwave Electronics Company, Clearwater, Fla.

4/4 FIELD OPERATIONAL TRAVELING-WAVE MASER AMPLIFIERS, by J. R. Yaeger, L. Buchmiller, W. P. Jones, and W. A. Petersen, Microwave Electronics Corporation, Palo Alto, Calif.

4/5 YAGI TRANSMISSION LINES, by Donald K. Reynolds, Robert F. Tighe, and Thomas L. Blakney, Dept. of Electrical Engrg. University, of Washington, Seattle, Wash.

SESSION 5: SWITCHING CIRCUITS

10:00 am — 12:30 pm

Session Chairman: Robert M. Shultz, Fairchild Semiconductor Corp., Mountain View, Calif.

5/1 EXPLOITATION OF INITIAL CONDITIONS TO ACHIEVE FLUX GAIN IN BALANCED MAGNETIC CIRCUITS, by E. E. Newhall and J. R. Perucchi, Bell Telephone Labs., Inc., Murray Hill, N. J.

5/2 NOVEL NANOSECOND CIRCUITS USING STORAGE DIODES AS CHARGE TRANSFORMERS AND TUNNEL DIODES AS CHARGE AMPLIFIERS, by Brian E. Sear, Electronic Systems and Products Division, Martin Company, Baltimore, Md.

5/3 A PRECISION SAMPLE AND HOLD CIRCUIT WITH SUB NANOSECOND SWITCHING, by J. S. Gray and S. C. Kitsopoulos, Bell Telephone Labs., Inc., Murray Hill, N. J.

5/4 APPLICATION OF NANOSECOND LOGIC CIRCUITS, by J. S. Jamison, T. E. Gilligan, and

Bacon, Burroughs Corporation, Great Valley Labs., Paoli, Pa.

TECHNICAL TOURS

University of California Electronic Research Lab, 1 to 5 pm
 Kaiser Aircraft and Electronics, 1 to 5 pm
 Westinghouse/Sunnyvale, 1 to 5 pm

Wednesday, August 21

SESSION 6: TRAINABLE SYSTEMS—REALIZATION & SIMULATION

10:00 am - 4:30 pm

Session Chairman: James B. Angell, Stanford University, Stanford, Calif.

1/1 A LARGE SELF-CONTAINED LEARNING MACHINE, by A. E. Brain, G. E. Forsen, D. Hall, and C. A. Rosen, Stanford Research Institute, Menlo Park, Calif.

1/2 DESIGN OF A MAGNETIC VARIABLE-GAIN COMPONENT FOR ADAPTIVE NETWORKS, by I. S. Crafts, Stanford Research Institute, Menlo Park, Calif.

1/3 INFLUENCE OF COMPONENT IMPERFECTION ON PERFORMANCE OF TRAINABLE SYSTEMS, by P. R. Low, I.B.M. and Stanford University, Stanford, Calif.

1/4 SIMULATION OF ADAPTIVE LINEAR DECISION FUNCTIONS USING THE IBM 7090 COMPUTER, by J. S. Griffin, Jr., J. H. King, Jr., and C. J. Tunis, I.B.M. Corp., Endicott, N.Y.

SESSION 7: MODULATION THEORY AND TECHNIQUES

10:00 am - 12:30 pm

Session Chairman: Malcolm McWhorter, Radar Corporation, Mountain View, Calif.

1/1 A TWO-STATE MODULATION SYSTEM, by Amar G. Bose, Dept. of Electrical Engrg. and Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Mass.

1/2 A NEW FM MULTIPLEX SYSTEM FOR PRECISION DATA RECORDING, by Dalton Martin, Radar Corporation, Mountain View, Calif.

1/3 MAGNETIC FEEDBACK MODULATOR IMPROVES ACCURACY IN FM RECORDING, by R. Lee Price, Mincom Division, Minnesota Mining & Mfg. Co., Los Angeles, Calif.

1/4 FM SIGNALS TAILORED TO SPECIFIC SONAR AND RADAR REQUIREMENTS, by Richard O. Rowlands, Ordnance Research Laboratory, Pennsylvania State University, University Park, Pa.

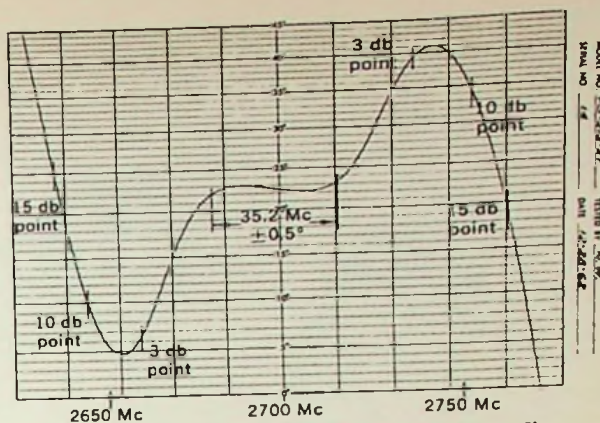
SESSION 8: SEMICONDUCTOR MICROELECTRONICS

10:00 am - 12:30 pm

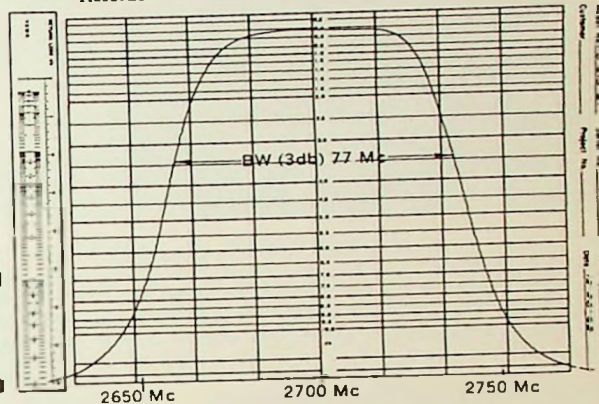
Session Chairman: R. Alberts, Wright Air Development Center, Dayton, Ohio

1/1 TELEMETRY ENCODER, by T. Galindo and Gerald Luecke, Components Division, Texas Instruments, Dallas, Tex.

1/2 MICROELECTRONICS AND MINUTEMAN, by Richard Platzek, Autonetics Division of



Phase response above of a three-cavity band-pass filter recorded by Rantec phase measurement system on 45° paper. Paper with 6° and 120° scales also available. Recorded insertion-loss response is shown below.



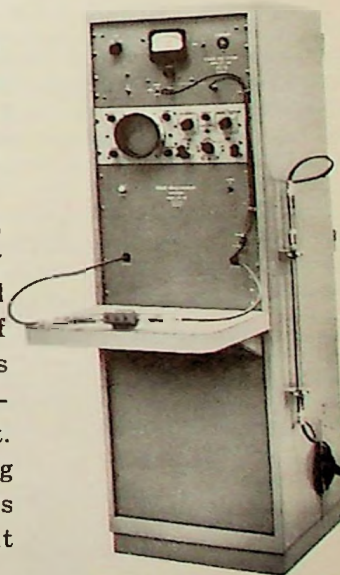
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Mrs. William P. Doolittle (left), whose husband is in charge of international activities of Hewlett-Packard Co., and Mrs. Stanley F. Kaisel, whose husband is president of Microwave Electronics Corp., are chairman and vice chairman of Wescon's women's activities committee. Holding their Wescon manual, they form a comparison with Bernice Kussoy's metal sculpture, "The Duet," which will be seen at the special open-air art show at Tiburon arranged by the Quay Gallery as a part of the special entertainment for ladies at Wescon

facturers-Representatives Conference on the day prior to Wescon's opening. The Cow Palace this year will house a record number of booths—1,210. More than 800 exhibitors from all over the country and several foreign nations have engaged space. All the available booths have been committed. It has been estimated that if all the 1963 exhibits were to be positioned side-by-side, they would reach in a continuous line for two and one-fourth miles—or over one-fourth the distance between the Cow Palace and the Fairmont Hotel atop Nob Hill. Wear comfortable walking shoes!

The Cow Palace, one of the best-known convention exhibition and sports facilities in the country, is situated on 67 acres of land with paved

and lighted areas to handle the parking of 6,500 cars. It is owned by the State of California and operated by No. 1-A District Agricultural Association.

Wescon will use nearly 250,000 square feet of the total available floor space for its exhibits. One hall has been reserved for the convention sessions. Consolidated under one roof and adjoining, meetings will take place in four rooms seating 500 each and in a fifth seating 800. All told, Wescon will make use of 323,000 square feet of space.

This year Wescon will speed up registration and traffic flow in and out of the Cow Palace through the creation of a second, new entrance at the

(Continued on page 12)

Committee chairmen and vice chairmen—Distributor/Manufacturer/Rep Conference: Elvin W. Feige, Elmar Electronics; Charles N. Meyer, Meyer & Ross; Co-chairmen, Hospitality: Donald B. Harris, Stanford Research Institute; Albert J. Morris, Radiation at Stanford; Industrial Design: Frederick C. Hill, Lenkurt Electric Co., Inc.; Donald W. Brundage, Brundage Associates; Visitors Services: Norman P. Hiestand, Varian Associates; William C. Weber, Jr., Compar Corp.



North American Aviation, Inc., Anaheim Calif.
8/3 INTEGRATED CIRCUIT PACKAGING AND INTERCONNECTIONS, by W. H. Ayer and E. Kirchner, Sippican Corp., Santa Ana Calif.

SESSION 9: PLASMAS
10:00 am — 12:30 pm
Session Chairman: Gordon Kino, Microwave Laboratory, Stanford University, Stanford Calif.
9/1 HARMONIC GENERATION IN PLASMAS, C. B. Swan, Bell Telephone Labs., Inc., Murray Hill, N. J.
9/2 HARMONIC GENERATION AND PARAMETRIC OSCILLATIONS IN A PLASMA DISCHARGE, by J. H. Krenz and G. S. Kino, Microwave Laboratory, Stanford University, Stanford, Calif.
9/3 MODULATED PLASMA ELECTRON BEAM, by L. W. Stauffer, General Electric Company, Schenectady, N. Y.
9/4 PHYSICS OF ION EXTRACTION FROM PLASMAS, by W. Eckhart, Hughes Research Laboratories, Malibu, Calif.

