

EDITOR'S PROFILE of this issue

from a historical perspective ...

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

August, 1969:

Cover: This special WESCON issue profiles the large, multi-topic IEEE conference being held at the S.F. Hilton and the Cow Palace.

Page 8: Don Hoefler of *Electronic News* chairs a session on how an engineer can become an entrepreneur. In 1971, Don coins the new nickname for our region: "Silicon Valley".

Page 10: Don Grace of Stanford heads up a session on university instructional TV networks. He and Joe Pettit (Stanford Dean of Engineering) describe their new SITN, which allows working engineers to take grad classes at their worksites. Other session talks cover the plans at UC-Berkeley, Santa Clara University, San Jose State, UC-Irvine, and USC. Pettit leaves Stanford to become president of Georgia Tech, and Grace becomes GaTech Dean of Engineering. The idea for SITN began with Tutored Videotape Instruction (TVI), with lecture videotapes couriered to worksites and viewed by working engineers in Stanford's Honors Coop program, pioneered by Jim Gibbons of Stanford. I used the SITN facilities in the evenings for IEEE Short Courses (see GRID of December 1980).

Page 24-25: The session strategy for WESCON is debated, and the early history of how IRE and AIEE joined WEMA to form the early WESCON.

Page 29: Andy Grove, newly arrived at Intel from Fairchild as their director of operations, receives the IEEE Region 6 Achievement Award.

Page 32: Bob Noyce, a founder of Intel, chairs a session on new solid-state devices. Morris Chang, of TI, gives a talk on new digital circuits. He goes on to found Taiwan Semiconductor Manufacturing Company (TSMC) to take advantage of a new wave of fabless IC design.



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

https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History

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

April, 2025

Contact p.wesling@ieee.org



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grid-bulletin

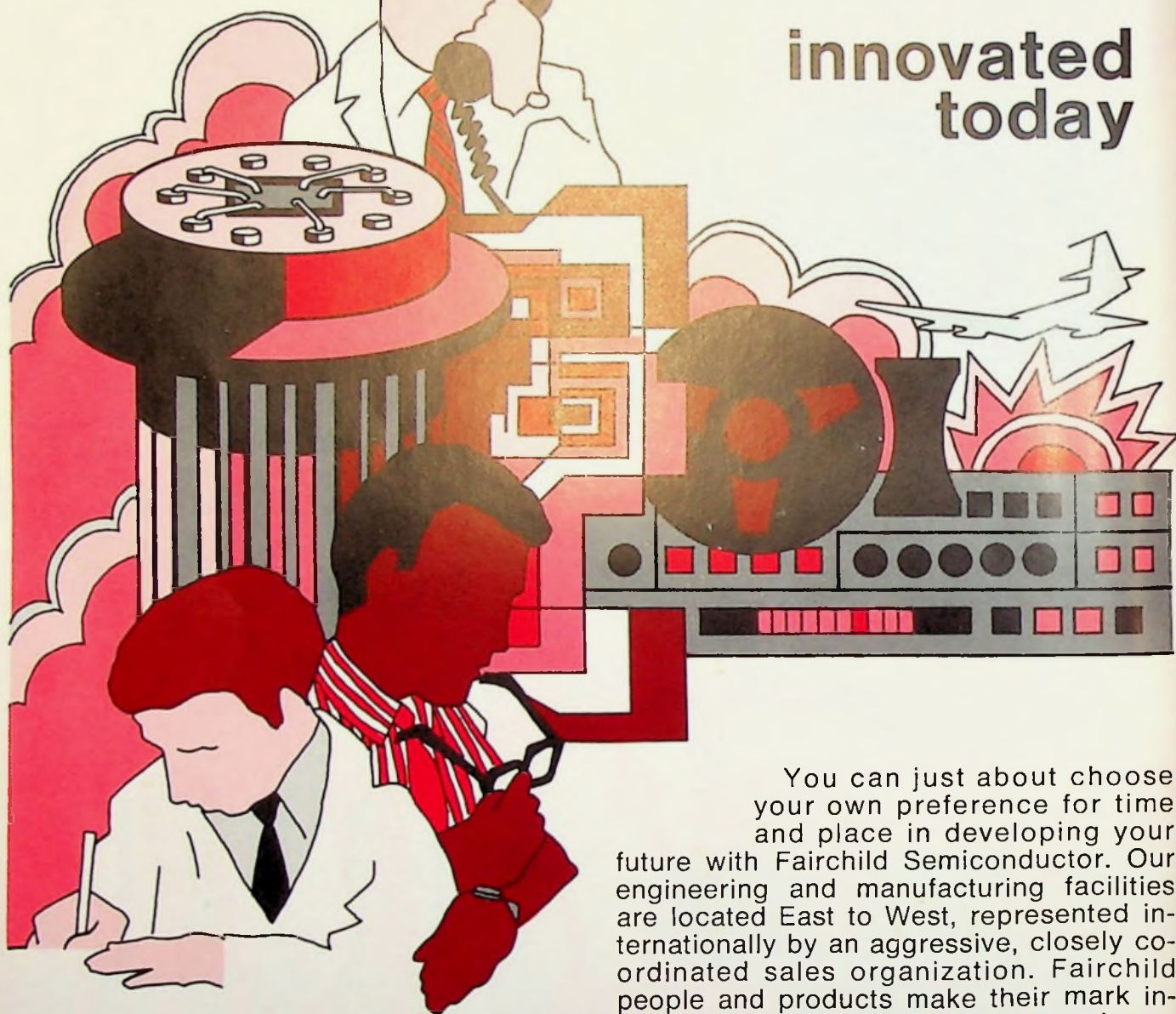
*** WESCON/69**

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AUGUST 1969

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THE COVER

Artist Ted Martinez has designed the Grid Bulletin cover with a montage of graphic symbols depicting WESCON's Eight Great Shows in Las Vegas. Mr. Martinez also designed the layouts for the feature articles.

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Schedule of Events

MONDAY, AUGUST 18

- 7:30 AM-5:30 PM — D-M-R Conference, Ballroom Floor, Hilton Hotel
- 9:00 AM-5:00 PM — IEEE Tab Operating Committee, Teakwood Suite, Hilton Hotel
- 9:00 AM-5:00 PM — Women's Hospitality Suite, California Room, Hilton Hotel
- 9:00 AM-5:30 PM — WESCON Press Room, East Exhibit Hall, Cow Palace
- 9:00 AM-4:30 PM — IEEE Subcommittee 3.02A on Electrical Power Conditioning Group, Tamalpais Room, Hilton Hotel
- 9:30 AM-12:30 PM — IEEE Information Services Committee, Shasta Room, Hilton Hotel
- 12:00 Noon — Future Engineers Field Trip to BART Fac.

TUESDAY, AUGUST 19

- 9:00 AM-5:00 PM — Women's Hospitality Suite, California Room, Hilton Hotel
- 9:00 AM-5:00 PM — IEEE Subcommittee 3.02A on Electrical Power Conditioning Group, Tamalpais Room, Hilton Hotel
- 9:00 AM-5:30 PM — WESCON Press Room, East Exhibit Hall, Cow Palace
- 9:00 AM-5:30 PM — IEEE Tab Board Meeting, Teakwood Suite, Hilton Hotel
- 9:30 AM-5:30 PM — WESCON Exhibits, Cow Palace
- 10:00 AM-4:30 PM — WESCON Science Film Theater, South Exhibit Hall, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 1, Meeting Room A, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 2, Meeting Room B, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 3, Meeting Room C, Cow Palace
- 12:00 Noon — WESCON Sponsors' Luncheon, Imperial Ballroom, Hilton Hotel
- 2:00 PM-4:00 PM — Women's Champagne Reception, St. Francis Yacht Club
- 2:00 PM-4:30 PM — WESCON Technical Session No. 4, Meeting Room A, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 5, Meeting Room B, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 6, Meeting Room C, Cow Palace
- 2:00 PM-5:00 PM — Eta Kappa Nu Board of Directors Meeting, Lassen Room, Hilton Hotel
- 2:00 PM-8:30 PM — IEEE PMP Group Meeting and Dinner, Shasta Room, Hilton Hotel
- 6:00 PM-8:00 PM — WESCON "Mirthquake" All Industry Cocktail Party, Continental Ballroom, Hilton Hotel.

WEDNESDAY, AUGUST 20

- 9:00 AM-5:00 PM — IEEE Subcommittee 3.02A on Electrical Power Conditioning Group, Tamalpais Room, Hilton Hotel
- 9:00 AM-5:00 PM — Women's Hospitality Suite, California Room, Hilton Hotel
- 9:00 AM-5:30 PM — WESCON Press Room, East Exhibit Hall, Cow Palace
- 9:00 AM-5:30 PM — IECF Symposium, Continental Ballroom, Hilton Hotel
- 9:00 AM-12:00 Noon — Eta Kappa Nu Meeting, Tamalpais Room, Hilton Hotel
- 9:30 AM-9:30 PM — WESCON Exhibits, Cow Palace
- 10:00 AM-4:30 PM — WESCON Science Film Theater, South Exhibit Hall, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 7, Meeting Room A, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 8, Meeting Room B, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 9, Meeting Room C, Cow Palace
- 11:30 AM-3:00 PM — Women's Fashion Show Luncheon, Gold Room, Fairmont Hotel

- 12:00 Noon — IECF Symposium Luncheon, Ballroom No. 5, Hilton Hotel
- 12:00 Noon — Eta Kappa Nu Luncheon, Ballroom No. 7, Hilton Hotel
- 1:00 PM-5:00 PM — IEEE Students Activities Committee, Shasta Room, Hilton Hotel
- 2:00 PM-4:30 PM — WESCON Technical Session No. 10, Meeting Room A, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 11, Meeting Room B, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 12, Meeting Room C, Cow Palace
- 7:00 PM — Future Engineers Symposium, Meeting Room C, Cow Palace

THURSDAY, AUGUST 21

- 8:30 AM-11:00 PM — WEMA Marketing Committee Breakfast, Diablo Room, Hilton Hotel
- 8:30 AM-5:30 PM — IEEE 6th Region Committee Meeting, Ballroom 7, Hilton Hotel
- 9:00 AM-4:00 PM — IEEE IEC 66-A WG Advisory Committee on Audio Frequency Generators, Shasta Room, Hilton Hotel
- 9:00 AM-5:00 PM — Women's Hospitality Suite, California Room, Hilton Hotel
- 9:00 AM-5:30 PM — WESCON Press Room, East Exhibit Hall, Cow Palace
- 9:00 AM-5:30 PM — IECF Symposium, Continental Ballroom, Hilton Hotel
- 9:30 AM-5:30 PM — WESCON Exhibits, Cow Palace
- 9:30 AM-5:00 PM — IEEE Electron Devices ADCOM Meeting, Walnut Suite, Hilton Hotel
- 9:30 AM — Women's Continental Breakfast and Tour of Exhibits
- 10:00 AM-4:30 PM — WESCON Science Film Theater, South Exhibit Hall, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 13, Meeting Room A, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 14, Meeting Room B, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 15, Meeting Room C, Cow Palace
- 11:30 AM-2:30 PM — WEEF Board of Trustees Meeting, Diablo Room, Hilton Hotel
- 12:00 Noon — Industrial Design Awards Luncheon, Ballroom No. 5, Hilton Hotel
- 12:00 Noon — Future Engineers Awards Luncheon, Ballroom No. 8, Hilton Hotel
- 2:00 PM-4:30 PM — WESCON Technical Session No. 16, Meeting Room A, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 17, Meeting Room B, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 18, Meeting Room C, Cow Palace
- 3:00 PM — Future Engineers Tour and Evening on Town

FRIDAY, AUGUST 22

- 9:00 AM-5:00 PM — Women's Hospitality Suite, California Room, Hilton Hotel
- 9:00 AM-5:30 PM — WESCON Press Room, East Exhibit Hall, Cow Palace
- 9:00 AM-12 Noon — IECPS Committee Breakfast Meeting, Shasta Room, Hilton Hotel
- 9:30 AM-5:30 PM — WESCON Exhibits, Cow Palace
- 10:00 AM-4:30 PM — WESCON Science Film Theater, South Exhibit Hall, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 19, Meeting Room A, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 20, Meeting Room B, Cow Palace
- 10:00 AM-12:30 PM — WESCON Technical Session No. 21, Meeting Room C, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 22, Meeting Room A, Cow Palace
- 2:00 PM-4:30 PM — WESCON Technical Session No. 23, Meeting Room B, Cow Palace

Wescon69 Exhibitors by Product Category

Computers & Electronic Data Processing

Academy Computing Corporation
Business Information Technology, Inc.
California Computer Products, Inc.
Canadian Government Exhibition
Commission
Cintra/Physics International Company
Data Disc, Inc. Display Division
Digital Equipment Corporation
Electronic Associates, Inc.
EMA-WEST Inc.
Friden Division, The Singer Company
General Electric Information Services
Graphcomp Sciences Corp.
Hewlett-Packard
Innovative Concepts Associates, Inc.
International Concepts Inc.
J. D. Kennedy Corporation
Maftronics
Modern Data
Olivetti Underwood Corporation
Raytheon Computer
Remex Electronics
Synergistics, Inc.
Telpex Corporation

