

EDITOR'S PROFILE of this issue

from a historical perspective ...

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

August, 1965:

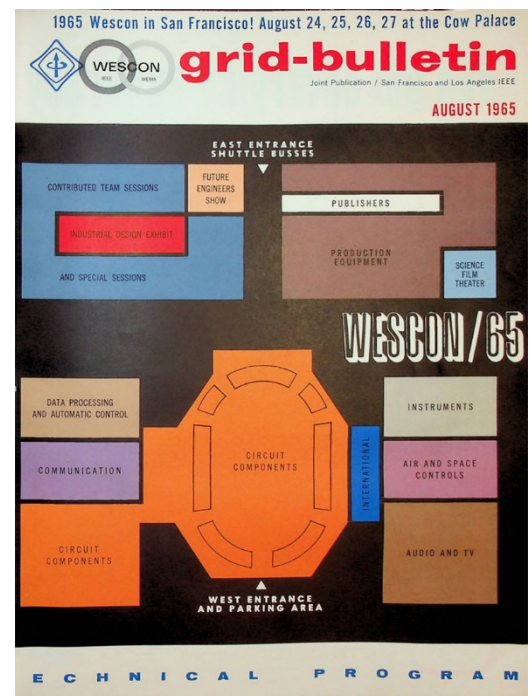
Cover: The exhibits floor diagram for WESCON.

Page 10: Talk 1/1 features James Meindl, who becomes a Stanford professor, then the president of Georgia Tech. He was awarded the 2006 IEEE Medal of Honor "for pioneering contributions to microelectronics, including low power, biomedical, physical limits and on-chip interconnect networks..

Page 12: Paper 8/6 is by Paul Baird of H-P, a reliability expert. After moving to H-P in the Bay area, he was a key person who did the statistical analysis of Japanese quality vs American-supplied semiconductors and sparked a needed upgrade in USA quality. I worked with Paul in the local IEEE Reliability Society chapter for many years.

Page 24: Doug Engelbart, of Stanford Research Institute (SRI), gives a talk (B/3) on text manipulation. He becomes famous later in the decade for his "Mother of all Demos" at the IEEE Fall Joint Computer Conference in S.F. where he linked up remotely to SRI computers in Menlo Park to demonstrate the mouse, WYSIWYG text editing, networking and other leading-edge technologies. They were implemented in the Xerox-PARC Alto computer (I helped bring one "back to life" in 2018) and then Steve Jobs' vision for the Lisa and Macintosh.

Page 28: J C R (Joseph Carl Robnett) Licklider (paper D/1) was at IBM, but moved to BBN, a time-sharing company that built the first Arpanet nodes. He headed up ARPA's project that became the Arpanet, then the Internet, funding a project at Stanford, and worked with Robert Taylor at Xerox-PARC.