SESSION 10: MANAGEMENT
10:00 am — 12:00 pm
Session Chairman: Stanley F. Kaisel, Microwave Electronics Corp., Palo Alto, Calif.
Titles and Authors to be Announced

TECHNICAL TOURS
4. Microwave Electronics Corp., 1 to 5
5. Systron-Donner Co., 1 to 5 pm
6. Ames Laboratory, NASA, 1 to 5 pm

Thursday, August 2

TECHNICAL TOUR
7. Stanford Linear Accelerator, 9 to 12:30

SESSION 11: TRAINABLE SYSTEMS—THEORY & APPLICATION
10:00 am — 12:30 pm
Session Chairman: Nils Nilsson, Stanford Research Institute, Menlo Park, Calif.
11/1 THE ARTIFICIAL INTELLIGENCE: A CRITIQUE OF VARIOUS CAMPS IN ARTIFICIAL INTELLIGENCE, by Louis Fein, Applied Physics Lab., Stanford Research Institute, Menlo Park, Calif.
11/2 SIMULATION STUDIES OF FOUR-LAYER AND CROSS-COUPLED PERCEPTRONS, by Fred Rosenblatt, Cognitive Systems Research Program, Hollister Hall, Cornell University, Ithaca, N. Y.
11/3 AN ADAPTIVE PREDICTION TECHNIQUE AND ITS APPLICATION TO WEATHER FORECASTING, by Richard O. Duda and Jack Machanik, Stanford Research Institute, Menlo Park, Calif.
11/4 SOME APPLICATIONS FOR ADAPTIVE DATA PROCESSING SYSTEMS, by Bernard V. Brown, Lee Talbert, Gabriel Groner, Fred Smith, Michael Hu, and Donald Speiser, Stanford University, Stanford, Calif.

SESSION 12: CONTROL THEORY

10:00 am - 12:30 pm

Session Chairman: James Eaton, Dept. of Electrical Engrg., University of California, Berkeley, Calif.

12/1 A CONTROLLABILITY CRITERION FOR A CLASS OF LINEAR SYSTEMS, by A. R. Stubberud, Dept. of Electrical Engrg. University of California, Los Angeles, Calif.

12/2 USE OF A COORDINATE TRANSFORMATION IN THE INCREMENTAL PHASE PLANE, by David P. Lindorff, Dept. of Electrical Engrg., University of Connecticut, Storrs, Conn.

12/3 SYMBOLIC REPRESENTATION OF COORDINATE TRANSFORMATIONS, by R. L. Pio, Hughes Aircraft Co., Culver City, Calif.

12/4 A METHOD FOR COMPUTING TIME OPTIMAL CONTROL, by Harold Knudsen, Lincoln Laboratories, M.I.T., Lexington, Mass.

12/5 A SURVEY OF MINIMUM FUEL SYSTEMS, by Michael Athans, Lincoln Laboratories, M.I.T., Lexington, Mass.

SESSION 13: INTEGRATED CIRCUITS

10:00 am - 12:30 pm

Session Chairman: R. S. Pepper, University of California, Berkeley, Calif.

13/1 AN APPROACH TO LOW-COST, HIGH-PERFORMANCE MICROELECTRONICS, by E. M. Davis, W. E. Harding, and R. S. Schwartz, Components Division, I.B.M. Corporation, Poughkeepsie, N. Y.

13/2 METAL-OXIDE-SEMICONDUCTOR FIELD EFFECT TRANSISTORS AND MICROCIRCUITRY, by F. M. Wanlass, Research & Development Lab., Fairchild Semiconductor, Palo Alto, Calif.

13/3 ELECTRON BEAM MANUFACTURING TECHNIQUES FOR INTEGRAL DEVICE INTERCONNECTIONS, by D. J. Caribotti, Electronics Department, Hamilton Standard Division, Broad Brook, Conn. and E. H. Miller, Manufacturing Technology Laboratory, Aeronautical Systems Division, Wright-Patterson Air Force Base, Ohio

13/4 INTEGRATED COMPLEMENTARY TRANSISTOR LOGIC GATES, by Robert Seeds, Application and Engrg. Department, Fairchild Semiconductor, Palo Alto, Calif.

SESSION 14: LASER TECHNIQUES

10:00 am - 12:30 pm

Session Chairman: William Culshaw, Lockheed Missiles & Space Company, Palo Alto, Calif.

14/1 POLARIZATION MODULATION AND DEMODULATION OF LIGHT, by W. Niblack and E. H. Wolf, Sylvania Electronic Systems, Division of Sylvania Electric Products, Inc., Williamsville, N. Y.

14/2 DIFFRACTION LIMITED, SINGLE MODE CLASS LASER, by J. W. Kantorski and C. G. Young, American Optical Company, Southbridge, Mass.

14/3 THE POTENTIAL OF TECHNIQUES USING COHERENT LIGHT DIFFRACTION, by W. H. Huntley, Jr., Stanford Electronics Laboratories, Stanford, Calif.

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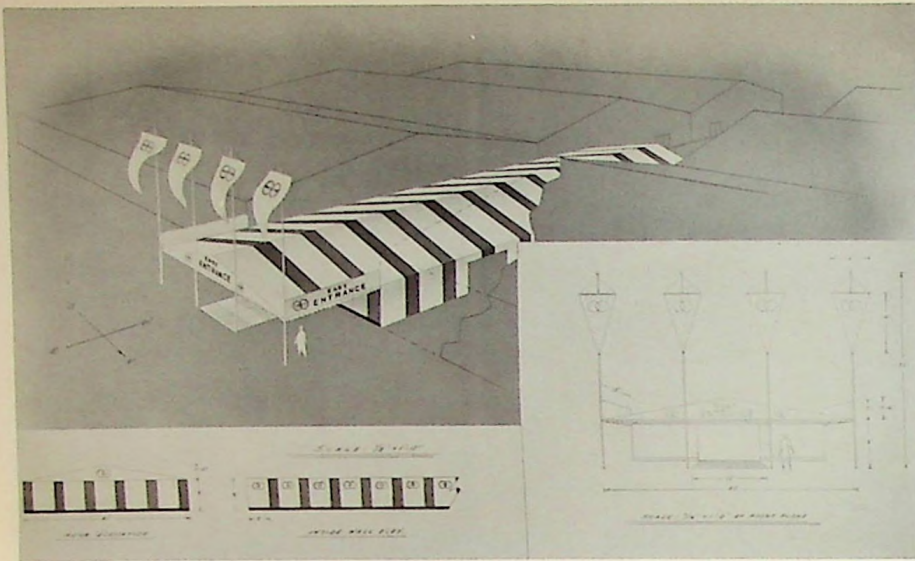


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New decor and entryway planned for the east entrance of Cow Palace

east end of the building complex, to be used in addition to the architectural main entrance facing west. Coming through a gate off Geneva Avenue, arrivals will see an inviting striped canopy projecting 15 feet from the mall separating the North and South Annexes. More striped tenting extending 100 feet inwards over the mall will shelter a large new registration area. Entering visitors can turn left directly into the North Annex, where all the technical sessions will be held, or veer right into the East Exhibit Hall for a first view of the exhibits. Alterations to the familiar West entrance will offer greater convenience for registration and traffic there.

The five meeting rooms will be tested upon installation of new materials for sound insulation. Each of the rooms will be mounted with platforms, blackboards, and audiovisual equipment of the latest design.

John B. Sauter, president of Stuart-Sauter Co., official decorators for Wescon, estimates 28 miles of wire will be laid to accommodate the electric power for the exhibits, along with installation of 214 distributing and load center panels. His firm will install two new substations, each of 500 KVA capacity, to handle the electrical load required throughout Wescon Week.

Restaurants, snack bars, and refreshment stands will be in operation during all setup and show hours to serve up to 15,000 persons daily. Attendance at Wescon is expected to hit around 35,000 this year.

The 1963 Technical Program during its formative period (late May-early June) began taking on the character of "quality of content" at the expense of filling all the time available for the four mornings and afternoons. Extensive winnowing and evaluation of the record 300-plus submissions, coupled

with 20 invited papers, have produced indications that there will be 18 morning sessions with between 60 and 70 papers assigned to times.

Some session subjects: Antenna arrays, network theory, control systems and control theory, reliability, pattern recognition, semiconductor devices, semiconductor microelectronics, adaptive learning machines, high-power modulators, engineering management.

As in past years, there will be "panels of peers" attending many of the sessions to comment and stimulate discussion. Not all sessions will have panels assigned.

There will be four afternoon special sessions with the following titles: "Active Communications Satellites," "Life on Other Planets," "Information Processing in Living Systems," and an as-yet untitled session on lasers.

Preprints will be available at a unit cost. Wescon has no plans for publishing the entire proceedings and will continue with the arrangement for making the postconvention oversupply available through a distribution house.

Committee chairmen and vice chairmen—Women's Activities: Mrs. W. P. Doolittle; Mrs. S. F. Kaisal; Banquet: Cori Van Rensselaer, Hewlett-Packard Co.; William P. Melchior, Eichhorn & Melchior; WEMA: Emmet G. Cameron, president (Varian Associates); William H. Hefim, chairman, San Francisco Council (Beckman & Whitley, Inc.)



14/4 A 2 MM (NON)-CONFOCAL RESONATOR FOR USE AS A WAVEMETER OR FILTER ELEMENT, by George Oltman, Space Technology Labs., Inc., Redondo Beach, Calif.

SESSION 15: FUTURE ENGINEERS SYMPOSIUM

10:00 am - 12:30 pm

Papers to be Selected

SESSION 16: DATA CODING & SWITCHING THEORY

10:00 am - 12:30 pm

Session Chairman: Bernard Elspas, Stanford Research Institute, Menlo Park, Calif.

16/1 PERFORMANCE OF ORTHOGONAL AND BI-ORTHOGONAL CODES UTILIZING SUB-OPTIMUM DETECTION TECHNIQUES, by R. Marquedant and H. Hodara, Research and Development Division, The Hallicrafters Co., Chicago, Ill.
16/2 A DECOMPOSITION RESULTING IN LINEARLY-SEPARABLE FUNCTIONS OF TRANSFORMED INPUT VARIABLES, by James Arli Cooper, Stanford University, Palo Alto, Calif.

16/3 PERFORMANCE OF HAMMING CODES, by R. G. Marquart and J. C. Hancock, Communications Science Laboratory, School of Electrical Engrg., Purdue University, Lafayette, Indiana

16/4 ON BINARY DATA TRANSMISSION ERROR RATES DUE TO COMBINATIONS OF GAUSSIAN AND IMPULSE NOISE, by Leonard R. Halstein, Institute of Science and Technology, University of Michigan, Ann Arbor, Mich.

TECHNICAL TOURS

8. Jennings Radio Manufacturing Co., 1 to 5 pm

9. United Technology Corp., 1 to 5 pm

10. Spectra-Physics/Sylvania, 1 to 5 pm

Friday, August 23

TECHNICAL TOUR

11. Station KPEN Transmitter Site, 9:30 am - 12:30 pm

SESSION 17: NON-LINEAR CIRCUITS AND SYSTEMS

10:00 am - 12:30 pm

Session Chairman: R. W. Newcomb, Stanford University, Stanford, Calif.

17/1 THE FREQUENCY RESPONSE OF A STABLE OSCILLATING CONTROL SYSTEM, by W. C. Foster, Douglas Aircraft Company, Inc., Santa Monica, Calif.

17/2 FUNCTIONAL TECHNIQUES FOR THE ANALYSIS OF THE NONLINEAR BEHAVIOR OF PHASE-LOCKED LOOPS, by Harty L. Van Trees, Dept. of Electrical Engrg., Massachusetts Institute of Technology, Cambridge, Mass.