Instruments and Instrumentation

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Alfred Electronics
Almex Cryogenics, Inc.
American Machine & Foundry Company
American Optical Corporation
American Optical Corporation
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Analog Devices, Inc.
API Instruments Company
Approved Engineering Test Laboratories
Associated Testing Laboratories, Inc.
Astrodial, Inc.
Astrosystems, Inc.
Atec, Inc.
Avien, Inc.
Avo Limited
Bary Instrument Corporation
Beede Electrical Instruments
Company, Inc.
F. W. Bell, Inc.
Biomat on
Bird Electronic Corporation
Bolt, Beranek & Newman
Data Equipment Division
Boonton Electronics Corporation
British Physical Laboratories
Burr-Brown Research Corporation
California Electro-Scientific
California Instruments Corporation
Cintra/Physics International Company
Christie Electric Corporation
Chronometrics, Inc.
Clevite Corporation
Cohu Electronics, Inc.
Coleman Engineering Company, Inc.
Computer Automation, Inc.
Computer Measurements Company
Comtel Corporation
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Control Data Corporation
Control Equipment Corporation
Control Logic, Inc.
Curtis Instruments, Inc.
Culpeper-Hammer Inc.
Dana Laboratories, Inc.
Darcy Industries Inc.
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Data Instruments Division
Data Royal Corporation
Data Technology Corporation
Datascan, Inc.
Daymarc Corporation
Delta Design, Inc.
Deltron, Inc.
Diplex, Inc.
Drane Engineering Laboratories, Inc.
Dynage, Inc.
Dynamics Research Corporation
Dynalite Limited
EC&G - Lab Products Division
E-H Research Laboratories, Inc.
Eico, Electronic Instrument
Company, Inc.
EIP Labs
Eldorado Electronics
Electro Scientific Industries, Inc.
Electrocraft Instruments Limited
Emerson & Cuming, Inc.
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Erb & Gray Scientific Division
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Federal Scientific Corporation
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Tektrol
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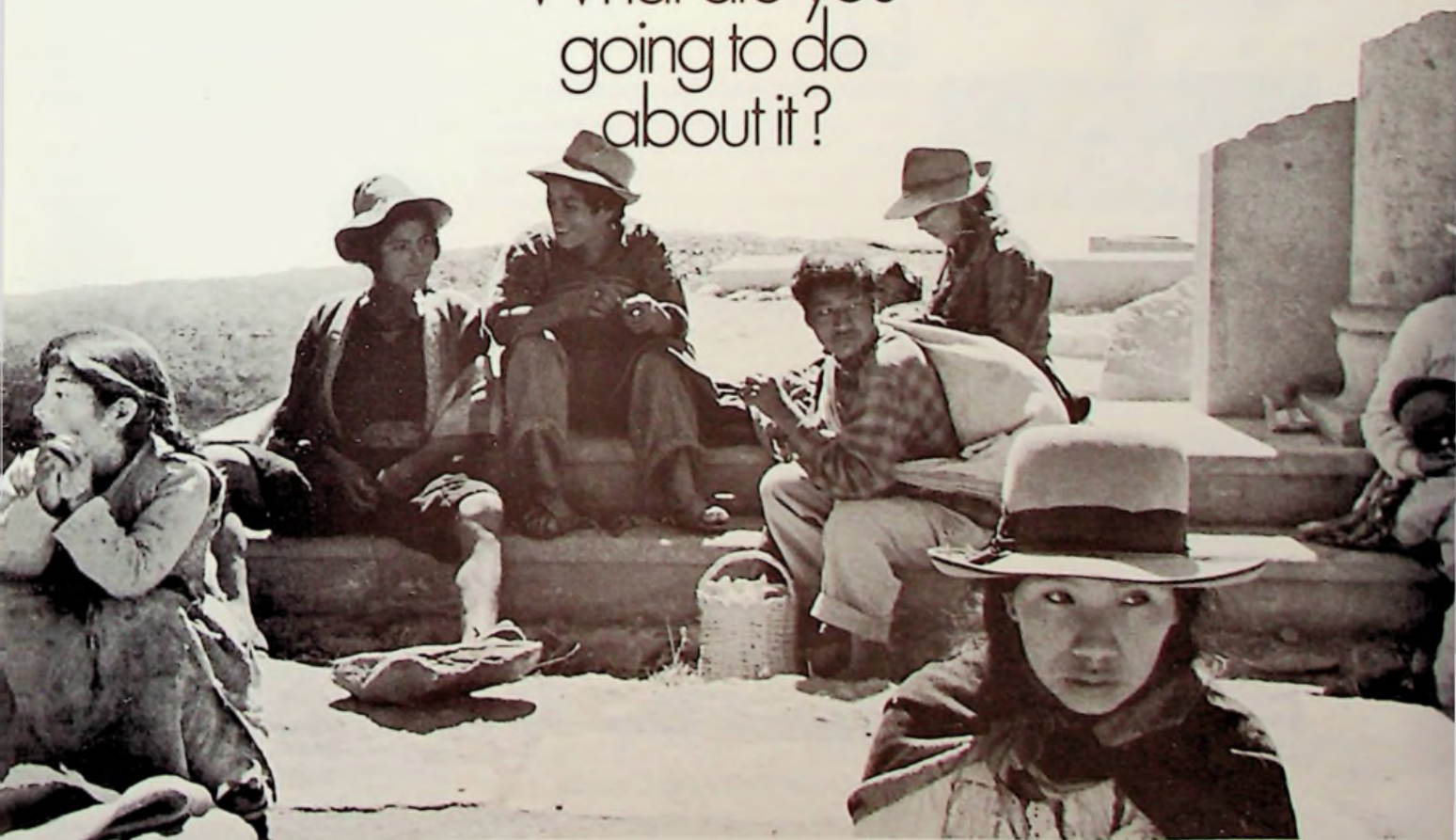


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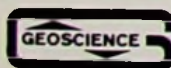


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WESCON SHOW - COW PALACE

CIRCLE INQUIRY CARD NUMBER 6

WESCON Schedules 23 Sessions for Technical Program

WESCON's technical program for 1969 offers 23 sessions for its four-day meeting at the Cow Palace, August 19-22.

According to Chairman Dalton W. Martin, vice president of engineering at Vidar Corp., Mountain View, the technical program committee issued the go-ahead following a second-round review of detailed proposals by "session organizers" who answered the call for technical program material earlier this year. The committee made its final selections from more than 75 original proposals submitted. In each case, the 23 proposals were for "session units," each presenting a group of complementary papers on a single subject of technology or management.

All of the WESCON sessions are to be held in air-conditioned meeting rooms located in the East Hall, one of five buildings that make up the Cow Palace complex on the southern outskirts of San Francisco. Format is for three sessions to run concurrently each morning and each afternoon.



Components and Microelectronics

Wherever circuits are being designed and built, the modern engineer must consider IC's. LSI, MOS, Hybrids, Power IC's—and even new components that are on the way. Wescon Sessions 1, 4, 9, 15, 17, and 20 detail applications and problem-solving uses of microelectronics in areas ranging from active filters to computer systems to communications equipment. (Of related interest: Sessions 3, 6, 11, 13, 18, 23.)



Instruments and Instrumentation

The instrument and the system must be considered interdependent—often in conjunction with the computer. The requirements for high-speed measurement and more complex testing are posing exceptional design challenges. Sessions 13, 21, and 22 discuss system configurations that can meet some of these challenges. (Of related interest: Sessions 8, 18, 19.)



Solid-State Fabrication

Two trillion semiconductors were produced in 1968. The fantastic number will be trebled within 10 years. How will we produce this massive volume of monolithics and discretes? Sessions 2 and 16 discuss the available techniques for automatic semiconductor fabrication and handling. (Of related interest: Sessions 8, 22, and 25.)



Communications and Science Systems

Earthbound and airborne communications de-

velopments are coming fast and frequent, with progress in all phases: electronic, visual, and man-machine. New analytical techniques and significant new hardware have been developed for sky-high and ground-level applications. Sessions 11, 12, 18, and 19 look at these new developments. (Of related interest: Sessions 3, 4, 6, 9, and 10.)



Microwave Technology

"That old black magic" of E and H fields can now be found in solid-state devices and associated amplifiers and oscillators. Microwave Sessions 3 and 6 provide new and practical information on transmission lines, solid-state devices, and circuits. (Of related interest: Sessions 12, 19, 20.)



Computers and Data Processing

Almost no area of the engineer's professional life goes unaffected by the computer today. Nearly all Wescon sessions reflect this fact, but several are particularly useful to the computer user. Sessions 7, 8, and 21 are so directed. (Of closely related interest: Sessions 4, 6, 11, 20, and 22.)



Management, Education, Marketing

Engineers today are inevitably concerned with such subjects of "produceability," "marketability," and the management of projects, departments, and companies. And the need for further education never ends. Sessions dealing with these areas of professional life include 5, 10, and 14.

Continued on page 6
AUGUST 1969

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CIRCLE INQUIRY CARD NUMBER 8

WESCON Schedules 23 Sessions for Technical Program

Wescon Session

1

LSI in Systems: The Design Task Interface

Tuesday, August 19, 10 am-12:30 pm
(Meeting Room A)

Session Organizer and Chairman: Stephen E. Scrupski, Electronics Magazine.

1/1 WHO NEEDS LSI IN-HOUSE CAPABILITY. George Hare, The Singer Co.

1/2 USING COMPUTER-AIDED DESIGN IN PRODUCTION AND TESTING OF CUSTOM LSI. Robert Ulrickson, Fairchild Semiconductor.

1/3 IMPACT OF LSI TECHNOLOGY ON THE ELECTRONICS MARKET. Glenn E. Penisten, Texas Instruments.

1/4 THE VENDOR USER INTERFACE WITH MOS UNIVERSAL ARRAYS. M. M. Kaufman and G. E. Skorup, RCA Defense Electronics.

Wescon Session

2

Handling Microcircuits Automatically

Tuesday, August 19, 10 am-12:30 pm
(Meeting Room B)

Session Organizer and Chairman: T. P. Long, Western Electric Co.

Session Organizer and Co-Chairman: C. W. Watt, NASA.

2/1 SOLID LOGIC TECHNOLOGY MANUFACTURING. Walter J. Schuelke, IBM.

2/2 BONDING TECHNIQUES FOR INTEGRATED CIRCUITS. Robert W. Helda, Motorola Inc.

2/3 BEAM LEAD ASSEMBLY TECHNOLOGY. Brian Dale, Sylvania Electronics System.

2/4 MANUFACTURING CONCEPT FOR BEAM LEAD ASSEMBLY. D. K. Thomson, Western Electric Co.

Wescon Session

3

Current Solid State Microwave Devices and Circuits

Tuesday, August 19, 10 am-12:30 pm
(Meeting Room C)

Session Organizer and Chairman: William E. Kunz, Watkins-Johnson Co.

3/1 SOLID STATE MICROWAVE VARIABLE DELAY DEVICES. Ernst K. Kirchner, Microwave Electronics.

3/2 BULK GAAS AND IMPATT MICROWAVE SOURCES. W. Keith Kennedy, Jr., Watkins-Johnson.

3/3 MICROWAVE TRANSISTOR AMPLIFIER DESIGN. James R. Reid, AvanteK Inc.

3/4 PARAMETERS USED IN SPECIFYING VARACTOR-TUNED SOLID STATE OSCILLATORS. William D. Heichel and Thomas R. Bushnell, Stewart Div., Watkins-Johnson Co.

3/5 UHF INTEGRATED MICROCIRCUITS. Robert M. Knox, Research Institute.

Wescon Session

4

Integrated Circuits in Active Filters

Tuesday, August 19, 2-4:30 pm
(Meeting Room A)

Session Organizer and Chairman: Gunnar Hurtig III, Kinetic Technology.

4/1 SURVEY OF ACTIVE FILTERING TECHNIQUES USING INTEGRATED CIRCUITS. Sanjit Mitra, University of California.

4/2 A STATE VARIABLE AND GYRATOR REALIZATION-COMPARISON. Robert Newcomb, Stanford University.

4/3 ACTIVE FILTERS EMPLOYING SILICON MONOLITHIC GYRATORS. Robert Hove, Boeing Company.

4/4 MULTILoop NEGATIVE FEEDBACK ACTIVE FILTERS USING THICK FILM INTEGRATED CIRCUIT TECHNIQUES. Dennis Hollenbeck, Kinetic Tech.

4/5 FEN FILTER DESIGN USING HYBRID INTEGRATED BLOCKS. George Moschytz, Bell Telephone Laboratories.

4/6 ICs AND THICK FILMS ADD UP TO IMPROVED RC ACTIVE FILTERS. William Broyles, Sprague Electric.

Wescon Session

5

New Company Start-ups: The Engineer Becomes Entrepreneur

Tuesday, August 19, 2-4:30 pm
(Meeting Room B)

Session Organizer and Chairman: Don C. Hoefler, Electronic News.

5/1 THE MANY ROUTES TO THE MONEY MARKET. William B. Huggle, Huggle Industries.

5/2 SELLING THE PACKAGE: WHAT THEY WANT TO HEAR. David C. Thompson, Linear Systems.

5/3 HOLDING YOUR OWN IN THE MONEY MARKET. Gordon L. Ness, Ness Industries.

5/4 WHY, HOW AND WHEN TO GO PUBLIC. David S. M. Lanier Jr., Compar Corp.

Wescon Session

6

Computer-Aided Design of High Frequency Circuits

Tuesday, August 19, 2-4:30 pm
(Meeting Room C)

Session Organizer: Gerald Schaffner, Ryan Electronics.