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

1965 Wescon in San Francisco! August 24, 25, 26, 27 at the Cow Palace

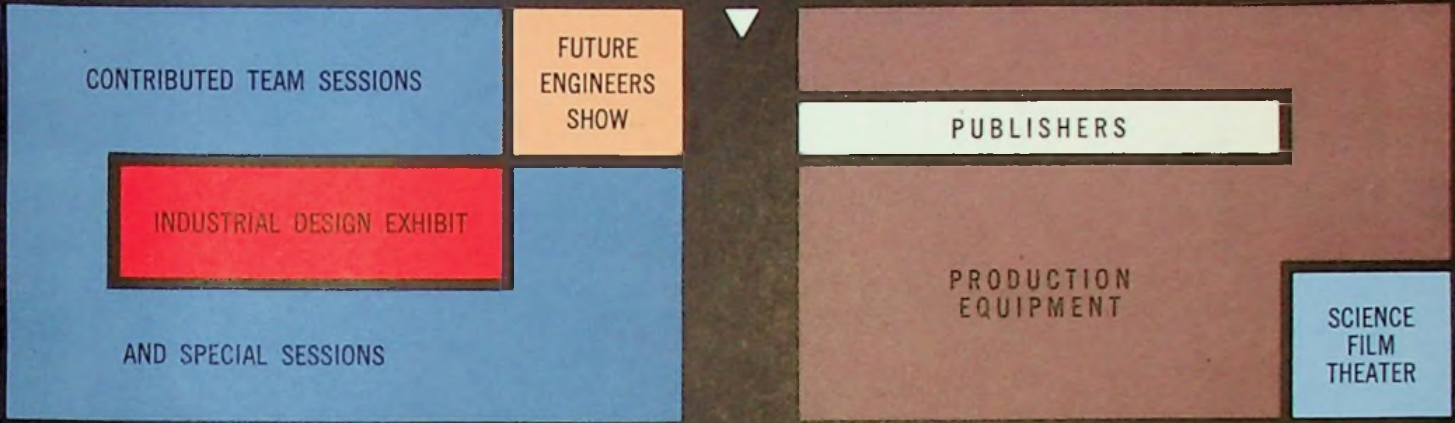


grid-bulletin

Joint Publication / San Francisco and Los Angeles IEEE

AUGUST 1965

**EAST ENTRANCE
SHUTTLE BUSES**



WESCON / 65

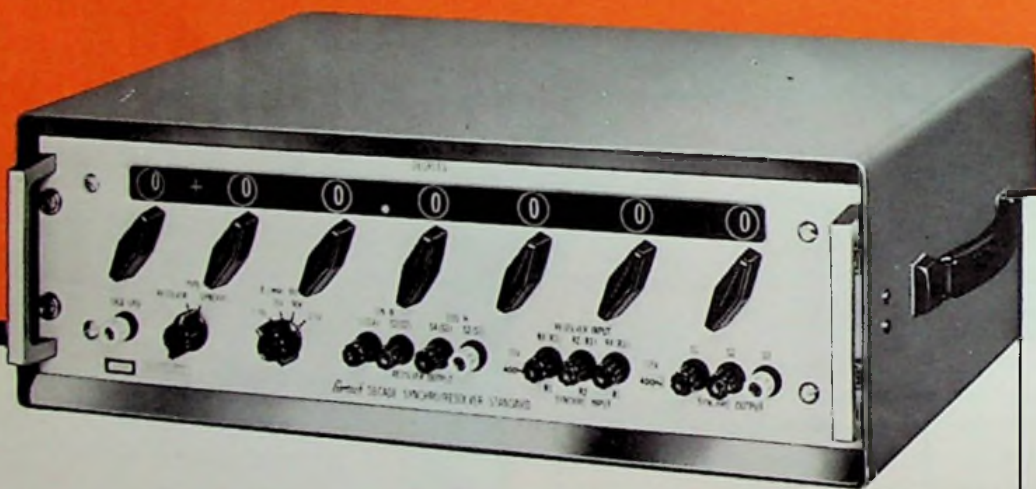


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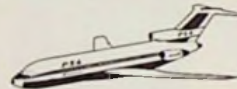
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A record number of jet flights on the world's most-traveled air route means Wescon in San Francisco is only an hour away from Los Angeles!

One-day commuting to Wescon from Southern California was never this easy before—'round-the-clock flights to San Francisco and Oakland and return make it easy and economical to spend a full day at Wescon and still have dinner at home with the family. All five airlines—United, PSA, Western, TWA, and Pacific—are cooperating with special check-in, baggage, and reservation services. Free shuttlebuses pick you up at San Francisco airport and take you to the Cow Palace—and back to the airport to catch your commuter flight home. Plan now to join the August 24-27 Wescon Jet Set on any of the fast flights listed below:

LOS ANGELES TO SAN FRANCISCO

7:00a	PSA	779	2:00	PAL	456
7:10	PSA	643	2:05	PSA	318*
7:15	UAL	500	2:10	PSA	78*
7:30	WAL	70	2:10	PSA	223*
7:30	PAL	406	2:20	PSA	229
7:35	PSA	1B	2:35	PSA	61B*
8:00	PAL	422	2:45	PAL	756
8:15	UAL	502	2:45	UAL	514
8:35	PSA	81B*	3:10	PSA	323*
8:35	TWA	105	3:15	TWA	157
8:45	PSA	819	3:15	PSA	329*
8:55	UAL	504	3:35	PSA	398
8:55	PAL	732	3:40	PSA	359
9:00	WAL	90	3:45	UAL	518
9:40	PSA	933	3:45	PSA	369*
9:40	PSA	909*	4:00	PAL	408
9:45	TWA	860	4:20	PSA	429*
9:50	PSA	38	4:20	PSA	349*
10:15	UAL	506	4:20	PSA	15B*
10:30	WAL	100	4:30	WAL	160
10:35	PSA	35B	4:30	PAL	754
10:40	PSA	143*	4:35	PSA	409
11:15	UAL	508	4:35	PSA	469*
11:35	TWA	95	4:50	PSA	41B
11:35	PSA	119	5:00	PSA	519*
11:40	UAL	51	5:10	PSA	523
11:55	PSA	5B*	5:15	UAL	522
12:00	WAL	120	5:30	TWA	61
12:15p	TWA	59	5:30	WAL	170
12:15	PAL	734	5:45	PSA	559*
12:15	UAL	510	5:50	PSA	553*
12:25	PSA	153*	6:00	PSA	539*
12:30	PSA	129*	6:00	PSA	43B
12:30	PSA	139*	6:15	UAL	524
12:30	WAL	122	6:15	TWA	69
1:00	PSA	249*	6:15	PSA	619
1:20	PSA	37B	6:20	PSA	53B*
1:25	PSA	103*	6:25	PSA	629*
1:30	PSA	239*	6:35	PSA	11B*
1:35	PSA	339*	6:50	PSA	633
1:45	UAL	512	6:50	PSA	653*
1:45	PSA	123	7:00	WAL	190
2:00	WAL	140	7:15	UAL	526