17/3 FREQUENCY TRANSIENTS IN SYNCHRONIZED OSCILLATORS, T. N. White and W. Jones, School of Electrical Engineering, Georgia Institute of Technology, Atlanta, Ga.

17/4 NONLINEAR SYSTEMS ANALYSIS AND ST

THESIS, Ming-Lei Liou, Department of Electrical Engineering, Stanford University, Stanford, Calif.

SESSION 18: SOLID-STATE ELECTRONICS

10:00 am - 12:30 pm

Session Chairman: John J. Linvill, Stanford University, Stanford, Calif.

18/1 ELECTROLUMINESCENT INSTRUMENT DISPLAYS, by W. Brooks, Electronic Sciences Laboratory, Lockheed Missiles and Space Company, Palo Alto, Calif.

18/2 DESIGNING TRANSISTORS FOR OPTIMUM HIGH FREQUENCY OPERATION, by J. Gerard F. Bouchard, Sprague Electric Company, Concord, N.H.

18/3 UNIVERSAL MODEL FOR SEMICONDUCTOR DIODE SWITCHING CHARACTERIZATION, by H. John Kuno, The National Cash Register Company, Hawthorne, Calif.

18/4 SOLID STATE ELECTROMETER USING BARRIER VARICAP DIODES, by Thomas B. Hutchins, Tektronix, Inc., Beaverton, Ore.

SESSION 19: ANTENNA ARRAYS

10:00 am - 12:30 pm

Session Chairman: John Damonte, Dalmo Victor Co., Belmont, Calif.

19/1 VLF SUPERDIRECTIVE ARRAY, by E. W. Seeley, U.S. Naval Ordnance Laboratory, Corona, Calif.

19/2 NON-UNIFORM TWO DIMENSIONAL SCANNING ARRAYS, by Robert F. Tighe, Dept. of Electrical Engrg., University of Washington, Seattle, Wash.

19/3 FORESHORTENED LOG PERIODIC DIPOLE ARRAY, by Claes T. Elfving, Sylvania Electronic Systems-West, Electronic Defense Laboratories, Mountain View, Calif.

19/4 APPLICATIONS OF PERTURBATION TECHNIQUE TO SIDELobe REDUCTION OF AMPLITUDE TAPERED ANTENNA ARRAYS AND SURFACE WAVE STRUCTURES, by Dominick J. Cormignani, Grumman Aircraft Engrg. Corp., Bethpage, Long Island, N.Y.

19/5 A SYNTHESIS TECHNIQUE FOR LINEAR ARRAYS WITH WIDE-BAND ELEMENTS, by F. I. Tseng and David K. Cheng, Electrical Engrg. Dept., Syracuse University, Syracuse, N.Y.

SESSION 20: HIGH POWER MODULATORS

10:00 am - 12:30 pm

Session Chairman: Eli Goldfarb, Radiation at Stanford, Palo Alto, Calif.

20/1 SPARK CHAMBER PULSE MODULATORS, by Quentin A. Kerns, Lawrence Radiation Laboratory, Berkeley, Calif.

20/2 COMMAND RESONANCE CHARGING SYSTEM FOR THE ASTRON ACCELERATOR, by K. A. Saunders and R. L. Sewell, Lawrence Radiation Laboratory, Livermore, Calif.

20/3 180 MW SPARK-GAP LINE MODULATOR, by George Hanna, Continental Electronics Manufacturing Co., Dallas, Texas

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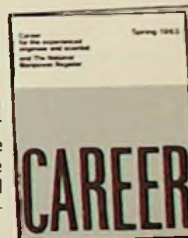
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Please send me without obligation, the information on the forthcoming Career Centers and the Center registration form, as well as "Career for the Experienced Engineer and Scientist."

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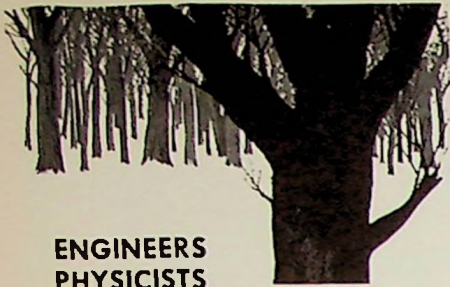
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177-16

GENERAL ELECTRIC



registration notes

HAVE KIT, WILL TRAVEL

To make preregistration for technical sessions and special events highly convenient, Wescon will this year inaugurate a unique series of all-day, staffed trailer visits to area plants July 15 through August 8.

Complete information and IEEE membership application kits will also be available at the trailer, in most cases parked outside the main gate.

Mon., July 15—Ampex Corp., 934 Charter St., Redwood City; Tues., July 16—Dalmo Victor, 1515 Industrial Way, Belmont; Wed., July 17—Eitel-McCullough, 301 Industrial Way, San Carlos; Thurs., July 18—Stanford Research Institute, 333 Ravenswood Ave., Menlo Park; Fri., July 19—Friden, Inc., 2350 Washington Ave., San Leandro; Mon., July 22—GE Microwave, 601 California Ave., Palo Alto; Tues., July 23—Watkins-Johnson, 3333 Hillview Ave., Palo Alto; Wed., July 24—Varian Associates, 611 Hansen Way, Palo Alto; Thurs., July 25—Porter Drive adjacent to Alfred Electronics, Palo Alto; Fri., July 26—Fairchild R&D, 4001 Junipero Serra, Palo Alto; Mon., July 29—Lockheed, 3251 Hanover St., Palo Alto; Tues., July 30—Stanford Electronics Lab and Hansen High Energy Lab, Stanford campus; Wed., July 31—parking lot of old Granger Associates bldg., 974 Commercial St., Palo Alto; Thurs., August 1—California Ave., adjacent to Granger Associates and General Precision, Palo Alto; Mon., August 5—Littton Industries, 960 Industrial Way, San Carlos; Tues., August 6—Philo, 3825 Fabian Way, Palo Alto; Thurs., August 8—Fairchild Semiconductor, 454 Whisman, Mountain View.

Members in these areas are urged to invite their nonmember colleagues to pick up a membership kit. For information call 321-1335.

social notes

FAIRMONT BANQUET

A major event of the social week of Wescon is the annual banquet the evening of Thursday, August 22—also in the Grand Ballroom of the Fairmont. This affair is both social and solemn. Dr. Lee A. DuBridge, president of California Institute of Technology, is the featured speaker. The evening's program includes presentation of the annual recognition award of the Sixth Region of the IEEE to a member for his outstanding professional contribution and, this year, the awards for the Industrial Design competition.

social notes

COCKTAILS, LADIES' EVENTS

The annual cocktail gala which traditionally occupies the first evening of Wescon will have a circus theme this year. It is set for the Grand Ballroom of the Fairmont Hotel.

"A Day at the Circus" will furnish the same colorful attractions of the midway at night—performing clowns, a calliope, a uniformed circus band, and some surprise acts. Attendance will be in the thousands.

International overtones will flavor the social program for ladies at Wescon. There will be two main activities. On Wednesday, August 21, a cruise boat will cross San Francisco's private sea, the Bay, to the Tiburon water front a collation of upperclass Bohemia in the way of handsome residences, specialty shops, art galleries, and unusual cafes. There the Quay Gallery will have a special sidewalk art show, and luncheon will be at Tiburon Tommy's and The Dock.

Thursday noon there will be a large luncheon in the Garden Court of the famed Sheraton-Palace Hotel as a setting for an Oriental fashion show. Miss Mai Tai Sing, widely known personality in San Francisco's entertainment world, will be commentator for modeled contemporary fashions created in Hong Kong and a collection of traditional Chinese wedding costumes. The Lion's Dance will be performed and butterfly harp music will add its exotic background.

A hospitality suite at the Fairmont will be headquarters for the women's events, and arriving visitors will enjoy "the cheering cup" and informal socializing there on Tuesday. The ladies will add their dressy presence to the cocktail party at the Fairmont Tuesday evening, and on Friday will visit the exhibition and special attractions (Future Engineers Show and Industrial Design Exhibit).

Guess the Power Supply for this 1887 Spacecraft!

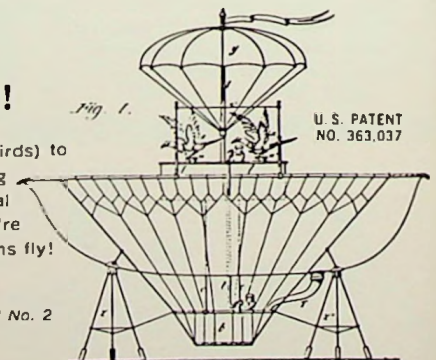
Birdseed! This inventor chose "living motors" (birds) to propel his balloon. Frankly, if you're thinking along this line, we can't help. But if you need a special power supply... any type, size or shape... then we're the birds for it. Call us in and watch your problems fly!

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Microcircuitry... PLUS Freedom of Design

How the Flexibility of General Instrument's MULTICHIP Technology Can Help You Produce Better Circuitry in Less Time at Lower Cost

AS EVERY DESIGN Engineer knows, many microcircuits in widespread use today have become so standardized that they are purchased "off-the-shelf" from various manufacturers as *fully integrated* or "monolithic" units. Such Integral Circuit Packages consist of various types of components mounted and interconnected on a single substrate. Circuitry and component parameters are fixed . . . and, for the standardized applications to which they are suited, need not be altered.

NEVERTHELESS, a high percentage of current circuitry should and frequently *must* be custom-designed by the engineer for optimum performance in a specific application. Here, the monolithic ICP may not be practical — for technical reasons, for economic reasons, or both. Yet the advantages of *microcircuits* may still be desirable or essential. In such cases, the ideal answer is General Instrument's highly advanced technology of *multichip* ICP's — a form of microcircuitry that permits full freedom of design . . . is economical, even where comparatively few units are required . . . equals or exceeds the performance of monoliths in most applications.

What GI Multichips Are — and Do

GI MULTICHIP Components are laid down on a silicon substrate by a technique virtually identical with that used in creating the same types of components in monolithic manufacture. But unlike monoliths, in which all the various components share a *common* substrate, GI multichip technology batch-manufactures on each silicon wafer a large number of *one* particular, identical component: a resistor, a capacitor, an R-C network, a transistor or diode of given, identical parameters. The hundreds of identical components on each wafer are later diced into *individual* elements, and then assembled to *your* circuit design.

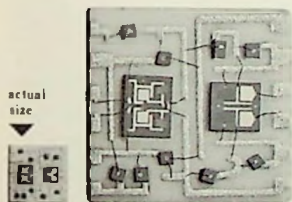
IN TERMS OF economics, the flexibility of this process for custom-designed circuits reduces the "tooling-up" cost

to a matter, usually, of only a few hundred dollars . . . whereas the equivalent cost of a monolithic ICP is so high that it can rarely be justified except for standardized circuitry that can be turned out in enormous quantities without modification. The technique also permits us to manufacture the individual components, in all standard values, in advance — and to maintain an inventory of components that can be assembled to your design on receipt of your order. This can mean a saving of many weeks in supplying you with custom-built microcircuits, compared with creating a complete monolith to your specifications.