Session Chairman: Frank Arams, Airborne Instrument Labs.

6/1 STRIPLINE CHARACTERIZATION BY COMPUTER. H. E. Brenner, Bell Telephone Labs.

6/2 COMPUTER-AIDED SMALL SIGNAL TRANSISTOR MODELING. F. H. Musa, Motorola Semiconductor.

6/3 COMPUTER-AIDED DESIGN OF GAAS IMPATT DIODES. C. K. Kim, Microstate Electronics.

6/4 MICROWAVE CIRCUIT SYNTHESIS AND MEASUREMENT. H. Stinehelfer and W. Atwood, Microwave Associates.

Continued on page 10

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CIRCLE INQUIRY CARD NUMBER 10

WESCON Schedules 23 Sessions for Technical Program

CONTINUED FROM PAGE 8

6/5 COMPUTERIZED WIDE-BAND AMPLIFIER DESIGN. Les Besser, Hewlett-Packard.

6/6 COMPUTER-AIDED DESIGN OF MICRO-WAVE INTEGRATED CIRCUITS. Gary J. Policky, Texas Instruments.

Wescon Session

7

Time-Sharing -- What it Can Do for the Industry and Vice Versa

Wednesday, August 20, 10 am-12:30 pm
(Meeting Room A)

Session Organizer and Chairman: Joseph T. Hootman, Remote Computing Corporation.

7/1 TIME SHARING: WHY, WHEN, WHITHER? Robert Forest, Datamation Magazine.

7/2 WHAT CAN THE ELECTRONICS INDUSTRY DO FOR TIME-SHARING? Kas Terhorst, Computer Design Corp.

7/3 COMPUTER LANGUAGES -- WHY SO MANY, AND WHAT IS THE APPLICATION FOR EACH IN THE ENGINEERING COMMUNITY? Paul Sleeper, Remote Computing Corp.

7/4 TIME-SHARING IN ENGINEERING EDUCATION -- AND AFTER. Eugene H. Koff, California State College at Los Angeles.

Wescon Session

8

Manufacturing and Computers

Wednesday, August 20, 10 am-12:30 pm
(Meeting Room B)

Session Organizers: George H. Ebel, Conrac Corp. and S. Levy, RCA.

Session Chairman: George H. Ebel, Conrac.

8/1 THE STAND ALONE, CENTRAL, OR SATELLITE APPROACH FOR COMPUTER CONTROL OF MANUFACTURING PROCESSES? James E. Stuehler, IBM.

8/2 FACTORY DATA COLLECTION -- A CASE STUDY. James D. Edwards, Lockheed Missiles & Space.

8/3 COMPUTER CONTROLLED ON LINE TESTING AND INSPECTION. Peter H. Goebel, General Radio.

8/4 AUTOMATED FACTORY: AN OVERVIEW AND PREDICTIONS. Walter R. Anderson, IRA Systems.

Wescon Session

9

Linear ICs in Communications

Wednesday, August 20, 10 am-12:30 pm
(Meeting Room C)

Session Organizer and Chairman: Alan B. Grebene, Signetics Corp.

9/1 VHF MOS RECEIVER "FRONT-END." Richard Q. Lane, Fairchild Semiconductor.

9/2 LINEAR ICs IN CONSUMER TELEVISION AND AM/FM RECEIVERS. S. B. Marshall and G. W. Haines, Sprague Electric Co.

9/3 EFFICIENT USE OF PINS IN COMPLEX COMMUNICATION SUBSYSTEMS. Robert A. Hirschfeld, National Semiconductor.

9/4 THE SYSTEMS APPROACH TO THE DESIGN OF INTEGRATED COMMUNICATION CIRCUITS. Hans R. Camenzind, Signetics Corp.

Wescon Session

10

University Instructional TV Networks -- What They Mean To Industry

Wednesday, August 20, 2-4:30 pm
(Meeting Room A)

Session Organizer: Albert J. Morris, Genesys Systems.

Session Chairman: Donald J. Grace, Stanford University.
10/1 UNIVERSITY-INDUSTRY TELEVISION, RADIO AND TELEPHONE LINKS. Albert J. Morris, Genesys Systems.

10/2 STANFORD INSTRUCTIONAL TV NETWORK. Joseph M. Pettit and Donald J. Grace, Stanford University.

10/3 ASSOCIATION FOR CONTINUING EDUCATION (ACE). Julian Johnson, ACE.

10/4 UC AT BERKELEY-TV PLANS AND STATUS. George Maslach, University of California.

10/5 UNIVERSITY OF SANTA CLARA-TV PLANS AND STATUS. Charles Dirksen, Univ. of Santa Clara.

10/6 TELEVISION INSTRUCTION AT SAN JOSE STATE COLLEGE. Norman O. Gunderson, San Jose State.

10/7 UC AT IRVINE-UCLA-TV SYSTEMS, PLANS AND STATUS. Robert M. Saunders, UC, Irvine.

10/8 UNIV. OF SOUTHERN CALIFORNIA-INSTRUCTIONAL TV NETWORK. Jack Munushian, USC.

Wescon Session

11

Signal Processing Techniques in Digital Communications

Wednesday, August 20, 2-4:30 pm
(Meeting Room B)

Session Organizer and Chairman: Adam Lender, Lenkurt Electric Co.

11/1 DIGITAL IMPLEMENTATION OF DATA TRANSMISSION MODULATORS AND DEMODULATORS. W. J. Melvin, Collins Radio.

11/2 A SIMPLE ADAPTIVE EQUALIZER FOR EFFICIENT DATA TRANSMISSION. D. Hirsch and W. J. Wolf, Bell Telephone Lab.

11/3 PRACTICAL ADAPTIVE EQUALIZERS FOR DATA TRANSMISSION. Gerald K. McAuliffe, IBM Watson Research Center.

11/4 RECENT DEVELOPMENTS IN ERROR CONTROL TECHNIQUES. Allen H. Levesque, General Telephone and Electronics Labs.

Wescon Session

12

Data Relay Satellites

Wednesday, August 20, 2-4:30 pm
(Meeting Room C)

Session Organizer: S. H. Durrani, Comsat Corp.

Session Chairman: E. J. Istvan, Comsat Corp.
12/1 COLLECTION OF DATA FROM IN SITU SENSORS VIA SATELLITE. S. D. Dorfman, Hughes Aircraft Co.

12/2 APPLICATION OF SATELLITES TO DOMESTIC RECORD DATA AND VIDEO TRANSMISSION. W. B. Gross, General Electric.

(Continued on page 12)

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DIGITAL CIRCUIT DESIGNERS — A number of opportunities are open for engineers with digital circuit design experience. Projects include digital tape units, disc files, and disc controllers. BSEE required; MSEE and 2 to 4 years' experience in above areas preferred. See A below.

SERVO CIRCUIT DESIGNERS — Design and develop capstan and reel servo circuitry used in digital and analog tape units. Work with mechanical engineers in achieving a satisfactory electromechanical design. Select hardware, assemble, and work with others to put designs into production. BSEE required, MSEE and 2 to 4 years' experience preferred. See A below.

MECHANICAL ENGINEERS — Design and develop precision mechanisms such as found in disc memories and digital tape units. Develop proper packaging for this equipment considering size, temperature, production requirements, etc. Work with others to put new hardware into production. BSME and experience with disc files or tape transports, or equivalent electromechanical design required. See A below.

MAGNETIC TAPE AND DISC HEAD ENGINEERS — Design and develop read-write heads for use in digital tape units and flying heads for use in disc memories. BS degree required. See A below.

PRODUCTION ENGINEER — Must know printed circuit fabrication and associated procedures. Should have good background in hardware, packaging techniques, test equipment and familiarity with manufacturing equipment. Requires BSEE or equivalent with 1-4 years' production engineering or related experience. See A below.

RESEARCH & DEVELOPMENT ENGINEERS — Must have analog circuit design background. Would be involved in circuit

design from audio to UHF areas. Requires BSEE with 1-4 years' experience in analog circuit design, but recent college graduate could qualify. See A below.

COMPUTER SYSTEMS DESIGN — A number of opportunities are open for engineers with design experience in circuits, logic and computer systems. Projects include processors, memory systems, I/O channels, peripheral controllers and interfaces for small and medium-size computer systems; also systems design and integration on time-sharing, numerical control and data acquisition (instrumentation) systems. BSEE required; MSEE preferred. See B below.

APPLICATIONS ENGINEERS/REGIONAL SALES ENGINEERS — Both positions will stress computer instrument systems and will require experience in instrumentation and computers so that the engineer can advise on application of computers to measurement problems. Responsibilities include preparation of quotations, proposals and customer liaison. A technical background is required for these openings, with a BSEE or Computer Science preferred, and 2-5 years' in computer applications and Data Acquisition Systems. See B below.

PRODUCTION ENGINEER — Plan and implement manufacturing strategy in conjunction with R&D and Marketing for bringing a product from the prototype stage into full production. For products already in production, be responsible for evaluating and instituting methods to increase manufacturing efficiency, product reliability and product performance. A BSEE degree is required; experience with digital circuits and/or an advanced degree (MBA or MSEE) is preferred. See B below.

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12 - GRID BULLETIN

WESCON Schedules 23 Sessions for Technical Program

CONTINUED FROM PAGE 10

12/3 A MULTIPLE-ACCESS SATELLITE RELAY SYSTEM FOR LOW DATA RATE USERS. P. J. Helfernan, NASA-Goddard Space Flight Center.

12/4 WIDEBAND TRANSMISSION OF PHOTOGRAPHIC DATA USING THE IDCSP SATELLITES W. J. Gill, Philco-Ford.

12/5 CODING AND SIGNAL SELECTION FOR THE DATA RELAY SATELLITE INTERROGATION CHANNEL.

G. D. Boyce, General Dynamics Convair.

Wescon Session

13

High-Speed Oscilloscope Recording

Thursday, August 21, 10 am-12:30 pm
(Meeting Room A)

Session Organizer and Chairman: James R. Pettit, Hewlett-Packard.

13/1 COMPUTER TECHNIQUES IN HIGH FREQUENCY CIRCUIT DESIGN. Alan J. DeVilbiss, Hewlett-Packard.

13/2 A NOVEL APPROACH TO HIGH FREQUENCY TRIGGER CIRCUIT DESIGN. Richard McMorrow and William Farnbach, Hewlett-Packard Co.

13/3 TRANSIENT OSCILLOGRAPHY WITH PHOTOGRAPHIC MEDIA. A. E. Ames, R. C. Jones, G. R. Bird, Polaroid Corp. Research Labs.

13/4 HIGH SPEED SINGLE TRANSIENT OSCILLOSCOPES, THE STATE OF THE ART, AND CURRENT POTENTIAL FOR MATING TO ON-LINE COMPUTERS. Gordon Longerbeam, Jay Wiedwald and Larry Ferderber, Lawrence Radiation Lab.

Wescon Session

14

Overseas Marketing: A Perplexing Opportunity

Thursday, August 21, 10 am-12:30 pm
(Meeting Room B)

Session Organizer and Chairman: C. Gerald Diamond, Sensus International.

14/1 EUROPEAN ELECTRONICS MARKET: 1969. R. J. Larkin Jr. Ampex Corp.

14/2 MARKETING ELECTRONIC PRODUCTS IN JAPAN. James K. Imai, Mentor Japan.

14/3 THE NEW ASIAN ELECTRONICS MARKET OUTSIDE OF JAPAN. G. B. Levine, Mentor International.

14/4 ALTERNATIVES TO DIRECT SALES, LICENSE, JOINT VENTURE, AND SUBSIDIARY. Carl J. Bradshaw, Oak Electro/netics Corp.

Wescon Session

15

MOS ICs: A Critical Review

Thursday, August 21, 10 am-12:30 pm
(Meeting Room C)

Session Organizer and Chairman: Raymond D. Speer, Electronic Design Magazine.

15/1 MOS ICs: THE DESIGNER'S DILEMMA. Glen Madland, Integrated Circuit Engineering Corp.

15/2 MOS ICs: ANSWERS TO SYSTEMS PROBLEMS. Ralph Parris, Burroughs Corp.

15/3 MOS/LSI: A JOINT BUSINESS VENTURE. Larry Drew, Viatron Computer Systems Corp.

15/4 MOS ICs: BIPOLAR COMPATIBILITY IS HERE. Leland Seely, General Instrument Corp.

15/5 MOS ICs: THE PROMISE OF THINGS TO COME. Al Phillips, Autonetics.

Wescon Session

16

Automatic Production of Semiconductors

Thursday, August 21, 2-4:30 pm
(Meeting Room A)

Session Organizer: William B. Hugle, Hugle Industries.

Session Chairman: Orville R. Baker, Signetics.

16/1 THEORY OF AUTOMATIC PROCESSING. Frank E. Boerger, IBM Corp.

16/2 EQUIPMENT FOR AUTOMATIC PROCESSING. Donald G. Pedrotti, Hugle Industries.

16/3 CASE HISTORY OF AUTOMATIC PROCESSING. Speaker to be announced.

16/4 THE FUTURE OF AUTOMATIC PROCESSING. C. Clifford Roe, Fairchild Semiconductor.

Wescon Session

17

High Power Microcircuits—The Real Challenge

Thursday, August 21, 2-4:30 pm
(Meeting Room B)

Session Organizer and Chairman: Robert E. Koeper, EDN Magazine.

17/1 MONOLITHIC VOLTAGE REGULATORS. Thomas M. Frederiksen, Motorola Integrated Circuits Center.