7:15	PSA	709
7:25	PSA	49B*
7:30	PAL	416
7:35	UAL	115
7:50	PSA	45B*
7:55	PSA	65B
8:00	PSA	839*
8:10	TWA	55
8:15	UAL	528
8:15	PSA	859
8:20	PSA	51B*
8:20	PSA	823
8:40	PSA	869*
8:45	PAL	710
8:55	TWA	407
8:55	PSA	67B*
9:00	PAL	758
9:05	PSA	953*
9:15	WAL	530*
9:20	PSA	899*
9:30	PSA	939*
10:10	PSA	69B*
10:15	UAL	532*
10:20	UAL	87
10:30	WAL	220
10:35	PSA	929
10:55	PSA	855*
11:10	PSA	71B*
11:15	PSA	199*
11:20	TWA	87
12:10a	UAL	318
12:15	PSA	299*
12:50	TWA	85
3:10	TWA	15

* Fri., Sat. or Sun. only.
San Diego to San Francisco is serviced by PSA, UAL, WAL, and PAL with 140 weekly flights including 20 nonstop.

SAN FRANCISCO TO LOS ANGELES

6:45a	UAL	501	2:00	PSA	206
7:00	PAL	411	2:00	PSA	286*
7:00	PSA	706	2:00	PSA	214*
7:15	UAL	240	2:00	WAL	141
7:15	TWA	66	2:15	UAL	517
7:30	PSA	726	2:25	PSA	226*
7:30	WAL	71	3:00	TWA	78
7:40	TWA	56	3:00	PSA	306*
7:45	UAL	503	3:00	PAL	453*
8:00	PSA	806*	3:00	PSA	316*
8:00	PAL	771	3:15	TWA	43*
8:20	PSA	814	3:15	UAL	519
8:20	PAL	701	3:15	PSA	14B*
8:20	TWA	24	3:30	PSA	366*
8:45	PSA	2B	3:35	PAL	717
8:45	UAL	505	3:40	PAL	419
9:00	WAL	91	3:45	PSA	388
9:30	TWA	108*	4:00	TWA	88
9:30	TWA	860	4:00	WAL	161
9:45	UAL	507	4:00	PSA	404
9:45	PAL	411*	4:00	PSA	406
10:00	PSA	106	4:00	PSA	62B*
10:00	PSA	82B*	4:05	PAL	459
10:45	UAL	509	4:10	PSA	49B*
10:55	PSA	4B*	4:30	PSA	436*
11:00	PSA	114	4:40	PSA	434*
11:00	PSA	34B	4:45	UAL	523
11:00	WAL	111	4:50	PSA	450
11:15	PSA	126*	5:00	PSA	40B
11:45	UAL	511	5:00	PSA	506*
11:45	PSA	30B*	5:10	PSA	576*
12:00	PSA	116	5:15	PSA	648*
12:00	PSA	216*	5:30	TWA	132
12:00	WAL	121	5:30	PSA	68B*
12:15p	PSA	276*	5:30	PSA	50B*
12:15	PAL	703	5:30	PAL	709
12:40	PSA	145	5:40	UAL	521
1:00	PAL	403	5:40	PSA	544*
1:00	PSA	36B	5:45	PSA	546*
1:00	PSA	124*	5:45	UAL	525
1:05	PSA	32B*	5:55	PSA	42B
1:05	PSA	6B*	6:00	PSA	606
1:15	PSA	566*	6:10	WAL	181
1:15	PSA	144*	6:25	PSA	626
1:15	UAL	515	6:30	PSA	634
1:30	PSA	154	6:45	UAL	527