THERE ARE significant technical advantages, too. Monolithic construction, in today's state-of-the-art, inevitably results in parasitic *coupling* between the components sharing the same substrate. In many cases, this may be unimportant. In others — especially where high-frequency performance must not be compromised — it may be undesirable or intolerable. In interface, multichip circuitry, the finished circuits compare favorably in performance to conventional circuits of discrete, conventional components — while matching monolithic ICP's in reliability, miniaturization, switching time, and other important performance characteristics associated with monoliths. Moreover, in GI multichips, each component can be produced on a particular silicon substrate selected for its optimum bulk-material properties for that particular type of component. In monolithic construction, of course, the substrate must be a compromise, since all components share the *same* wafer.

Yours on Request — the FULL Story:

THE PURPOSE of this advertisement, and others to follow, is to apprise you and other engineers of the vast potentialities of a technique that can help you solve important problems of reliability and performance in a broad and vital area of design . . . problems that can *not* be ideally solved by either conventional circuitry or monolithic ICP's. There's more to the story — a great deal more. For the facts and data on what GI multichip microcircuits can do for you, just drop a line to Jerry Fishel at the address below.



Typical example of multichip circuits: General Instrument's PC 13, RST Flip-Flop, 20 mc clock rate.

GENERAL INSTRUMENT CORPORATION
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technical tours

TWELVE FACILITIES SET

The technical tours closely integrated with the conference program for the 1963 Wescon will travel both sides of San Francisco Bay and deep into the Peninsula, offering a wide spread of interest to participants—including the large number of electrical power engineers expected to attend.

Arrangements have been completed by a committee headed by Robert E. Miller of Stanford Electronics Laboratories, chairman, and John W. Summers of Varian Associates, vice chairman.

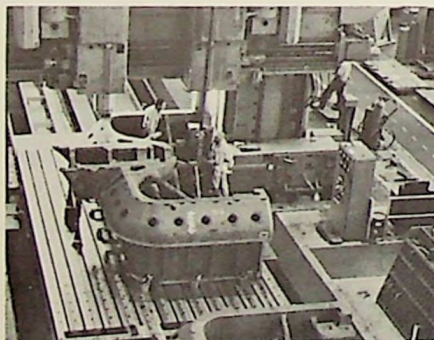
Three tours have been set for the opening day of Wescon—Tuesday, August 20.

Tour 1 will go to the Electronic Research Laboratory of the University of California at Berkeley, where current research will be reviewed by key staff members. Emphasis will be on plasmas and integrated circuits, with demonstrations of a new plasma mirror machine and a visit to the recently completed solid-state microelectronic laboratory.



Tour 2—Kaiser's experimental microcircuits

Tour 2 will be to Kaiser Aircraft & Electronics' West Coast Laboratories in Stanford Industrial Park, where demonstrations will center on navigational aids for interpreting data from separate flight instruments through electronic simulation. Unusual television displays, including a filter which allows television to be seen in bright sunlight, will figure in the tour.



Tour 3—Westinghouse planer-mill

Tour 3 on opening day will be to the Sunnyvale Division of Westinghouse Electric Corp., for the special interest of electrical engineers. To be



Tour 4—Microwave Electronics' maser

seen are large compressors, wind-tunnel throats, solar telescopes, high-volume production lines for distribution transformers and power transformers, and R & D work for Polaris missile launchers.

Tour 4 to Microwave Electronics Corp. in Stanford Industrial Park during Wednesday afternoon, August 21, will concentrate on advances in low-noise solid-state microwave devices and their application to space communications. Demonstrations will include solid-state microwave masers operating refrigerators designed for continuous field operational systems,



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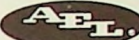
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Insertion loss	1 db
Isolation	45 db
VSWR	1.4
Switching speed	5 nanoseconds
RF Power	2 Watts average

✓ **ITS RELIABILITY**

Temperature: Operating	-54°C to 110°C
Storage	-85°C to 160°C
Vibration: 20 G's	10 to 2000 cycles
10 G's	2000 to 5000 cycles
Shock: 100 G's	
Operating life: 100 million switching cycles (minimum)	

✓ **ITS SIZE**

2" x 1/2" x 1/2" . . . occupies 1/2 cu. in. . . weighs only 2.3 ounces

Developed for use in a tactical missile guidance system currently in the military inventory, this switch can be used in virtually any application requiring a high performance C-Band switch.

■ AEL has the most complete line of off-the-shelf solid state switches available today.

■ **IMPORTANT:** We also can provide you with solid state switches incorporating virtually any characteristics you desire. WE INVITE your inquiry for custom designs.



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HIGH POWER
to 20 KW peak, 50 watts average

HIGH SPEED
as fast as 0.2 nanoseconds

LOW INSERTION LOSS
down to 0.1 db

HIGH ISOLATION
to 150 db

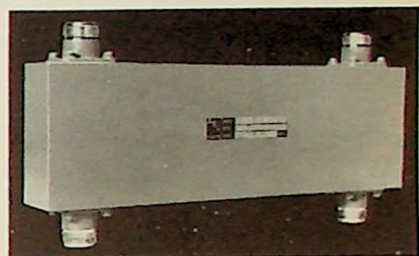
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to meet missile requirements

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SPECIFICATIONS

Model	Frequency band (Gc)	Coupling (db)	Directivity (db. min.)	VSWR (max.)
HCN101A	0.1-0.5	3±0.5	30	1.15
HCN102A	0.2-1.0	3±0.5	30	1.15
HCN103A	0.4-2.0	3±0.5	25	1.15
HCN104A	1.0-5.0	3±0.5	20	1.25

Maximum insertion loss—0.1 db. Phase difference at output—90° at all frequencies.

Let us consult with you on producing HYBRID COUPLERS for use in other bands than are listed above. Contact your AEL Product Sales Representative . . . or write directly to AEL, Colmar, Pa., stating your requirements. Your inquiry will receive prompt attention!

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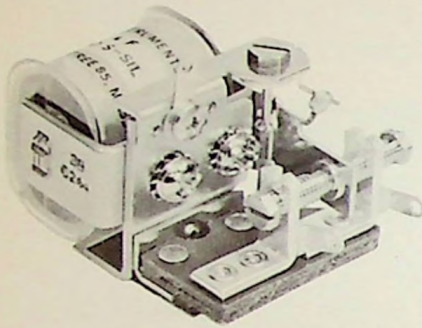
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DC SPDT

- Dependable
- General purpose
- Medium priced



The Series 4 is an electromagnetic, DC, single-pole double-throw, balanced armature relay. Standard operating sensitivities are 20 milliwatts and 50 milliwatts. The "4" is available in several mounting styles and enclosures.

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Tour 5—Systron-Donner's transducer

as recently installed in the NASA Deep Space Instrumentation Facility at Goldstone, Calif.

At Systron-Donner Corp., Concord, on Tour 5, discussions and demonstrations will be concerned with inertial transducers and their applications to flight control. Visitors will be shown a variety of missile and satellite flight-control instrumentation and ground-support check-out equipment based on digital and analog computing techniques.



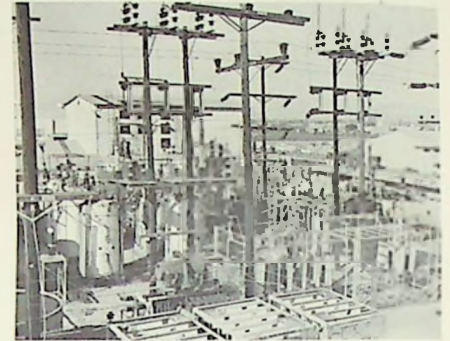
Tour 6—NASA's wind tunnel

Tour 6, also on Wednesday afternoon, will go to NASA's Ames Research Center at Moffett Field to inspect activities there associated with the nation's manned space-flight program. Several of Ames' flight simulators will be demonstrated, including a five-degrees-of-freedom motion simulator and the Apollo midcourse navigation simulator—all of which are computer programmed. Also to be seen is a high-speed wind tunnel in which aerodynamic design of the Mercury space capsule was tested and where tests are currently being conducted on the Apollo space craft.



Tour 7—SLAC's electron racetracks

Tour 7 on Thursday morning, the 22nd, will inspect work progress at the new Stanford Linear Accelerator Center on the Stanford campus. First, the visitors will witness an orientation presentation with slides and models explaining the purpose and design of the two-mile-long linear electron accelerator now under construction. Following will be a tour of an existing operating linear accelerator and to the site of control buildings for the machine that will fit into a 25-foot-deep trench two miles long.



Tour 8—Jennings Radio's substation

Tour 8 to Jennings Radio Manufacturing Corp. at San Jose on Thursday afternoon will give emphasis to the applications of nonthermionic vacuum techniques to high-power electronic



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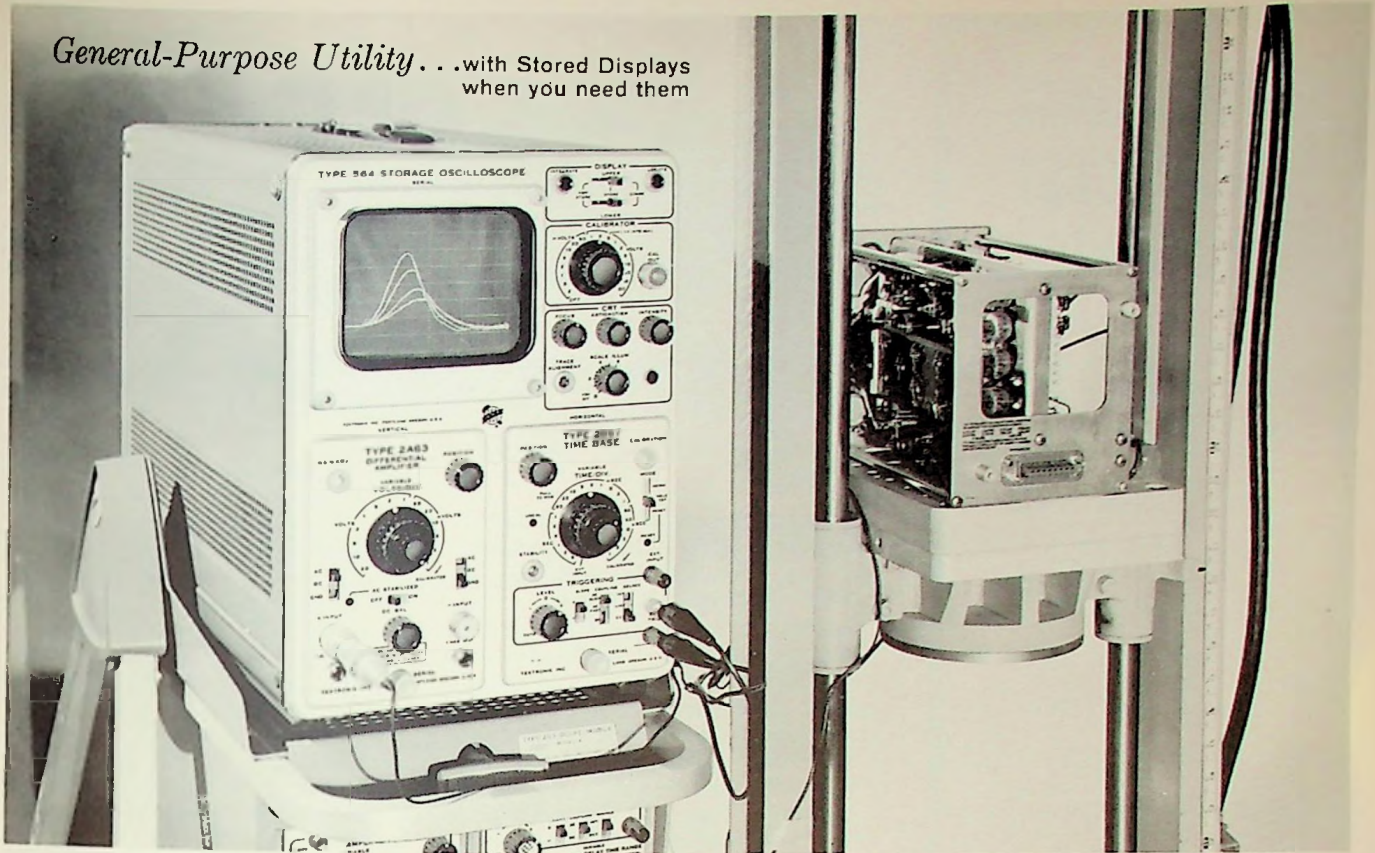