17/2 VOLTAGE REGULATOR CAPABILITIES USING HYBRID TECHNIQUES. George W. Smith, Beckman Instruments Inc.

17/3 HIGH POWER HYBRID AMPLIFIERS. Herb Miezal, Dale Baugher, and Leon Balents, RCA.

17/4 CONTROLLING POWER ON A CHIP. William D. Whittekin Sr., Texas Instruments.

17/5 WHAT IS NEEDED IN POWER MICROCIRCUITS. James W. Williams, Hughes Aircraft Co.

Wescon Session

18

Trends in Large System Data Display

Thursday, August 21, 2-4:30 pm
(Meeting Room C)

Session Organizer and Chairman: E. R. Owen, General Electric Co.

18/1 STATUS TRENDS & PREDICTIONS OF DISPLAY DEVICES. Edwin H. Hilborn, NASA Electronics Research Center.

18/2 DISPLAYING ENGINEERING DATA IN SYSTEMS APPLICATIONS ON A COLOR CRT. I. M. C. Griesacker, General Electric Co. and Walter H. Tew, General Electric.

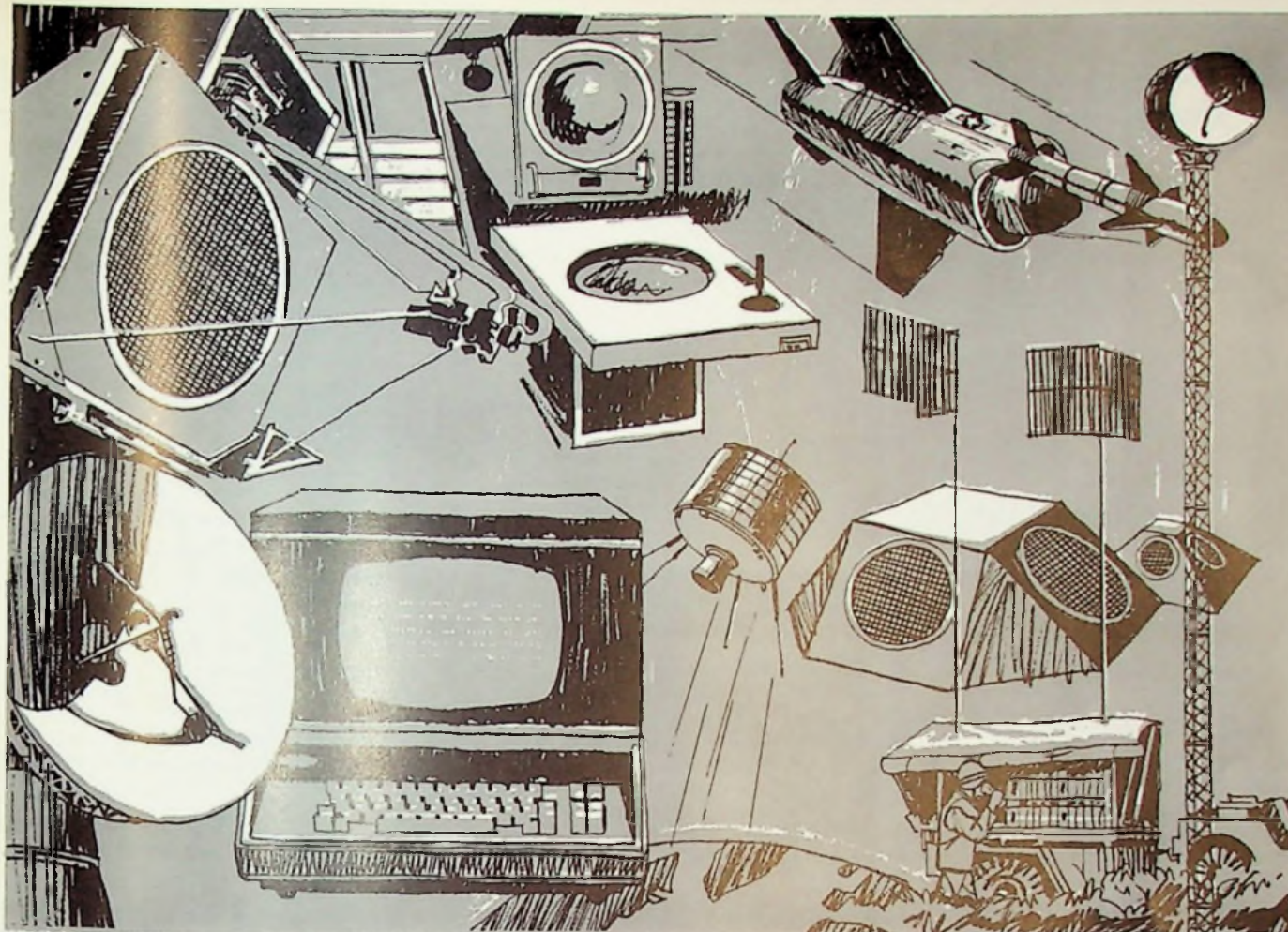
18/3 IMAGE DISTRIBUTION SYSTEM, AN APPROACH TOWARD PERSONAL DISPLAYS. Joe T. Ma, IBM Corp.

18/4 THE APPLICATION OF DIGITAL TELEVISION DISPLAYS TO COMPUTER-DIRECTED CONTROL SYSTEMS. S. E. Grooms, Philco-Ford.

18/5 ON-LINE GRAPHICS FOR INFORMATION HANDLING & DISPLAY. John E. Peyton Jr., Boeing.

Continued on page 32

AUGUST 1969



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KEYNOTES

PACKAGING SYMPOSIUM

International Electronic Circuit Packaging Symposium

Thin film technologist William L. Shockley is the keynote speaker for the 1969 International Electronic Circuit Packaging Symposium, to be presented by WESCON August 20 and 21. An official part of the WESCON technical program, the symposium is being presented for the tenth consecutive year.

Shockley, now president of Nuclear Systems Inc. (Dallas), was long associated with Collins Radio and gained international recognition for his work in thin film techniques. He was also one of a three-man Collins team that originated the digital frequency synthesizer technique. At WESCON, he will address about 600 participants at the IECP keynote luncheon in the grand ballroom of the San Francisco Hilton.

Eight technical sessions are included in the symposium plans. H. J. Scagnelli (Bell Labs), chairman of the organizing committee, predicts "it will be the strongest program we have ever had." It is the only WESCON activity to carry a special registration fee (\$40), which includes the luncheon, the symposium sessions, and a copy of the full proceedings.

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Moderator: F. E. Grace, IBM Corporation.

1/1 PACKAGING AND CABLING OF A MARS ROUGH LANDER. William S. Read, JPL.

1/2 PACKAGING OF ELECTRONICS FOR USE AT CRYOGENIC TEMPERATURES. Bernard J. Schebler, Bendix Instruments.

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2/1 POLYIMIDE FILM IN CHIP PACKAGING AND INTERCONNECTION. K. C. Hu, Hughes Aircraft.

2/2 POWDER INTERCONNECTION. L. F. Miller, IBM Components Division.

LUNCH (12:15-2 pm)

2/3 THE APPLICATION OF POLYAMIDE-IMIDE MATERIALS FOR COMPUTER MEMORY JUMPER CABLES. J. R. Cannizarro and P. E. Twigg, IBM.

2/4 TESTING FOR CHEMICAL INERTNESS IN ELECTRONIC COOLANTS. A. A. Arcus, J. A. Grande, P. J. Alberts, L. P. Richard, IBM.

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3/1 DEVELOPMENT USE OF SOLID FILM LUBRICANTS. Charles E. Vest, Goddard Space Center.

3/2 TESTING OF SOLID LUBRICANTS. Hayni T. Azzam, Dow Corning Corp.

3/3 APPLICATION OF SOLID FILM IN THE AIRCRAFT AND AEROSPACE INDUSTRIES. Lowell Horwedel, Electrofilm Corp.

3/4 SOLID LUBRICANTS IN THE COMMUNICATIONS INDUSTRY. George Kitchen, Bell Labs.

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Announcing the formation by Bourns, Inc., Analog Integrated Microsystems (AIM) Inc. and other investors of a new company devoted to the manufacture of analog monolithic circuit functions of the highest precision and quality, to be known as

PRECISION MONOLITHICS, INC.

Three professional positions are still available on the initial team, carrying excellent salaries and the right to purchase Founder stock:

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- Analog IC Systems Applications Engineer
- Precision Analog Modules Salesman

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Att: Mr. Marvin B. Rudin, President
Dr. Garth Wilson, Vice President Engineering
2700 Scott Blvd., Santa Clara, Calif. 95050



Session IV: Which Package — Flip-Chip, Beam Lead, or Spider?

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Moderators: M. T. Ross, The Milton Ross Co., and Dr. W. B. Hogle, Hogle Industries.

- 4/1 EXPERIENCE WITH THE FLIP-CHIP PACKAGE. Murray Siegel, Intersil, Inc.
- 4/2 EXPERIENCE WITH THE BEAM LEAD PACKAGE. Melvin G. Snyder, Raytheon.
- 4/3 SPIDER BONDING TECHNIQUE WITH ICs. Robert W. Helda, Motorola Semiconductor Div.
- 4/4 PRODUCTION EQUIPMENT FOR THE NEW PACKAGES. Dr. Hans M. Wagner, Hogle Industries.

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- 5/2 REFLOW SOLDERING WITH RADIANT HEATING. David Schoenthaler, Western Electric Co.
- 5/3 HIGH EFFICIENCY PACKAGING USING TOTAL FLEX CIRCUITRY. Charles H. Kahaian and Alfred Righini, Sylvania Electronic Systems.
- 5/4 PULSED ARC SPOT WELDER. M. Davis, Sandia.

Session VI: Emphasis on Micro-electronic Packages

Thursday, August 21, 11:15 am-2:30 pm

Moderator: T. A. Teller, General Electric.

- 6/1 MEDIUM DENSITY MONOLITHIC LOGIC TECHNOLOGY. O. Bilous and E. J. Rymaszewski, IBM. LUNCH (11:45-1:30)
- 6/2 A PLASTIC DUAL-IN-LINE APPROACH FOR THICK FILM HYBRIDS. Dean C. Bailey, Transformer-Electronics Co.
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- 8/3 LASER TRIMMING OF THICK FILM RESISTORS. R. L. Waters, Union Carbide Corp.
- 8/4 YAG LASER RESISTOR TRIMMER. John Summerford, Texas Instruments.
- 8/5 IN-PROCESS APPLICATIONS OF LASER METROLOGY. S. Minkowitz, Perkin-Elmer Corp.

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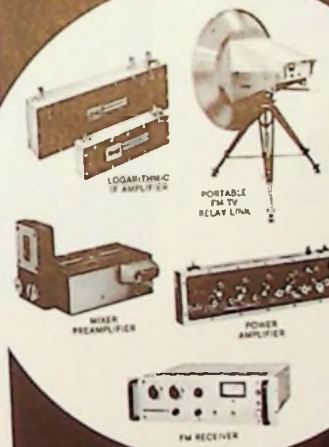
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WILLIAM SHOCKLEY KEYNOTES PACKAGING SYMPOSIUM

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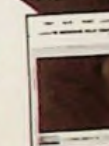
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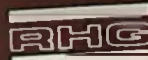
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IDA Judges Choose De

Twenty-one outstanding product designs in five categories have been selected for WESCON's 1969 Industrial Design Awards Exhibit in San Francisco during the show and convention.

They were named by a jury of five senior members of the Industrial Designers Society of America from among 98 entries. Visual quality of function (human factors) and contribution of industrial design to product improvement were among judging criteria.

A second judging of the 21 products to determine top awards will be held July 24. The judging group is chaired by Jon Hauser (J. W. Hauser Inc., St. Charles, Ill.); John Genaro (Henry Dreyfuss and Associates, New York); Herbert J. Zeller Jr. (Motorola Inc., Franklin Park, Ill.); John Coleman (Art Center College of Design, Los Angeles), and Colin G. Neale (Chrysler Corp., Detroit).

The 21 products (by category) to be shown at WESCON are:

INSTRUMENTS AND INSTRUMENTATION: DC Bridge Amplifier, Brush Instruments Division, Clevite Electronics Corp., Cleveland, Ohio; Test Instrument Cabinet, Cushman Electronics, Sunnyvale, California; Counter, Dana Laboratories Inc., Irvine, California; and Portable Digital Multimeter, Digilin Inc., Glendale, California.



Reading each row of pictures from top to bottom.

- A. Pulsed Thermocompression Bonder, Hughes Aircraft Co., Oceanside, California.
- B. 8200 Series Keyboard, Friden Division of The Singer Company, Rochester, New York.
- C. Datapoint, Computer Terminal Corp., San Antonio, Texas.
- D. Digital Tape Memory System, Ampex Corp., Culver City, California.
- E. Mini-Computer, Honeywell, Inc., Framingham, Mass.
- F. Modular Instrument Component Cabinet, RO Associates, Menlo Park, California.
- G. Model Apollo - Planetarium, Viewlex, Inc., Holbrook, New York
- H. Color Video Camera, International Video Corp., Sunnyvale, California.
- I. Portable Digital Multimeter, Digilin, Inc., Glendale, California.
- J. Micro Blaster, Comco Supply, Inc., Burbank, California

Winners for WESCON

PRODUCTION MACHINERY AND FABRICATION EQUIPMENT: Micro Blaster, Comco Supply Inc., Burbank, California; Numerically Controlled Wirecenter, Hughes Aircraft Co., Los Angeles; and Pulsed Thermocompression Bonder, Hughes Aircraft Co., Oceanside, California.