7:00	WAL	191
7:00	PAL	777
7:00	PSA	696*
7:05	PSA	716*
7:10	PSA	714*
7:15	PSA	44B
7:15	PSA	52B*
7:25	PSA	786*
7:30	PSA	66B*
7:40	PSA	744
7:45	UAL	529
7:50	PSA	72B*
8:00	PAL	433
8:05	PSA	816*
8:05	PSA	804*
8:15	TWA	106
8:15	PSA	836
8:35	PSA	54B*
8:45	UAL	531*
8:55	PSA	46B
9:00	WAL	211
9:00	TWA	62
9:05	PSA	74B*
9:20	PSA	906*
9:30	PSA	934*
9:30	UAL	58
9:35	UAL	78
9:40	PSA	916*
9:45	TWA	871*
9:45	UAL	533*
10:00	WAL	221*
10:00	PSA	166
10:00	TWA	74
10:05	PSA	76B*
10:50	PSA	976
10:50	PSA	134*
11:05	PSA	176*
11:15	TWA	72
12:20a	PSA	80B*
3:40	UAL	291

Schedules subject to change; please check with the airline or your travel agent.



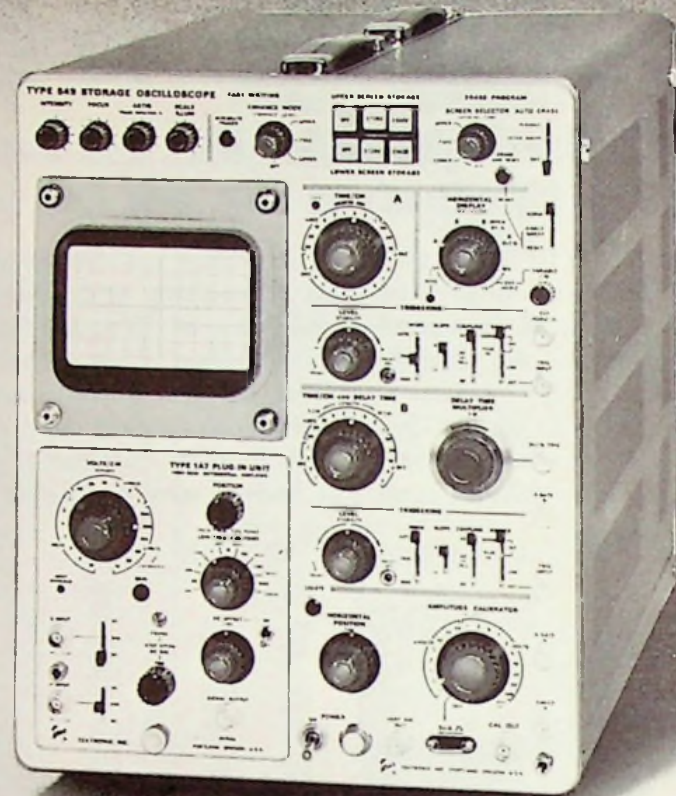
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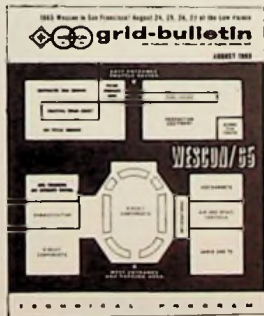
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cover

Wescon's unique departmentalization of exhibits for the convenience of its 35,000 expected visitors, a first in industrial shows, was unveiled at last year's event and will be seen at the Cow Palace for the first time this year.

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grid-bulletin—5



*When this headline was current news . . .
 digital recording tapes
 had a packing rate of 200 bpi.
 Today, 800 bpi is standard;
 improvement in tape and base is the reason.*

In analyzing the sensational development of EDP over the past decade, most of us naturally talk in terms of improvement of hardware. But when you stop to examine them, the contributions made by tape manufacturers have been quite remarkable.

The tape of today looks like the tape of 1954 . . . but think of the differences: improved oxide coatings to increase total capacity, reduce fluctuations in performance; much stronger binders to reduce dropouts and flaking, lengthen tape life; smoother surfaces to give longer, error-free wear; thinner coatings and better production controls to guarantee reel-to-reel uniformity.