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When you don't need stored displays, the Type 564 operates for you as a conventional oscilloscope, with all the versatility afforded by interchangeable vertical-deflection amplifiers and time-base generators.

Vertical Plug-In Units Offer:

DC to 1 Mc at 50 mv/cm—Type 2A60	\$ 105
DC to 4 Mc at 50 mv/cm—Type 3A75	\$ 175
0.06 cps to 300 kc at 10 μ v/cm—differential input—Type 2A61	\$ 385
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Dual-Trace, DC to 650 kc at 10 mv/cm—Type 3A72	\$ 250
Dual-Trace, DC to 10 Mc at 10 mv/cm—Type 3A1	\$ 410
Four Trace, DC to 2 Mc at 20 mv/cm—Type 3A74	\$ 550
0.4-nsec risetime at 2 mv/cm, sampling—Type 3S76	\$1100

Time Base Plug-In Units Offer:

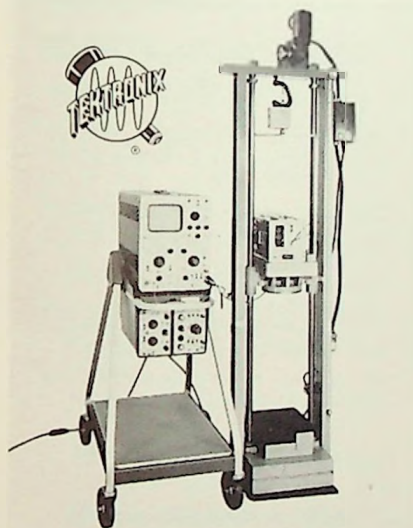
1 μ sec/cm to 5 sec/cm, 5x magnifier, single sweep—Type 2B67	\$ 175
Normal and Delayed Sweeps, 0.5 μ sec/cm to 1 sec/cm, calibrated delay from 0.5 μ sec to 10 sec, single sweep—Type 3B3	\$ 525
Same as Type 3B3 except delay not continuously calibrated and no single sweep—Type 3B1	\$ 475
0.2-nsec/cm to 10 μ sec/cm equivalent, for sampling—Type 3T77	\$ 650

... As a Storage Oscilloscope

Single traces at low and medium speeds are stored for at least one hour, and erased in $\frac{1}{4}$ second. A unique split screen permits storage or conventional operation over the whole screen, or storage on either half with conventional operation on the other half.

Type 564 (without plug-in units) \$950

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The Type 564 in a typical mechanical measurement. Waveforms on screen represent shock imparted on the device under test when dropped from successively increasing heights. Trace is calibrated vertically at 8.6 g/cm and horizontally at 2 msec/cm. Storage facility permits easy analysis of shock data without need for multiple exposure photography.

For a demonstration and/or complete information, please call your Tektronix Field Engineer.

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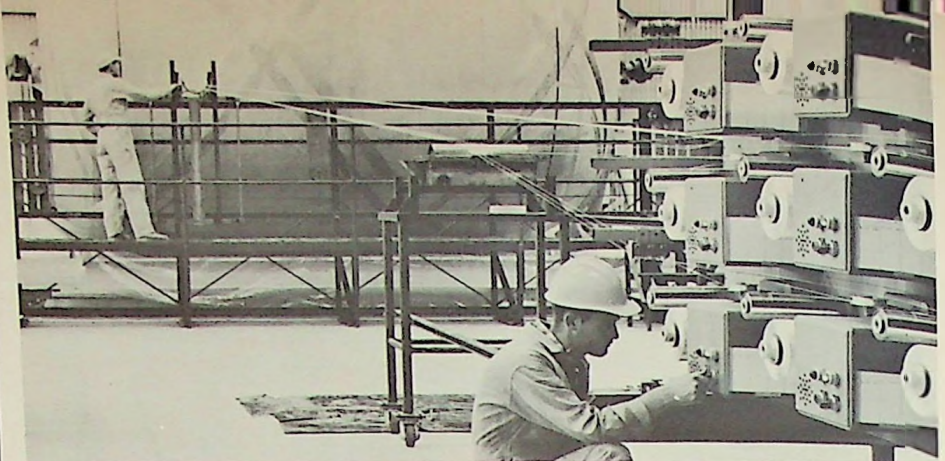
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Tour 9—United Technology's glass fiber winding facility

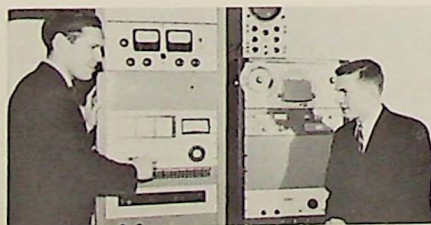
equipment. Shown will be high-power transmitters and very-high-power voltages and currents demonstrated in multiple megawatts of power.

At United Technology Corp., Tour 9 will appeal to those working in the space industry, as a variety of things will be shown at the UTC Development, Processing and Test Center near Coyote. After a film presentation explaining the technical program (which includes the Titan III's first-stage fabrication and testing), talks and demonstrations will relate to fabrication of fiberglass casings, hybrid rocket motors, and solid propellants. A drive-through of the test site will include a stop at the control facility of Titan III test motor firing.



Tour 10—Spectra-Physics' gas lasers

A two-part tour, No. 10, will go to Spectra-Physics, Inc., and the Optical Device Department of Sylvania Electric Products, Inc., at Mountain View. Spectra-Physics will show its work in commercial CW gas lasers and special systems for magnetic field measurement and testing. Sylvania will feature devices for microwave-frequency modulation and demodulation of light, with experiments employing either



Tour 11—KPEN's telemetering equipment

amplitude or frequency-modulated light showing the measurement of the noise power output of optical demodulators.

The final tour, No. 11, will be on Friday morning—the last day of Westcon—to the transmitter site of San Francisco FM Station KPEN, at Mount San Bruno on the Peninsula. This antenna site contains three of the major TV transmitters and six of the FM station transmitters for the Bay Area. Along with KPEN, KFRC and KXXX will show their facilities. KPEN is the first FM station in California to broadcast multiplex stereo and has been responsible for the introduction of numerous new components to FM broadcasting techniques.

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In addition, he must be intimately familiar with the latest fabrication techniques.

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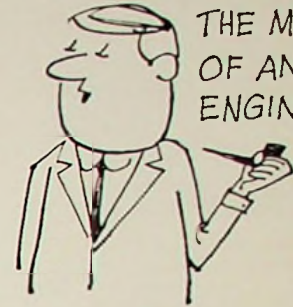
SO HERSHEIMER
COMES IN AND
I TELL HIM
I'M QUITTING!



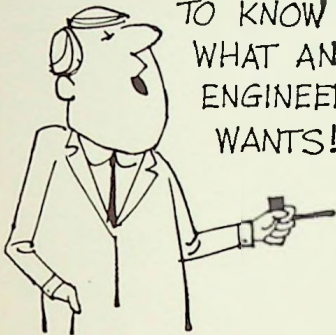
AND HE SAYS
WHY? YOU'RE
GETTING AS MUCH
AS SIEFRIED
AND LUCAS!



SO I SAID: MONEY!
WHAT'S MONEY? YOU
BUSINESSMEN JUST
DON'T UNDERSTAND
THE MIND
OF AN
ENGINEER!



I'M AN ENGINEER
AND I OUGHT
TO KNOW
WHAT AN
ENGINEER
WANTS!



I WANT **FULLFILLMENT**
I WANT TO WORK ON
THE **SURVEYOR**
AT HUGHES!



JUST THINK!
SOMEDAY THERE'LL
BE A LITTLE
PIECE OF **ME**
ON THE
MOON!



NO MORE ELECTRONIC
EGG-TIMERS! I'LL
BE **CONTRIBUTING!**
I'LL BE DOING
SOMETHING **SIGNIFICANT!**
SOMETHING **INTER-PLANETARY!**



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- Digital circuit design.
- Analog circuit and system design.
- Data acquisition system design (analog and digital).
- Telemetry receiving station systems design.
- Preliminary and theoretical system analysis (automatic data check-out and data acquisition systems).

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8TH ANNUAL OPENS WESCON

The eighth annual Distributor-Manufacturer-Representative Conference held in connection with the Western Electronic Show and Convention has been set for Monday, August 19—the day prior to the opening of the 1963 Wescon in San Francisco.

An all-day program at the Jack Tar Hotel will attract several hundred electronic distributors, manufacturers, and representatives to discuss marketing aspects of what has become one of the dominant industries in the country. Wescon itself is the largest trade show in the West.

Chairman

Chairman of the conference planners is Elvin W. Feige, president of Elmar Electronics of Oakland. Vice chairman is Charles N. Meyer, partner in Meyer & Ross of San Francisco.

Assisting with details are V. N. "Zack" Zachariah, president of Zack Electronics of San Francisco, publicity chairman, and David H. Ross, president of David H. Ross Co. of San Carlos, Calif., registration chairman. Zachariah is also president of the National Electronic Distributors Assn.

Program

The day's program will have two sessions of ten 20-minute table conferences each, the morning hours being between 8:40 a.m. and noon and the afternoon hours between 1:40 and 5:00 p.m. A luncheon is planned, and in the late afternoon there will be a cocktail party preceding dinner and special entertainment.

The Wescon D-M-R Conference is available to distributors with established operations in the Western Region (including Hawaii and Alaska), manufacturers exhibiting at Wescon and their Western representatives.