COMPUTER AND ELECTRONIC DATA PROCESSING EQUIPMENT: Digital Tape Memory System, Ampex Corp., Culver City, Calif.; Datapoint, Computer Terminal Corp., San Antonio, Texas; 8200 Series Keyboard, Friden Division of The Singer Company, Rochester, New York; Mini-Computer, Honeywell Inc., Framingham, Mass.; Compact Terminal, Keytape, and Keytape Program Card Reader, all from Honeywell Inc., Waltham, Mass.; and Model Apollo Planetarium, Viewlex Inc., Holbrook, New York.

COMMUNICATIONS EQUIPMENT: Auto Pilot Control Box, Collins Radio Co., Richardson, Texas; Color Video Camera, International Video Corp., Sunnyvale, Calif.; and Portable Television Recorder, Westel Company, San Mateo, California.

SUB-SYSTEMS, COMPONENTS AND MATERIALS: Digital Panel Meter, API Instruments Co., Chesterland, Ohio; Corporate Systems Enclosure, Hewlett-Packard Co., Palo Alto, Calif.; and Modular Instrument Component Cabinet, RO Associates, Menlo Park, California.



WEEF SEARCHES FOR TOMORROW'S ENGINEERS

An unusual program of industrial-educational cooperation to interest youngsters in electronic engineering and scientific careers is showing promise of success in its pilot run. The program, "Engineer's Look-In," brings small groups of high school and junior high school students and faculty into WEMA member plants to see what engineers and scientists really do in today's industry. It is being evaluated now in the San Francisco Bay Area, where it began in September, 1968.

The target of the program is sagging enrollments in engineering and related scientific courses, which is the concern of the Board of Trustees of the Western Electronic Education Fund (WEEF). The four trustees are selected by WEMA and IEEE. The present board members are Dr. Stanley F. Kaisel, Burgess Dempster, Dr. R. C. Mercure, Jr., and Dr. Walter P. Dyke. WEEF is the outgrowth of

a scholarship fund set up by WEMA in 1952, and now is supported by contributions from WESCON revenues and from electronics companies, with principal support coming from the show.

WEEF's purpose is to encourage students to enter the appropriate fields of study to assure the growing demands of industry a continuing supply of talented young people. For years it functioned by allocating scholarship grants to western universities and colleges. In 1966, the WEEF trustees began to shift the emphasis from students who already have made career decisions to yet-undecided students in junior and senior high schools.

In 1968 the trustees created a position of staff coordinator to investigate, propose and carry out a program to reach these students. Chosen for the job

Continued on page 34

The engineers of tomorrow will be joining the professionals during the week of WESCON activity in San Francisco.

After a first round of rugged competition, a panel of engineering jurists have selected 24 students — representing 14 Sections and eight states with Region 6 — as the WESCON Future Engineers. All high school students concentrating in science and math, and each at work on a special WESCON science project, they will be competing for \$3400 in scholarship prizes in a program that includes their own symposium, technical field trip and awards luncheon — in addition to “manning their booths” in the special exhibit area.

Student coordinators in Arizona, Alaska, California, Idaho, Montana, New Mexico, Oregon and Washington have reviewed local entries and are making progress checks on the winning candidates. Earlier this year, entries were opened to high school students throughout the western states. They could enter themselves, be entered by the high school instructors, or be suggested by local IEEE Sections. First judging was based on several criteria: academic record, involvement in other school and community projects or activities, a statement of their interests in technology and a description of a proposed project for WESCON.

Judges included Alan Simpkins (1967 IEEE chairman) of Palo Alto; Dr. James Arnett, California State College at Long Beach; Allen Church, Sandia Labs, Albuquerque; Gordon Longerbeam, JPL, Livermore; Dr. Nathan Hall, Hughes Aircraft, Los Angeles and Norton Chaston, Brigham Young University.

The 24 students, accompanied by their science instructors, receive air travel and expense allowances for their stay in San Francisco, and each student, whether or not he wins one of four scholarship prizes, receives a \$50 U.S. savings bond. Their busy schedule in San Francisco allows time for a tour of the city, a visit to BARTD and their own awards luncheon at the San Francisco Hilton with Bob Brunner, Hewlett-Packard technical executive, as the featured speaker.

The “Future Engineers” are: Clyde R. Sparks, Alamogordo High School, Alamogordo, New Mexico; Eric W. Strid, Dimond High, Anchorage, Alaska; Larry R. Garcia, Manzano High, Albuquerque, New Mexico; William C. Thompson, Santa Fe High, Santa Fe,



Robert Ernest Beach, 18, Menlo-Atherton High, Atherton, “Design and Construction of A Stored Program Digital Computer.”
 Vincent Henry Tobkin, 17, Homestead High, Sunnyvale, “Electronic Measurement of Changing Gas Concentrations.”
 J. Kenneth Salisbury, Jr., 17, Menlo-Atherton High, Atherton, “Las Vegas Computer.”
 Barry Dean Berry, 17, Madison High, San Diego, “A Study of Magneto and Electro-Optical Rotary Effect Analysis.”

future engineers

New Mexico; Douglas W. White, Los Alamos High, Los Alamos, New Mexico; James R. Rasmussen, Burley High, Burley, Idaho; James E. Lalonde, Sentinel High, Missoula, Montana; Joyce V. S. Westgard, Anaconda High, Anaconda, Montana; Albert A. Barbieri, Arcadia High, Phoenix, Arizona; Robert W. Bales, McNary High, Salem, Oregon; Pamela J. Mattern, Columbia High, Richland, Washington; Robert J. Crepin, Jr., Charles Wright Academy, Federal Way, Washington; Vernon T. McDougall, Inglemoor High, Bothell, Washington and Mark F. Johnson, Eastmont High, East Wenatchee, Washington.

Students from northern California are: Douglas M. Logan, Sacramento Union Academy, Sacramento; Robert E. Beach, Menlo-Atherton High, of Redwood City; John F. Belew, Jr., Mission San Jose High, Fremont; Glenn A. Fuji-hara, Sanger Union High, Del Rey; John K. Salisbury, Jr., Menlo-Atherton High, Atherton and Vincent H. Tobkin, Homestead High, of Los Altos.

Southern California students are: Barry D. Berry, Mark E. Dorian, and Andy Sturman, all of Madison High, San Diego and Brent A. Dussia, Buena High, Ventura.

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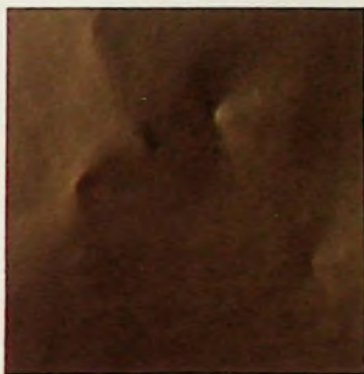
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TECHNICAL PROGRAM The Software Function — By John Beckett

John Beckett, Government Relations Manager, Hewlett-Packard Co., Palo Alto

During the third week of August in San Francisco, about 45,000 persons will involve themselves in the phenomenon called WESCON.

About 80 per cent of them will be technologists. About 12 per cent of them will actually participate in technical sessions, and another 10 per cent of them will acquire published technical manuscripts. A large additional number (both attendees and non-attendees) will study magazine summaries or reviews of the technical program.

A significant number of engineer-visitors will head for the Cow Palace with a technical session in mind — then never make it into the meeting room. Very few persons will attend as many as three complete sessions during the week. The odds are that the typical engineer will spend more time on the exhibit floor than in technical sessions.

At WESCON, however — unlike many conventions — there is a much higher expectancy for a man to take in a COMPLETE session, as opposed to zeroing-in on a specific paper and walking out when it's over.

CO-PARTNERS IN WESCON

For the IEEE reader of this publication, these observations are not presented as abstractions. Region 6 (represented by San Francisco Section and Los Angeles Council) is the active co-partner in presentation of the Western Electronic Show and Convention.

In a real sense, each Region 6 member participates in this, one of the world's most important technical expositions — whether he ever attends in person.

A relatively small number of engineers are directly involved in the producing of the "convention side" of WESCON each year — as program planners, session organizers, speakers, panelists, session moderators, and monitors.

But the WESCON convention, and specifically the technical program, serves as a very useful model in the study of information-acquisition by electronic engineers throughout the West.

FACING UNCOMFORTABLE FACTS

In the early '60s, IEEE representatives on the WESCON board of directors faced up to some uncomfortable facts: The technical program approach was

lengthy and laborious; there were too many sessions and too many papers; and the methodology for organizing the program almost guaranteed that many presentations would be either out-of-date — or so advanced that only a handful of specialists could find them meaningful.

In succeeding years, a number of "sacred cows" bit the dust, as WESCON sought the ways in which technical programming could do a better job of serving its technical audience. Not all the experimentation was successful; and some steps away from established ways of doing things had to be retracted.

In 1964, the technical program process was examined in a more formal manner, in the first of a series of in-depth studies that have resulted in a set of goals, purposes, and procedures that moved WESCON considerably apart from most technical conventions. (More recently, some of the approaches have been adapted elsewhere.)



'VOLKSWAGEN CHANGES'

A number of these changes have been of the "Volkswagen" variety; modest adjustments and improvements not immediately visible from the outside.

Others have been more apparent. From a high of 48 sessions, the four-day program design was reduced to an annual goal of about 24. The "over-the-transom" method of soliciting papers (in which the committee issues a "call" and waits for whatever comes in) was abandoned forever. Projects aimed at improving the quality of podium performance, insuring better visuals, and controlling the pace and length of sessions were undertaken.

Sessions became "units." The "call" is now for proposals for entire sessions, and each session consists of four or five papers expressly prepared for WESCON

and for the session, so that the two-and-one-half-hour program offers complementary presentations aimed to add up to a complete technical story. If the session title is "New Uses for MOS," you can be sure that all papers tie directly to that topic.

SESSIONS MUST BE USEFUL

And after much debate and concern, the formal research which indicated that a major national convention is the wrong setting for far-advanced technical material of relatively narrow interest, was confirmed. (Highly specialized material is better kept to meetings of specialists.) Instead, WESCON committees strive to attract sessions that are strongly job-related for their audiences — that is, that discuss techniques, trends, applications, and hardware that the engineer can use in his professional life NOW, or at least in the short-term future.

In other words, the conclusion of the studies sponsored by WESCON, was that the program had to move closer to "what's really happening" to serve its audiences. It also had to recognize something else — that engineers at the show and convention have an almost compelling need to examine the new products on the floor, and that this action, too, is part of "keeping up" technically. Hearing about new developments is necessary, but seeing them in live demonstration is valuable, too.

REGION 6 PIONEERS

Region 6 IEEE members can take some pride that their colleagues — operating as volunteer committeemen, ad hoc advisors, and as participants — have applied their talents and energies toward the analysis and modernization of one of the important channels of technical information. In a matter of just a few years, they have developed a new approach to the "meeting" as a source of timely and useful information. When you examine the 23-session lineup for 1969, you will see how far the system has been developed.

All of the votes are not yet tallied. It is much too early to call the system an unqualified success, and this technology moves much too fast for any "formula" to last more than a few seasons. But the evidence of the effort to make technical programming "relevant" and beneficial to working professional engineers is apparent.

PRODUCT SHOW The Hardware Function — By Emmet Cameron

Emmet Cameron, Vice-President, Corporate Development, Varian Assoc., Palo Alto

The electronics industry of the western United States — an area that coincides with IEEE Region 6 — will buy about \$2 billion worth of electronics supplies this year.

By the end of 1969, it will have used this equipment and added value so that sales by western organizations will approximate about \$6 billion — or nearly 25 per cent of the national volume in electronic products and systems.

These figures for both purchases and sales exclude consumer products and any "software" that isn't a part of producing products. In other words, the West will produce \$6 billion worth of electronics "hardware."

The "added value" that makes \$2 billion in purchases become \$6 billion in sales is largely in creative engineering and manufacturing. In both areas, the West has earned its own world-wide recognition.

same time when a relatively modest IRE convention was being held simultaneously. In 1952, the unusual equal partnership between the two organizations was written. Today, WESCON has grown — as the western technology has grown — both in size and significance. In number of product exhibits, attendance by professionals, quality of programming, and most other measures, it ranks favorably with almost any other event of its kind anywhere.

While it will never claim to be all things to all people, either companies with a product line to exhibit or engineers seeking to inform themselves, WESCON now serves more than 45,000 professionals each August, who review the latest product achievements of more than 600 manufacturing firms.

You can easily draw the parallel of the "show" part of WESCON to the centuries-old marketplaces of the world. The artisans who make things agree to bring their wares to a single site; the people who are interested in those wares agree to come and evaluate them.

manufacturers use WESCON as the one time in which that large western audience is available in one place and at one time for product demonstrations.

As John Beckett remarks in another article in this issue, WESCON's responsibilities to its sponsors include making WESCON serve all segments of the industry as well as it is able to do. As part of this effort, a great deal of study has been given to how the trade show process works.

One of the most interesting of the findings is that the product exhibits are of great use in helping engineers keep up with the proliferation of new materials, methods of test, fabrication, and inspection. In certain ways, the products "show" serves a much larger number of persons than does the technical program itself.

Another finding is that very little WESCON exhibit viewing is undertaken just to spend an afternoon away from the plant or laboratory. It is instead pretty serious business to most attendees, who concentrate an average of

THE WESCON ALLIANCE

The 25-year growth in prominence of the Western capabilities for design engineering and manufacturing is reflected in proportion, by two organizations: the Western Electronic Manufacturers Association and the Institute of Electrical and Electronics Engineers.

WEMA started with a handful of small companies who called themselves the "West Coast Electronic Manufacturers Association" and banded together early in World War II in order to tell the nation of their capabilities. Today, it has 500 member-companies, and serves them in a variety of essential services.

IEEE, combining the strengths of two great technical societies (IRE and AIEE), now has some 27,000 professional members in the western area.

If you can extrapolate the strength of western electronics based on the strength of WEMA and IEEE in the region, it is also useful to look at the example in which those strengths are combined. That example is WESCON, co-sponsored by WEMA and IEEE.

WESCON started as a "card-table" product show in the late '40s, at the



The parallel continues, in that WESCON, and in fact, every major electronics product show, is essentially local in terms of its visitors. More than 80 per cent of those 45,000 people at WESCON will be westerners. Conversely, more than 70 per cent of the 600 exhibitors will be from outside the West. Thus, the pattern emerges clearly: a large western audience of engineers uses WESCON to assess new product and equipment trends "live and in color";

six hours in studying about 20 of the exhibits.

Perhaps of most interest to the more than 400 volunteer representatives of WEMA and IEEE who help produce WESCON is that it is no longer possible — if indeed it ever was — to separate a major show and convention into its component parts. It is no longer a technical convention with an exhibit attached; nor is it a product show with technical sessions on the side. The evidence is compelling that technical presentations and "live" product demonstrations go hand-in-hand, and the engineer who is really looking for new ways to improve his professional skills (and to enhance his value to his organization) uses both the meeting-room and the exhibit floor to advantage.

The summary is that an event like WESCON performs a needed function, both as a timely review of manufacturing achievement and as a technical forum. As long as it continues to perform this function, western technologists and leading manufacturers will "agree" to come together.



Elizabeth Phillips, Cleone Damonte, Millie Leadabrand, Peggy Broadwater

LADIES FETED AT WESCON

Variety, color, and change-of-pace — all served with a touch of old-time San Francisco elegance — are in store for women who visit WESCON.

As planned by a volunteer committee headed by Mrs. Ray Leadabrand and Mrs. John Damonte, WESCON hospitality for feminine guests includes a champagne reception by-the-Bay, a one-man fine art show and comments by the artist himself, a fashionable luncheon on Nob Hill (featuring famous fashion from the City's fabled past), a conducted tour of the big WESCON show — and of course, a week-long

"hospitality headquarters for visiting wives."

For Peninsula women attending the San Francisco Golden Days fashion luncheon at the Fairmont Hotel, August 20, bus service will be available from the Cabana Hyatt House at 10:30 a.m., returning about 2:30 p.m. Fare will be \$1.00.

First item on the ladies' agenda will be a champagne reception at the beautiful St. Francis Yacht Club on the Bay near the Golden Gate Bridge. A special feature will be the paintings of Dr. Dan Noble, vice chairman of the board, Motorola, Inc., and a painter of renown,





Dr. Daniel E. Noble

who will also comment on modern art in an illustrated talk. Time is from 2 to 4 p.m. Tuesday (August 19), and there is no charge. The club offers ample free parking for guests.

Attention shifts to a retrospective showing the next day, Wednesday. Authentic antique gowns, accessories and costumes — including the turn-of-the-century version of smart swimwear, will be featured during an elegant luncheon event in the Gold Room of the Fairmont. "San Francisco's Golden Days," a fashion production that will relate important periods in the city's growth to the clothes typical of the era, will feature commentary by Virginia Worth. Models and clothes come from Fashion Collectors Ltd.

The luncheon is priced at \$7.50 per person, and advance reservations may be made in the Bay Area through the San Francisco Section IEEE office (327-6622).

On Thursday, a continental breakfast (no charge) at the San Francisco Hilton will precede a bus trip to the Cow Palace and a tour of the WESCON Show, complete with guides.

All during the week, starting Tuesday, August 19, a women's hospitality suite will be open in the California Room of the Hilton, as a place for visitors to ask directions or arrange transportation, to meet friends, and for light refreshments.

Working with Millie Leadabrand and Cleone Damonte on the planning of the "Age of Elegance" women's program are Mmes. John C. Beckett, John M. Cage, John E. Barkle, Ralph E. Lundahl, Robert A. Craig, and Fred J. MacKenzie.

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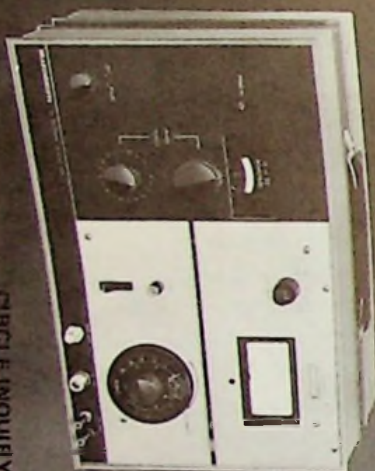
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WESCON EXECUTIVE COMMITTEE. Members are, from left, John C. Beckett (Hewlett-Packard), board chairman; Emmet G. Cameron (Varian), executive committee chairman; Fred J. MacKenzie (Stanford Research Institute), convention director; Don Larson, WESCON general manager; and William H. Heflin (FRL, Inc.), show director.

WESCON Shuttle Buses Serve City, Airport, Peninsula

Free shuttle bus service for WESCON visitors has been announced by William H. Heflin, Show Director.

The service calls for departures on a 15-minute schedule from San Francisco International Airport (both terminals) to the Cow Palace. Fifteen-minute schedules during all show hours will also be maintained between the downtown San Francisco airline bus terminal and the Cow Palace, with "feeder" service from all major hotels to the airline terminal every 30 minutes.

Service for the Peninsula area consists of buses that will depart from the Cabana Hyatt House on the hour starting at 8 a.m. daily, Tuesday, August 19, through Friday, August 22, with return from the Cow Palace on an hourly schedule.

Arrangements have been made for free parking in the Cabana Hyatt House rear parking lot for persons taking the WESCON shuttle bus.

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Andrew Grove Receives IEEE Region 6 Achievement Award

Dr. Andrew S. Grove, a leader in semiconductor technology, author, and educator, has been named winner of the 1969 Region 6 Achievement Award.

Announcement was made by Langdon Hedrick, regional director, and Louis N. Stone, chairman of the awards committee.



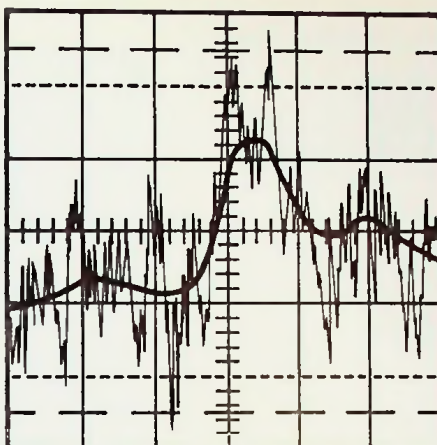
Dr. Andrew S. Grove

Dr. Grove, who is director of operations at Intel Corp. of Mountain View, joined the organization last year. He was previously identified with the Fairchild Semiconductor research and development laboratory. He is also a graduate lecturer in semiconductor device physics at the University of California, and is author of a textbook, "Physics and Technology of Semiconductor Devices." In recent years, he has also authored 31 technical papers and articles.

The Region 6 citation reads, "For advancing the state of the art in semiconductor devices through his leadership, teaching, publications, and research on the metal-oxide-silicon system."

He is an active member of the San Francisco Section of IEEE, and is a member of the American Physical Society and Tau Beta Phi. He is a member of the Electronic Materials Committee of the American Institute of Metallurgical Engineers.

He was graduated from the City University of New York in 1960, and received his doctorate in chemical engineering from the University of California in 1963.



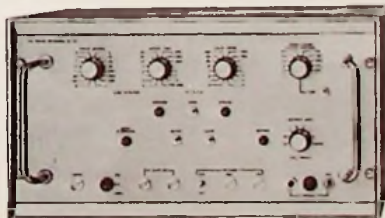
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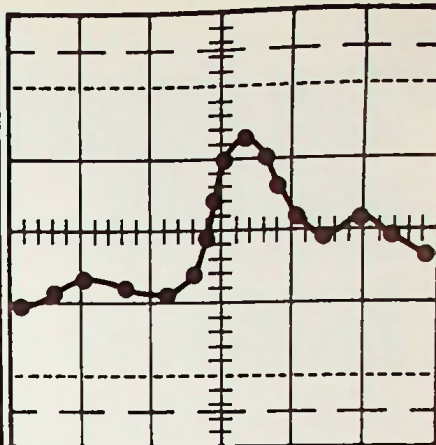
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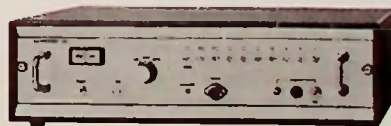
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614 Broadway, 362-1324. 5:30 PM to 2 AM daily. Cocktails, entertainment (swim dancing).

CHI-CHI CLUB

444 Broadway, 392-6213. 7 PM to 2 AM daily. Cocktails, entertainment.

THE COMMITTEE

622 Broadway, 392-0807. Cocktails, dinner from 8:30 PM. Closed Monday. Satirical theater revue "The Committee."

CONDOR

300 Columbus Ave., 392-4443. 6 PM to 2 AM daily. Cocktails, entertainment.

DOMINO PENTHOUSE

25 Trinity Place, 392-5579. 8:30 PM to 2 AM daily. Cocktails, Entertainment.

EXTENSION 21

124 Geary Street, 982-0880. 4:30 PM to 2 AM. Closed Sunday. Cocktails, telephone introductions.

FAIRMONT HOTEL

California and Mason Streets, 362-8800. Venetian Room and Tonga Room — see listing under "Hotels."

FINOCCHIO'S

506 Broadway, 362-9913. 8 PM to 2 AM daily. Cocktails, entertainment (female impersonators).

GALAXIE

Broadway at Kearny Street, 981-0664. 8 PM to 2 AM daily. Cocktails, entertainment (swim dancing).

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56 Gold Street, 397-5626. Monday-Friday 11 AM to 2 AM (luncheon from 11:30 AM to 2:30 PM); Saturday 6 PM to 2 AM; closed Sunday. Cocktails, impromptu entertainment; New Year's Eve celebrated every night.

MARK HOPKINS HOTEL

California and Mason Streets, 392-3434. The Nob Hill Restaurant — see "Hotels."

MOULIN ROUGE

412 Broadway, 434-2444. 6 PM to 2 AM daily. Cocktails, floor show.

OFF BROADWAY

1024 Kearny Street, 982-3866. Monday-Friday 11 AM to 2 AM (luncheon 11 AM to 3 PM); 5:30 PM to 2 AM Saturday and Sunday. Dinners nightly 5:30 to 8:30 PM. Cocktails, entertainment.

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Mason and O'Farrell Streets, 771-1400. The Kaleidoscope — see "Hotels."

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659 Montgomery Street, 421-8292. Cocktails noon to 2 AM; entertainment Thursday-Saturday 9 PM to 1 AM; closed Sunday.

SHERATON-PALACE HOTEL

Market and New Montgomery Streets, 392-8600. Tudor Room — see "Hotels."

SINALOA MEXICAN CANTINA

1416 Powell Street, 781-9624. 6 PM to 3 AM, closed Sunday. Cocktails, dinner, dancing, floor show.

SIR FRANCIS DRAKE

Powell and Sutter Streets, 392-7755. Starlite Roof — see "Hotels."

WARNI'S ROARING 20'S

807 Montgomery, 982-1350. 7 PM to 2 AM; Closed Sunday. Cocktails, entertainment.

Continued on page 36

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32 - GRID BULLETIN

WESCON Schedules 23 Sessions for Technical Program

(Meeting Room C)



Wescon Session

19

Future Avionics System Architecture

Friday, August 22, 10 am-12:30 pm

(Meeting Room A)

Session Organizer: John R. Alexander, TRW Systems Group.

Session Co-Chairmen: R. K. Whitford, TRW Systems Group and Joseph Rodriguez, Grumann Aircraft Engineering Corp.

19/1 INTEGRATED AVIONICS. Richard D. Alberts, AF Avionics Lab.

19/2 FEDERATED VS. INTEGRATED COMPUTER SYSTEMS. J. H. Crenshaw, IBM Federal Systems Division.

19/3 ROLE OF MAN AND MACHINE IN FUTURE AVIONICS SYSTEMS. L. S. Guarino, Naval Air Development Center.

19/4 REALIZING OBJECTIVES FOR COMPLEX AVIONIC COMPUTER SYSTEMS. H. Barry Schoenky, Teledyne Computer Systems Division.

19/5 DESIGN CONCEPTS IN AVIONICS AND SPACE EQUIPMENT. J. R. Goodykoontz, V. A. Karpenko, TRW Systems Group.



Wescon Session

20

New Solid-State Devices

Friday, August 22, 10 am-12:30 pm

(Meeting Room B)

Session Organizer and Chairman: Robert N. Noyce, Intel Corp.