Zachariah has announced that a shuttle bus service will operate between the Jack Tar and the Cow Palace, scene of the trade exhibition and technical conference, on an hourly schedule during the show hours August 20-23. He said distributors registering for the August 19 conference will be furnished complimentary tickets to Wescon.

Western Reps

Assisting with planning in various areas of the West are a number of prominent distributors and representatives. Appointed by Feige as area representatives for the conference are the following, the first named being distributors and the second being representatives:

Northern California: V. N. Zachariah and David H. Ross.

Los Angeles: Thomas Lynch of Lynch Electronics, Monrovia, and W. Bert Knight of W. Bert Knight Co., Los Angeles.

San Diego: Don Reser of Western Radio & TV Supply, San Diego, and Dave Marshank of Marshank Sales, Los Angeles.

Arizona-New Mexico: Herman Middleton of Southwest Wholesale Radio, Inc., Phoenix, and Harry A. Moore of Harry A. Moore Sales Co., Phoenix.

Utah: Charles E. Ballard of Ballard Supply Corp., Ogden, and Joe Shaw of Ron G. Bowen Co., Salt Lake City.

Colorado: D. W. Hornbrook of L. B. Walker Radio Co., Denver, and Allen I. Williams, Jr., of Williams Associates, Denver.

Oregon-Idaho: J. A. Murphy of Lou Johnson Co., Portland, and William E. Earl, Sr., of Don H. Burcham Co., Portland.

Washington-Montana: William M. Bigelow of Columbia Electronics, Spokane, and Ray Blank of Ron Merritt Co., Seattle.

Hawaii: Harris F. Tarumoto of Precision Radio, Ltd., Honolulu, and Gordon Dougherty of Dougherty Enterprises, Honolulu.

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Communication Sciences

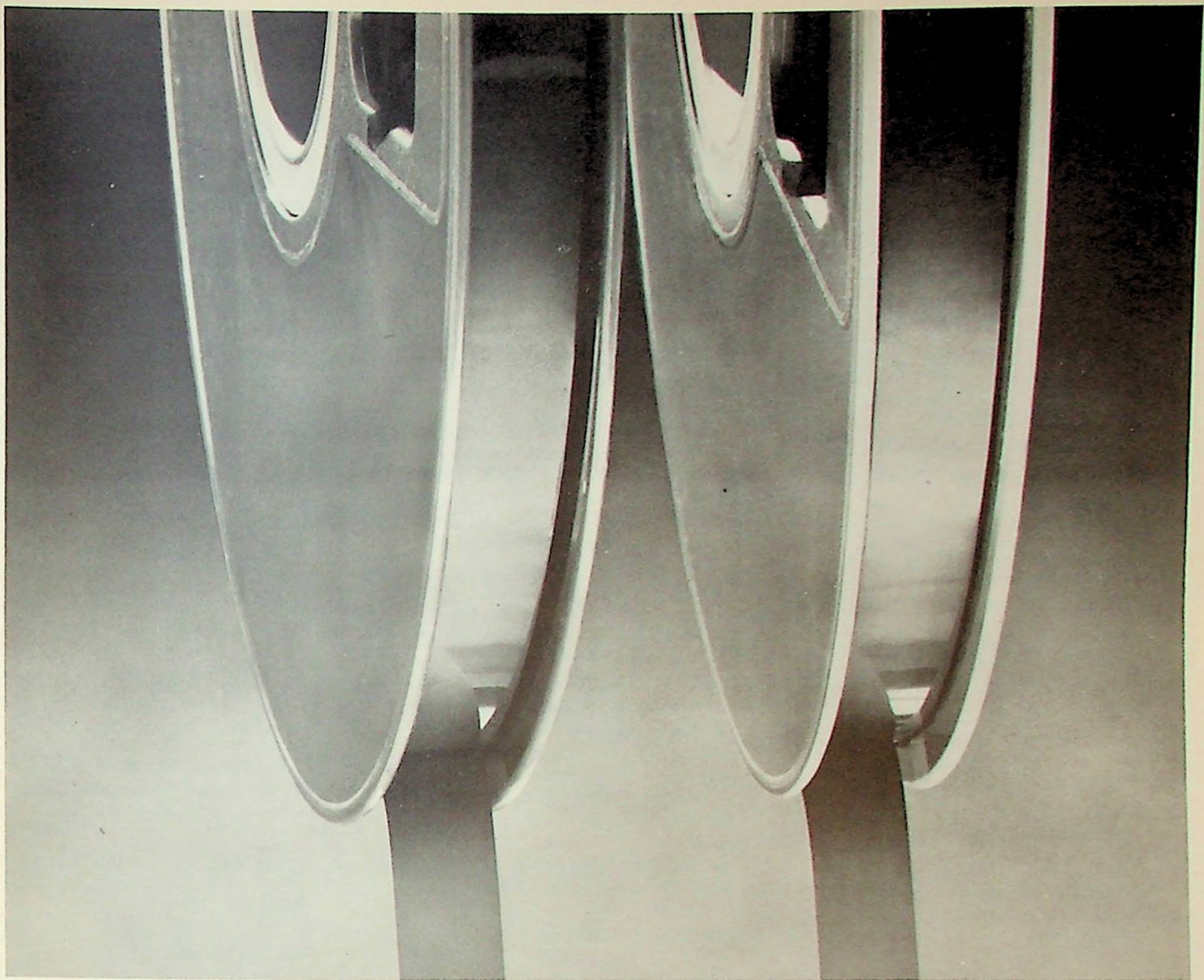
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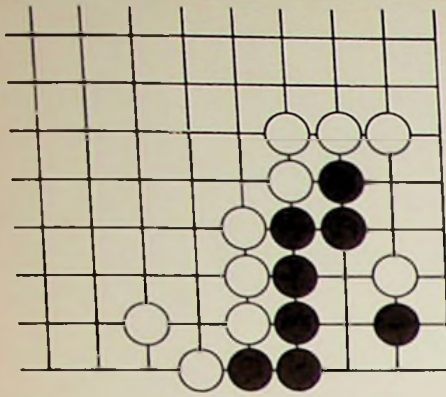


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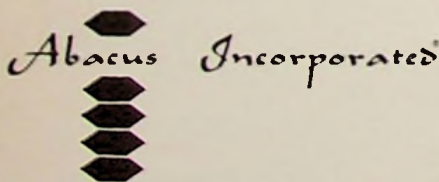
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industrial design awards

28 ENTRIES NAMED

Twenty-eight entries in Wescon's fifth annual industrial design award competition have been chosen for exhibition at the San Francisco Museum of Art in July and at the Cow Palace during Wescon, August 20-23.

Selected by a professional jury from among 118 submissions, the choices will figure in a first public display of a Wescon IDA competition at the San Francisco Museum July 20-August 19. During the museum showing the entries will be judged again for awards of merit and awards of excellence honors to be announced at Wescon.

Judges for the initial selections and for the final honors are Mrs. Edith Heath of Sausalito, one of the nation's leading ceramic designers; William Friedman, consulting designer of Felton, Calif., with broad identifications in the design field; Edward H. Jacobsen, chief designer for Hiller Aircraft Corp., and Robert H. McKim, lecturer in design at Stanford University.

Special installations are being planned for the museum and the Cow Palace by a group headed by Emmett M. Brownell of Varian Associates and including Merle J. Grossmeyer of Lenkurt Electric Co. and Robert F. Jensen of Exhibit Design Associates, San Francisco.

Chairman of the Wescon committee in charge of this year's IDA program is Frederick C. Hill, manager of advertising and promotion for Lenkurt Electric Co., San Carlos, Calif. Vice chairman is Donald W. Brundage of Brundage Associates, San Francisco, who has worked with Walter Landor of Walter Landor & Associates, San Francisco, in planning the judging.

As announced by Hill and Brundage, following are companies (in alphabetical order) and products to be represented in the 1963 showings, together with designers and engineering supervisors:

Aerojet-General Corp. (commercial products division), Azusa, Calif., with a "microwelder" which bonds wires and ribbons down to 0.0005 inch in diameter to metal films only 50 angstroms thick, without damage; staff designed; R. M. Stewart, design director; Mortimer Penberg, project engineering supervisor.

Ampex Corp. (video/instrumentation division), Redwood City, Calif., with a "portable recorder/reproducer" for field and laboratory applications; Glenn A. Smith, designer; Frank T. Walsh, design director; Al Dinsmore, project engineering supervisor.

Beckman Instruments, Inc. (Spineco



Laying plans at the San Francisco Museum of Art for the initial installation of the 1963 Wescon Industrial Design show there July 20-August 19, Frederick C. Hill of Lenkurt Electric Co. (left), committee chairman, and Don Brundage of Brundage Associates, San Francisco, inspect a layout with George D. Cull, (right), director of the museum

division), Palo Alto, Calif., with two selections.

Collins Radio Co., Cedar Rapids, Iowa, with a "Collins transponder" which provides a signal to reinforce radar replies; Don Wolfe, Peter Lang-



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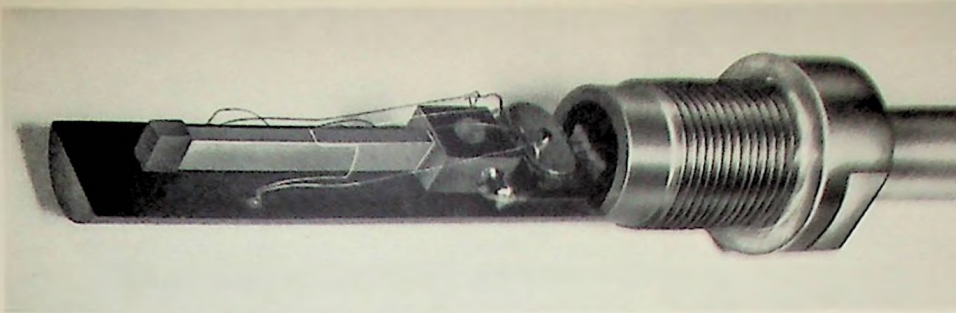
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In the Nernst-Ettingshausen effect, heat is pumped as a result of an electrical current flowing in a magnetic field. The heart of the present device is a bismuth antimony single crystal. Other crystal systems are also being investigated.

This thermomagnetic cooling device is one of the results of the Lockheed research program in transport phenomena in solids.

Another investigation concerns the quantum theory of the electronic structure of crystals. An ingenious computer program has been devised for determining the essential features of the energy band structure of a wide variety of crystals. Results for a given case can be obtained in an hour or less. Conclusions drawn from the theoretical solution elucidate many of the electronic properties of crystals, and have widespread significance.

Lockheed scientists and engineers are also studying: Electron spin echo phenomena; the interaction of electrons with microwave phonons; coupled traveling waves in crystals; semiconductor lasers; antiferromagnetic resonance; various theoretical and experimental aspects of superconductivity.

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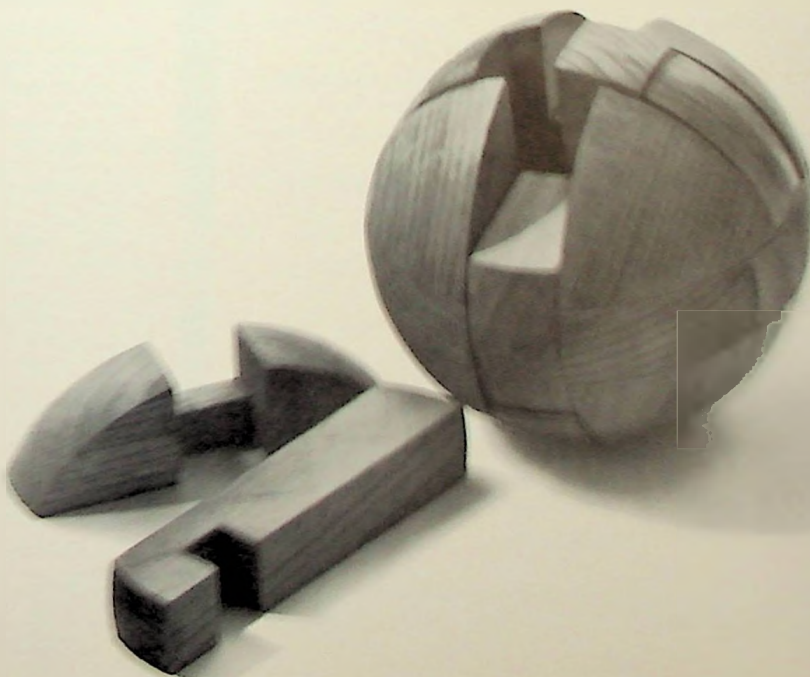
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mach, Ted Papajohn, and Fred Holm, designers; Clarence Zierhut, design director; Ken Engholm, project engineer supervisor.

Electronic Engineering Company of California, Santa Ana, Calif., with two entries.

Fisher Berkeley Corp. of Emeryville, Calif., with an "ektacon nurse-call" for voice and light communications between nurses and patients in hospitals; John Crane, designer; J. O. Ernest, project engineering supervisor.

Hewlett-Packard Co. (microwave division) of Palo Alto, Calif., with a "variable attenuator" used in precision microwave measurements; Allen Inhelder, designer; Carl Clement, design director; Stephen F. Adam and Thomas Wirrick, project engineering.

Hughes Aircraft Co. (ground systems group), Fullerton, Calif., with a "laser" which provides an intense source of monochromatic light for applications in welding, micromachining, photography, optical ranging, spectroscopy, and chemistry; L. C. Timmiermeyer, designer; D. A. Buddenhagen, project engineering supervisor.

International Business Machines Corp. (general products division), Endicott, N.Y., with a "data communications system" which provides input data to processor from data source and processed output to required distant points; W. Furiani and E. J. Sabella, designers; Elliot Noyes, design director; J. H. Wellburn, project engineer.

Itek Corporation (Palo Alto division), with a "single path viewer" to examine 70 mm negative or positive transparent film; John F. Henshaw, designer; Fred E. Tarver, design director and project engineering supervisor.

Machtronics, Inc., of Mountain View, Calif., with a "video tape recorder" to record and store audio and visual information for playback; Robert Montgomery, designer; Kurt R. Machein, project engineering supervisor.

Malco Manufacturing Co., Chicago, with four selections.

Minneapolis - Honeywell Regulator Co. (semiconductor products division), Minneapolis, with a "power transistor" for use in converters, regulators, and other high current applications; J. R. Mourning, designer; D. R. Palmer, design director; G. W. Reiland, project engineering supervisor.

Optimation, Inc., of North Hollywood, Calif., with an "a.f. sine wave oscillator," an ultra-pure a.f. signal source for a.c. calibration, precision a.c. power applications, production testing, and general laboratory use; Stanley R. Sears, designer; Henry O.

Wolcott, project engineering supervisor.

George A. Philbrick Researches, Inc., of Boston, Mass., with a "universal stabilized amplifier" for applications in analog computing, measurement and control; Walter P. Kern, designer; George A. Philbrick, project engineering supervisor.

Phillips Control Co. (Phillips-Eckardt Electronic Corp. division) of Joliet, Ill., with a "circuit designer's 'breadboard'" which allows the electronic engineer to quickly and without soldering build and test preliminary circuits; Lee Radtke, designer; Thomas M. Steinbach, design director; Jack Mannell, project engineering.

Space Technology Laboratories (STL products division) of El Segundo, Calif., with two selections.

Spectra-Physics, Inc., of Mountain View, Calif., with a "gas laser" used in laboratory investigation of coherent light in communications and interferometry; C. E. Jones and L. L. Morris, designers; R. C. Semple, design director and project engineering.

Telex Corp. (Telex/Acoustic products division), Minneapolis, with two selections.

Ultek Corp. of Palo Alto, with a "Ultek ion pump," a vacuum pump for

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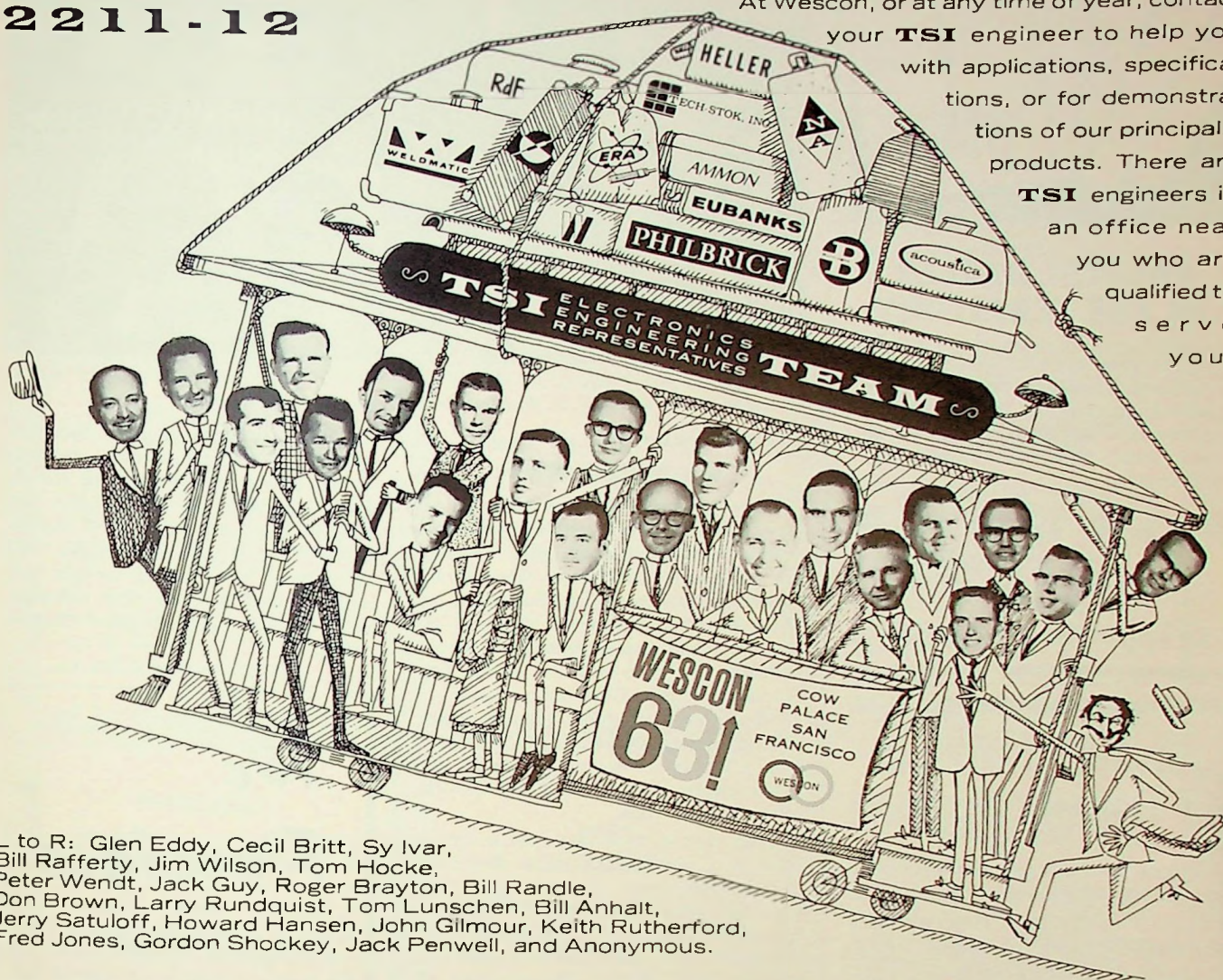


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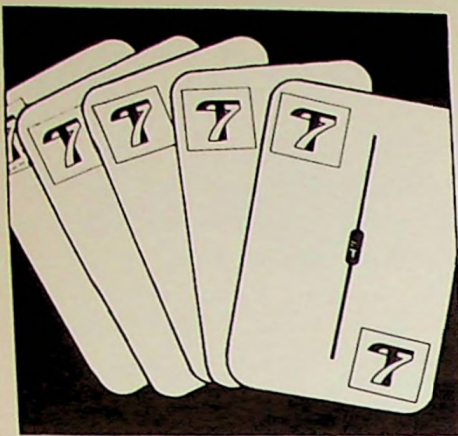
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'63-64 officers of LA Section are (seated, left to right) Will Fenn and William S. Moody; (standing, left to right) G. R. Woodman and Gerald M. Goldenstern

Los Angeles section

NEW OFFICERS NAMED

The first slate of officers elected to serve the 15,000 members of the newly merged Los Angeles Section are: chairman, Willard H. Fenn, Southwest manager for Radiation at Stanford; vice chairman, William S. Moody, manager, application engineering, Pacific Southwest region for General Electric Company; secretary, G. R. Woodman, chief electrical design engineer, Southern California Edison Company; treasurer, Gerald M. Goldenstern, partner, Business Development Associates.

Also elected to serve as the section's four members-at-large were: Bruce S. Angvin, manager, western region, receiving tube department, General Electric Company; Theodore M. Blakeslee, assistant chief electrical engineer, Los Angeles Department of Water and Power; Forrest C. Six, project engineer on the Titan III program, Ralph M. Parsons Company; Norman Schuster, head of advance techniques section, computer systems laboratory, Litton Systems.

The above officers were installed at the combined IRE-AIEE annual in-

MORE IDA

beam gun, space simulation, and thin film deposition; Maynard G. Smith, designer; Donald F. Munro, project engineering supervisor.

Vidar Corp. of Mountain View, Calif., with a "voltage-to-frequency converter" used in various data-acquiring systems and industrial process control systems; Leonard Albrecht, designer; Dalton W. Martin, project engineering supervisor.

stallation dinner - dance, Saturday, June 8, 1963, when members gathered at the Hollywood Palladium for the final meeting of the Los Angeles Sections of IRE and AIEE. The installation of the new, combined IEEE 1963-64 officers, culminated merger proceedings and laid the first milestone for the new Los Angeles Section, IEEE.