20/1 ECOLOGICAL NICHES FOR OPTOELECTRONIC DEVICES. E. E. Loebner and H. Borden, Hewlett-Packard Co.

20/2 NEW SOLID-STATE PRODUCTS—DIGITAL CIRCUITS. Morris Chang, Texas Instruments Semiconductor Circuits Division.

20/3 BULK SEMICONDUCTOR DEVICES FOR MICROWAVES, MILLIMETER WAVES, AND BEYOND. John A. Copeland, Bell Telephone Labs.

20/4 LINEAR CIRCUITS FOR COMMUNICATIONS APPLICATIONS. Derek Bray, Fairchild Semiconductor.



Wescon Session

21

Computer-Aided Testing, Management and Implementation

Friday, August 22, 10 am-12:30 pm

Session Organizer and Chairman: A. Machi, Bendix Navigation & Control Division.

21/1 DESIGNING AVIONIC EQUIPMENT FOR AUTOMATIC TESTING. Richard O. Barrett, Honeywell Aerospace Division.

21/2 DEVELOPMENT OF SOFTWARE SYSTEMS FOR AUTOMATED TEST EQUIPMENT (CATE). Eddie J. Johnson and James V. McCarthy, SDC.

21/3 A COMPUTER CONTROLLED TEST SYSTEM. Frank M. Stutesman, Bendix Navigation & Control Division.

21/4 HARDWARE/SOFTWARE MANAGEMENT—COMPUTER AIDED TESTING. D. S. Bassett, Emerson Electric Co.

Wescon Session

22

Instrumentation for High-Speed Phenomena

Friday, August 22, 2-4:30 pm

(Meeting Room A)

Session Organizers and Chairmen: Gordon T. Longerbeam, Lawrence Radiation Lab. and Sid Sternick, EG&G.

22/1 THE TRAC SYSTEM. G. St. Leger-Barter, Lawrence Radiation Lab. and S. Walter, EG&G.

22/2 WIDEBAND ATTENUATION AND PHASE MEASUREMENTS ON HIGH QUALITY COAXIAL CABLES. R. L. Rhoads and A. M. Evans, Lawrence Radiation Lab.

22/3 WIDEBAND SYSTEM FUNCTION ANALYZER EMPLOYING TIME TO FREQUENCY DOMAIN TRANSLATION. A. M. Nicolson, Sperry Rand.

22/4 AN ITERATIVE, TIME DOMAIN METHOD OF SYSTEM RESPONSE CORRECTION. M. P. Ekstrom, Lawrence Radiation Laboratory.



Wescon Session

23

Computer-Aided Circuit Design and Testing

Friday, August 22, 2-4:30 pm

(Meeting Room B)

Session Organizers: Ron Rohrer, Fairchild Semiconductor, and Gabor Temes, Ampex Corp. Session Chairman: Ron Rohrer, Fairchild.

23/1 COMPUTER-AIDED CIRCUIT ANALYSIS. Harry B. Lee, Mass. Institute of Technology.

23/2 BIPOLAR TRANSISTOR MODELING FOR COMPUTER-AIDED DESIGN. William G. Howard Jr., University of California.

23/3 NETWORK DESIGN BY MATHEMATICAL OPTIMIZATION. S. W. Director, Univ. of Florida.

23/4 COMPUTER-AIDED LAYOUT. Les Hazlett, Motorola.

23/5 AUTOMATIC TEST SYNTHESIS. E. R. Jones, Fairchild Semiconductor.

AUGUST 1969

Eta Kappa Nu Holds
Awards Luncheon
During WESCON Week



P. E. Haggerty, chairman of the Board, Texas Instruments, Inc.

Patrick E. Haggerty will be inducted as an Eminent Member of Eta Kappa Nu, national professional engineering fraternity, at the fraternity's awards luncheon to be held during WESCON week.

The luncheon is scheduled for noon on Wednesday, August 20, at the San Francisco Hilton. All WESCON visitors are invited. Price per person is \$6.00.

Mr. Haggerty will also be principal speaker at the event, which also honors Eta Kappa Nu's selections of the "out-standing college engineering students," who are to be announced during the program.

Tickets may be ordered in advance (see order form in this magazine), or at the door.

Call for Papers

THIRD ASILOMAR CONFERENCE ON CIRCUITS AND SYSTEMS. DECEMBER 10-12, 1969, Asilomar Hotel, Pacific Grove, Calif. Abstracts of 500 words and summaries must be received prior to October 3, 1969. Send two copies to:

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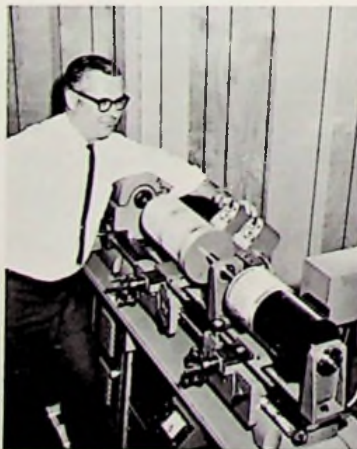
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TOMORROW'S ENGINEERS

Continued from page 18

was Joseph J. Schwarz, a veteran of many years of industrial training management for General Motors, Lockheed, Librascope Company and most recently, Ampex. He also had taught at Cal Tech, UCLA and the University of Kansas. Schwarz talked with state-level school counseling officials at Sacramento and worked down to local schools in San Mateo and Santa Clara counties. He interviewed engineers involved in the WEMA Colorado Council's program to improve technician training throughout the state and consulted with state educators at the University of Colorado's three-day seminar for teachers, counselors and students, which was supported by a WEEF grant.

The consensus from the interviews was that contacts should be made in high schools or junior high schools, but should take place in industry's plants. There should be complete and open communication with industrial operations presented as they really are. In August, Schwarz proposed the program to WEEF's trustees; in September it was launched in the Bay Area.

Working units are groups of three students and three adults, counselors or teachers, from each school. According to Schwarz, each group visits an electronics plant for a half-day on two separate occasions. On the first visit, a qualified engineer guides the group through the complete cycle of creation of a selected product, from conception of the product to shipment of the production model. On the second visit, the group follows the solution of a realistic engineering problem. The engineer-guide must be able to establish rapport with young people. He should be authoritative, with a thorough knowledge of the elements of an industrial organization and preferably should have some supervisory responsibilities. Above all, he should have the time and interest to do the job painstakingly.

The program is still in experimental stages. Educators wish more students could participate, and although the engineer-guides feel it is effective, some feel it is more effective with counselors and teachers who are better prepared to understand and will influence more students. Some suggest students be pre-selected on the basis of interest and age and be better prepared. But, to those who have been exposed to it, the program seems a good way to stimulate some of tomorrow's engineers.

Special Events Ticket Order Form

Mail to: WESCON Ticket Bureau, Suite 1920
36500 Wilshire Boulevard, Los Angeles, California 90005

Please send the following special events tickets:

Sponsors Luncheon (August 19) _____ at \$6.50, total \$ _____
All-Industry Cocktail Party (August 19) _____ at \$6.00, total \$ _____
Eta Kappa Nu Awards Lunch (August 20) _____ at \$6.00, total \$ _____
Ladies Fashion Luncheon (August 20) _____ at \$7.50, total \$ _____
Future Engineers Luncheon (August 21) _____ at \$6.00, total \$ _____

Please mail tickets to:

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Check in the amount of \$ _____ enclosed.

(Mail orders will be filled until August 11, 1969. Later orders will be held in Will-Call at the door.)

IECP Advance Registration Form

1969 IECP Symposium, August 20 and 21

Mail to: WESCON (IECP Symposium)
36500 Wilshire Boulevard, Los Angeles, California 90005

Please make the following reservation(s) for the two-day International Electronic Circuit Packaging Symposium, August 20 and 21 at the San Francisco Hilton Hotel. I understand that the \$40 registration fee includes admission to all symposium sessions and to WESCON, a special IECP luncheon on August 20, and a full symposium record.

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Make checks payable to 1969 IECP Symposium. You will receive prompt confirmation by mail. All credentials will be held in your name at the San Francisco Hilton for pickup August 20.

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AUGUST 1969

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**PHYSICS
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CIRCLE INQUIRY CARD NUMBER 32

Gunn to Receive IEEE Morris Liebmann

J. B. Gunn, whose name is widely recognized in the phrase "the Gunn Effect," will receive the IEEE Morris H. Liebmann prize award during ceremonies at WESCON in San Francisco. He will be honored during the Program of the Sponsors Luncheon in the San Francisco Hilton on Tuesday, August 18.

The "Gunn Effect" describes high-frequency current oscillations that occur when gallium arsenide samples are subjected to a field above certain threshold levels. Mr. Gunn discovered this phenomenon in the early 1960's, and went on to analytical work now considered a classic of semiconductor research.

Mr. Gunn, born of British parents in Egypt, received his baccalaureate from the University of Cambridge. Since 1959, he has been on the staff of the IBM Thomas J. Watson Research Center.



He is a fellow of the IEEE and of the American Physical Society. His hobbies include maintaining and racing his own motorcycle and "preventing the collapse of an old house in Mt. Kisco, N.Y.," which he shares with his wife and two daughters.

NIGHTLIFE/HOTELS

Continued from page 31

Some of San Francisco's most distinctive dining rooms are located in the major hotels.

CANTERBURY, 750 Sutter Street, 474-6464: Patio, 11:30 AM to 2 PM daily; 10 AM to 2 PM Sunday. Prime Rib Room, Monday-Friday 6 to 9 PM; Saturday 6 to 10 PM; Sunday 5 to 9 PM. **CLIFT**, Redwood Room, Geary and Taylor Streets, 775-4700. Monday-Saturday, 12 noon to 10:30 PM; Sunday noon to 9:30 PM.

DEL WEBB'S TOWNEHOUSE, Carriage Room, Market and 8th Streets, 863-7100. Monday-Friday noon to 2 PM, 6 to 10 PM; Saturday and Sunday 5 to 10 PM.

FAIRMONT HOTEL, California and Mason Streets, 362-8800: Crown Room, 11 AM to 2 PM (luncheon); 11 AM to 2 AM (cocktails). Restaurant Camellia, 7 AM to 11 PM daily. Squire Room, 11:30 AM to 2:30 PM (luncheon restricted to men only), 5:30 to midnight daily. Venetian Room, 7:30 PM to 1 AM, closed Monday; dinner, dancing, entertainment. Tonga Room, 5:30 PM to 2 AM daily; dancing from 9 PM nightly except Sunday.

JACK TAR, Cosmopolitan Room, Van Ness Avenue and Geary Street, 776-8200, 7 AM to 11 PM daily.

MARK HOPKINS HOTEL, California and Mason Streets, 392-3434; Top of the Mark, 10 AM to 2 AM daily (cocktails). The Nob Hill Restaurant, 7 AM to 3 PM; 6 PM to midnight (until 10 PM Sunday); dancing from 8 PM nightly except Sundays.

PLAZA, El Prado, Post and Stockton Streets, 781-7200. Tuesday-Saturday 12 noon to 4 PM, 5:45 to 9 PM; closed Sunday and Monday.

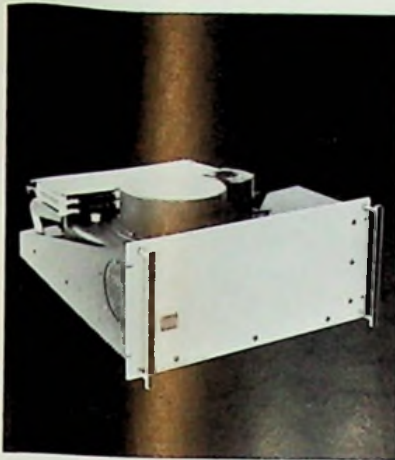
ST. FRANCIS, Powell and Geary Streets, 397-7000. Medallion Room, Monday-Friday 12 noon to 2:30 PM, 6 to 10 PM; Saturday 6 to 10 PM; closed Sunday. Terrace Room, Monday-Saturday 12 noon to 2:30 PM (luncheon). 11 AM-1 AM (cocktails); Sunday 4 PM to midnight (cocktails). English Grill, Monday-Saturday 6:30 AM to 10 PM; Sunday noon to 10 PM.

SAN FRANCISCO HILTON, Mason & O'Farrell Streets, 771-1400: Cafe Belagio 11 AM to 11 PM; closed Sunday. Chef's Table, Monday-Friday 11:30 AM to 3 PM, 5 PM to 1 AM; Saturday and Sunday 5 PM to 1 AM. Kaleidoscope, Friday and Saturday cocktails, dancing from 9 PM.

SHERATON-PALACE, Market and New Montgomery Streets, 392-8600: Garden Court, 7 AM to 2:30 PM, 5:30 PM daily. Tudor Room, Monday-Friday 11:30 AM to 2 PM, 6 PM to midnight, Saturday 6 PM to midnight; dancing 9 PM to 1 AM Friday and Saturday; Closed Sunday. Pied Piper (men only), Monday-Friday 11:30 AM to 2 PM (luncheon). 9 AM to 2 PM (cocktails.)

SIR FRANCIS DRAKE, Starlite Roof, Powell and Sutter Streets, 392-7755: Monday-Saturday 11:45 AM to 2:30 PM (luncheon); Sunday 10 AM to 2:30 PM (brunch); 10 AM to 1 AM daily (cocktails); dancing from 9 PM nightly. Plate of Brasse, 6:30 AM to 9:30 PM.