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PHYSICIST

For work on processes in support of high reliability tube projects. Will develop new vacuum equipment for microwave tube processing, incorporating mass spectrometers. Experience should incorporate development work in the areas of physics, vacuum tube processing, and mass spectrometry. Requires minimum of BS Physics or Chemistry.

TEST ENGINEER

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future engineers

7TH ANNUAL SHOW SET

Included in the convention planning is a seventh program for the popular and appealing Future Engineers Show and Symposium Competition. Started with the 1957 Wescon, this feature has now become a solid attraction—widely anticipated by young people with developing interests in engineering and allied scientific disciplines, their teachers, their parents, and by most of those who attend Wescon.

Provision is being made this year for more than 30 displays in a prominent location situated at the new East entrance to the Cow Palace. IEEE sections which sponsor the participants—choosing them from local science affairs or by direct acquaintance with school programs, and arranging their transportation to and from Wescon—had entered nominations for more than 20 students by mid-May. The Future Engineers Show is open to the public.

Prizes in the form of scholarship funds will be awarded for the best displays in the show and in a student paper competition held separately. The top awards in each are named in honor of the late Dr. Lee de Forest and of Dr. Frederick E. Terman, provost of Stanford University and a foremost educator in engineering.



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PACIFIC GENERAL MEETING

The Pacific General Meeting of IEEE will be held August 26-29 at the Davenport Hotel in Spokane, Wash., with 24 technical sessions, 7 field trips, a golf tournament, ladies' activities, and related events.

Wendal A. Morgan, program chairman, announces that sessions will cover basic sciences, chemical industry, communication switching, cybernetics, domestic and commercial applications, feedback control systems, human factors in electronics, industrial and commercial power systems, industrial power rectifiers, nucleonics, power system communications, power system engineering, radio communications, recording and controlling instrumentation, relays, special instruments and auxiliary apparatus, transformers, transmission and distribution, and wire communications.

Inspection trips will be made to Grand Coulee Dam, Cabinet Gorge and Noxon Rapids dams, Kaiser Aluminum & Chemical Corp. reduction plant, Potlach Forests, Inc., Hanford Atomic Energy Project, Bunker Hill Mine & Sullivan Zinc plant, and Big Eddy substation at Bonneville.

For more information, write the chairman, Stephen J. Pope, P.O. Box 6217, Spokane 28, Wash.

san fernando subsection

NEW OFFICERS AT FIESTA

The San Fernando Valley Sub-Section of IEEE will hold its eighth annual installation dinner-dance on Saturday, July 20, at the Woodland Hills Country Club, 21150 Dumetz Road, Woodland Hills, California. This year's theme will be "La Fiesta." The event starts with cocktails at 6:30 p.m., to be followed by a prime roast of beef dinner at 7:30 p.m. and dancing, to a "real live" orchestra, from 8:30 p.m. to 1:00 a.m. The cost is \$5.00 per person.

Members should plan their fiesta attire now. However, whether they dress for the occasion or not, members and guests are invited to enjoy this meeting in traditional valley style. Even if they haven't been an IRE or AIEE regular, they should plan to attend this meeting and inaugurate the 1963-64 officers into the new organization.

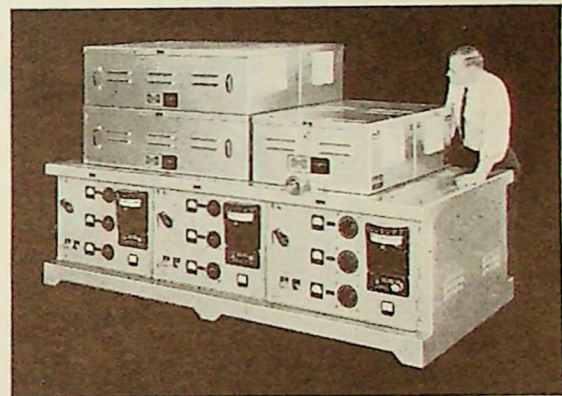
The directions for reaching the Woodland Hills Country Club are: turn south on Canoga Avenue from the Ventura Freeway. Travel twelve blocks to Dumetz Road. Turn left to the country club entrance.

Reservations can be made by calling Howard Westgate, EM 3-1709; Bruce Copeland, TR 7-1282, Ext. 243; or the IEEE Business Office, 387-1203.

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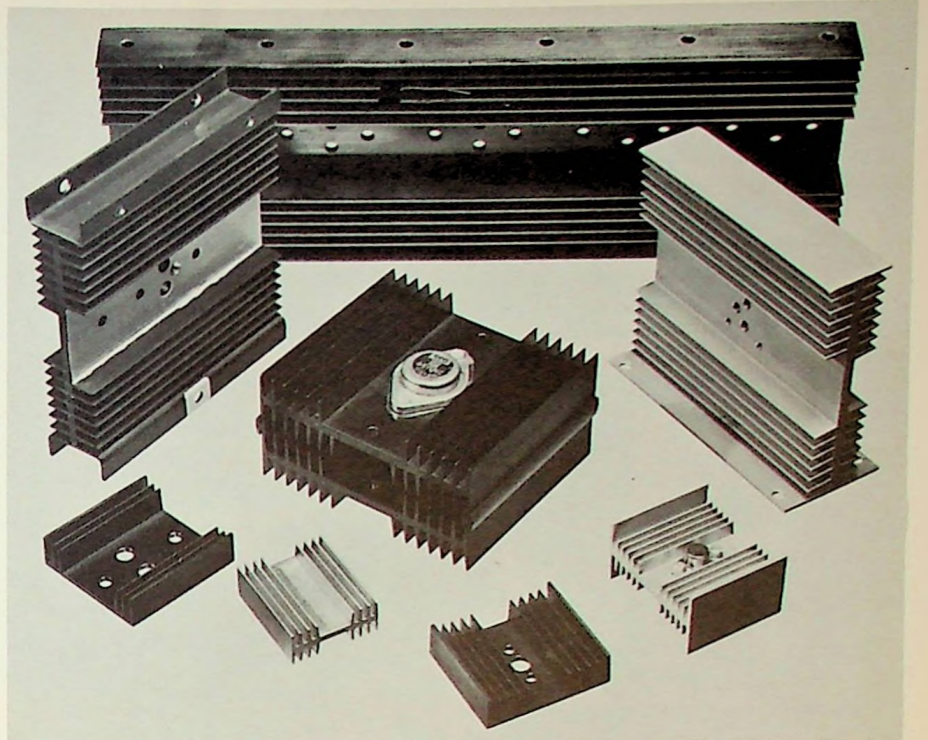
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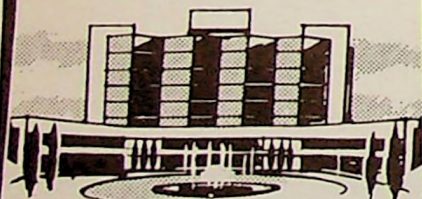
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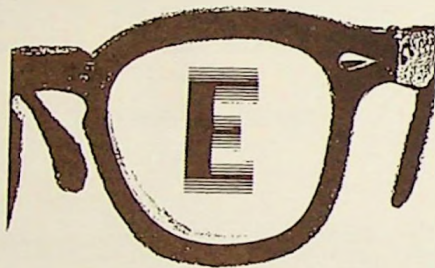
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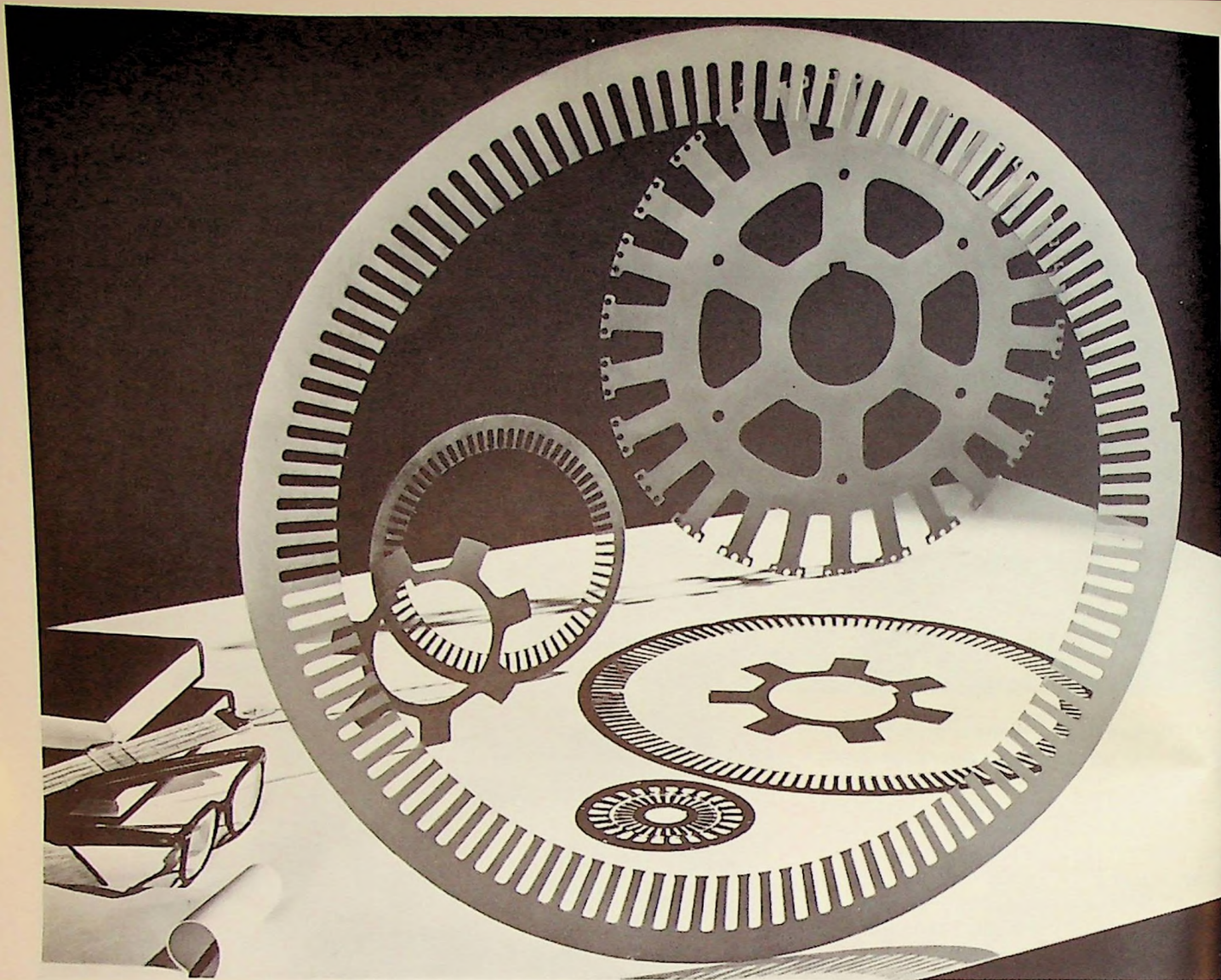
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