Disc memories for digital and video storage. Keyboard displays for computer input/output.



Disc memories for computers, Series 7200.

Series 7200 head-per-track memories provide high-capacity, high-speed storage for any digital computer or data handling system. The memories use all-TTL logic and Data Disc's "Micro-space" heads to store 100,000 bits per track. Models storing 0.8, 1.6, 3.2 and 6.4 megabits are available. Microscopic head-to-disc spacing of 10 to 15 microinches permits sharp, well-defined magnetic recording and strong, clean signal reproduction. High packing density reduces cost per bit stored well below cost of conventional

disc memories.

Average access time is 16.7 ms, and the standard data transfer rate is 3 megabits per second through the TTL interface. The entire memory, including a separate 5 1/4 inch high power supply, fits in 14 inches of rack space.

Unit prices, including all electronics and power supply, range from \$6925 for an 8-track, 800,000-bit memory to a maximum of \$11,275 for a 64-track, 6,400,000-bit memory. Inquire for quantity discounts.

Disc controllers for computer interface, Series 1200.

Series 1200 disc controllers are complete plug-compatible units that provide a convenient and reliable interface with your computer or digital system. Since a controller can serve as many as four memories, total capacity can be 25.6 megabits—either initially or later as required.

The field length is variable from one byte to 12,000 bytes per track and the data transfer rate is variable to a maximum of 125,000 bytes/sec. The controllers feature all-TTL logic, a built-in error check, and a "write protect" circuit to prevent destruction of permanent data.

Display terminal systems with disc storage, Series 6200.

Series 6200 systems can generate as many as 128 different TV pictures simultaneously. The displays, containing alphanumeric and/or graphic information, may be located up to 2000 feet from the central disc memory. Since a single low-cost disc memory refreshes many displays, the system is far more economical than systems requiring a refresh memory at each display terminal.

Pictures consist of 245,000 black and white elements in a 512 x 480 matrix, displayed on a television monitor. Each display is refreshed at the

rate of 30 frames/second (60 fields/second) thereby creating a stable, flicker-free image. A stored picture may be updated at any time without affecting other displays then showing.

The system includes a character generator which converts incoming ASCII character symbols from keyboard or computer into the picture elements which form display characters.

A basic 6200 series system consists of 1 to 32 closed-circuit TV terminals with a single-disc memory that stores up to 32 pictures.

Digital disc buffers for CRT displays, Series 5200

Series 5200 memories have up to 72 tracks, each of which can store one CRT display in the form of up to 100,000 black and white picture elements. By using more than one track for each picture, images with higher resolution and gray scale may be recorded.

All stored pictures can be displayed simultaneously on different monitors. Pictures may be recorded in a form suitable for display on standard 512-line TV monitors or in a form suitable for XY plots on a CRT.

The information on any track may be updated without affecting simultaneous displays from other tracks. Each track has an individual read/write head with all associated read and write electronic circuitry. Interface is via standard TTL logic levels.

The Series 2200 Servo Drive System below may be used with this memory.

Prices, including power supply, range from \$7270 for an 8-track memory to \$26,470 for a 72-track memory.

Parallel video storage for TV displays, Series 4200

Series 4200 Video Disc Recorders store up to 64 TV pictures on one disc, all of which can be displayed simultaneously on standard TV monitors. Any stored pictures may be updated without affecting displays then showing.

Each track has an individual read/write head with all associated read and write electronic circuitry. With optional period-modulation modems, any

EIA compatible video signal may be recorded. Recorders with discs turning at 1800 rpm can store up to 64 pictures with dc to 4 MHz video bandwidth. Recorders with 3600 rpm disc speed store up to 32 pictures with wider dc to 6 MHz bandwidth.

A Series 4200 system includes a Series 2200 Servo Drive System described below.

Random-access video storage for TV displays, Series 3200

The Series 3200 Video Disc File stores up to 600 TV pictures for display one at a time in any order. With an optional period-modulation modem, pictures may be recorded from any source that provides an EIA compatible video signal, and displayed on standard TV monitors. All recorded pictures may be displayed in rapid succession to create moving pictures in normal

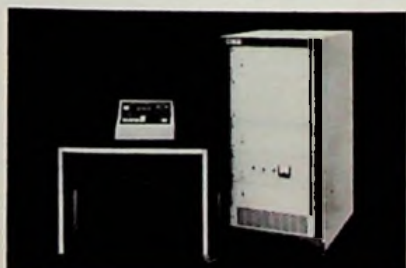
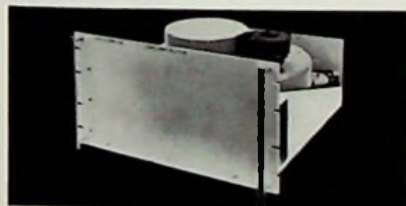
motion, slow-motion, or lapsed-time form. Any picture may be transferred to a buffer track for viewing while the access mechanism retrieves another image for subsequent display.

Systems with 1800 rpm disc speed store up to 600 pictures with a 4 MHz video bandwidth. Systems with 3600 rpm discs store up to 300 pictures with a wider 6 MHz bandwidth.

Servo drive system for disc memories, Series 2200

The Series 2200 Servo Drive System synchronizes the speed of one or more Data Disc memories with an external reference clock. The system drives a disc through a bearing-less printed-circuit motor attached directly to the disc drive shaft. A double-loop, phase-locked

system reduces timing error to less than ± 50 nanoseconds. The low timing error simplifies control problems greatly, permitting many memories to be synchronized with each other or with network TV programs.

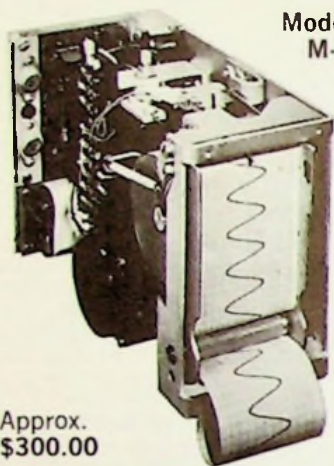


Data Disc, Incorporated, 1275 California Avenue, Palo Alto, Calif. 94304.
Phone (415) 326-7602. TWX 910-373-1248.

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38 - GRID BULLETIN

Sessions at a Glance

San Francisco Cow Palace

AUGUST 19

TUESDAY A.M.

Meeting Room A

LSI in Systems:

The Design Task Interface

Meeting Room B

Handling Micro-circuits Automatically
(Long/Western Elec.)

Meeting Room C

Solid-State Microwave Devices & Circuits
(McKay/W-J)

TUESDAY P.M.

Meeting Room A

ICs in Active Filters
(Hurting/Kinetics Tech.)

Meeting Room B

New Company Start-Ups:

Engineer Becomes Entrepreneur
(Hoefler/EN)

Meeting Room C

Computer-Aided Design of HF Circuits
(Schaffner/Ryan Elec.)

AUGUST 20

WEDNESDAY A.M.

Meeting Room A

Time-Sharing—What It Means to
Industry & Vice Versa
(Hootman & Remote Computing)

Meeting Room B

Manufacturing & Computers
(Ebel/Conrac)

Meeting Room C

Linear ICs in Communications
(Grebene/Signetics)

WEDNESDAY P.M.

Meeting Room A

University Instructional TV Networks
(Morris/Genesys)

Meeting Room B

Signal Processing Techniques &
Digital Communications
(Lender/Lenkurt)

Meeting Room C

Data Relay Satellites
(Durrani/Comsat)

AUGUST 21

THURSDAY A.M.

Meeting Room A

High-Speed Oscilloscope Recording
(Pettit/H-P)

Meeting Room B

Overseas Marketing:
A Perplexing Opportunity
(Diamond/Sensus Int'l)

Meeting Room C

MOS ICs: A Critical Review
(Speer/Electr. Design)

THURSDAY P.M.

Meeting Room A

Automatic Production of
Semiconductors
(Hugle/Hugle Ind.)

Meeting Room B

High Power Micro-circuits—
The Real Challenge
(Koeper/EDN)

Meeting Room C

Trends in Large System Data Display
(Owen/G.E.)

AUGUST 22

FRIDAY A.M.

Meeting Room A

Future Avionics System Architecture
(Alexander/TRW)

Meeting Room B

New Solid-State Devices
(Noyce/Intel)

Meeting Room C

Computer-Aided Testing, Management
& Implementation
(Machi/Bendix Nav.)

FRIDAY P.M.

Meeting Room A

Instrumentation for Hi-Speed
Phenomena
(Longerbeam/LRL / Sternick/EG&G)

Meeting Room B

Computer-Aided Circuit Design
& Testing
(Rohrer/Fairchild & Temes/Ampex)

AUGUST 1969



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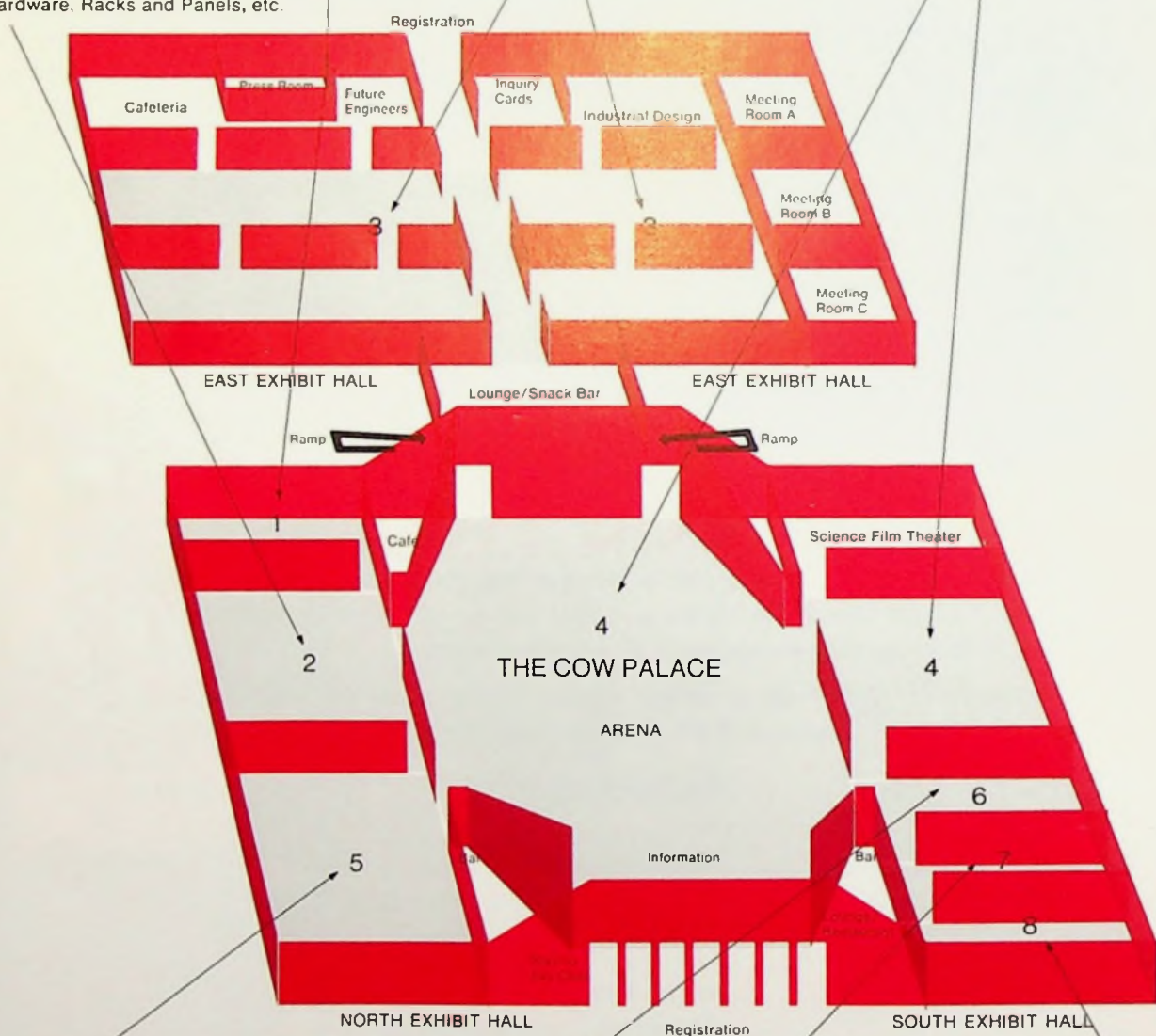
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4) Components and Microelectronics
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Production Engineers

With experience in a variety of engineering assignments in the electronic instrumentation field. Prefer BSEE with a minimum of 2 years' experience in electronic equipment testing. Must have an understanding of digital and analog recording circuitry and testing techniques.

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BSEE or MSEE with a minimum of 2-4 years' direct design experience with Biomedical Instrumentation. Background should include circuitry for ECG amplifiers, cardiac rate, blood pressure and display oscilloscopes, and experience with clinical and research instrumentation systems. Experience with either telemetry or computer interface desirable.

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Production Engineering Supervisor

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Duties will include wide range of exposure in production engineering such as cost reduction programs value engineering in and coordination with design engineers on new

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Senior Process Engineer

Duties will include the development of new processes and assembly techniques; establishment of manufacturing methods and special tools; liaison between design and manufacturing; project, tooling and product cost estimating; and the responsibility for pilot production of new products. BSIE or BSME or equivalent is required with several years' experience in volume electronic production methods and standards.

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