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WESCON QUICK-CHECK LIST

EVENTS — TIME — PLACES

ADDITIONAL INFORMATION: Wescon Information Centers at the airport, Cow Palace and in the major hotels should be checked for last minute information on events. The centers may be reached by calling the Fairmont (DO 2-8800), the Hilton (YU 6-1080, YU 6-0991), or the Cow Palace (JU 4-2480).

Monday, August 23

8:00 AM to 5:30 PM	Distributor-Manufacturer-Representative Conference, Jack Tar Hotel
12:00 Noon to 5:00 PM	WEMA Board of Directors Meeting, Walnut Suite, Hilton Hotel
9:00 AM to 5:00 PM	IEEE Sections Committee Meeting, Diablo Suite, Hilton Hotel
9:00 AM to 5:00 PM	EDN Packaging Symposium, Continental Ballroom 6, Hilton Hotel
9:00 AM to 5:00 PM	JEDEC J-T 13.2 Sub-Committee on Klystrons, State Room, Fairmont Hotel
9:30 AM to 5:30 PM	IEEE TAB OPCOM, Lassen Suite, Hilton Hotel
9:30 AM to 5:00 PM	JEDEC Semiconductor Device Council, Frontier Room, Fairmont Hotel
12:00 Noon to 2:00 PM	EDN Luncheon, Continental Ballroom 4 & 5, Hilton Hotel
2:00 PM to 5:00 PM	Electron Devices Symposium, Terrace Room, Fairmont Hotel
5:00 PM	IEEE Group on Component Parts & Materials Meeting, Diablo Suite, Hilton Hotel
5:00 PM to 7:00 PM	EDN Symposium Discussion, Teakwood Suite, Hilton Hotel
6:00 PM to 9:00 PM	IEEE Intersociety Relations Committee Meeting, Lassen Suite, Hilton Hotel
7:00 PM to 10:30 PM	IEEE TAB Forum, South Continental Parlors 1, 2, & 3, Hilton Hotel

Tuesday, August 24

9:00 AM to 5:00 PM	Women's Hospitality Room, Rosewood Suite, Hilton Hotel
9:00 AM to 5:00 PM	IEEE Intersociety Relations, Lassen Suite, Hilton Hotel
9:00 AM to 5:00 PM	EDN Symposium, Ballrooms 1, 2, 3, 4, & 5, Hilton Hotel
9:00 AM to 5:00 PM	Electron Devices Symposium, Terrace Room, Fairmont Hotel
9:00 AM to 11:00 PM	IEEE Executive Committee Task Force on Districts Meeting, Diablo Suite, Hilton Hotel
9:00 AM to 5:00 PM	JEDEC J-T 13.2 Sub-Committee on Klystrons, State Room, Fairmont Hotel
9:30 AM to 5:30 PM	IEEE TAB, Toyon Suite, Hilton Hotel
9:30 AM to 6:30 PM	WESCON Exhibits, Cow Palace
9:30 AM to 6:30 PM	Future Engineers Show, Cow Palace
9:30 AM to 6:30 PM	Industrial Design Exhibit, Cow Palace
9:30 AM to 5:00 PM	JEDEC JS-10 Committee on Mechanical Standardization, International Room, Fairmont Hotel
10:00 AM to 12:30 PM	Technical Session No. 1, Room A, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 2, Room B, Cow Palace
10:00 AM to 1:30 PM	Technical Session No. 3, Room D, Cow Palace
10:00 AM to 1:00 PM	Technical Session No. 4, Room C, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 5, Room E, Cow Palace
10:00 AM to 11:22 AM	Film Session No. 1, Science Film Theater, Cow Palace
11:25 AM to 12:52 PM	Film Session No. 2, Science Film Theater, Cow Palace
12:00 Noon	EDN Luncheon, Continental Ballrooms 4 & 5, Hilton Hotel
12:00 Noon to 2:30 PM	Eta Kappa Nu Luncheon, Continental Ballrooms 7, 8, & 9, Hilton Hotel
1:55 PM to 3:15 PM	Film Session No. 3, Science Film Theater, Cow Palace
2:00 PM to 4:30 PM	Technical Session A, Room C, Cow Palace
3:20 PM to 5:15 PM	Film Session No. 4, Science Film Theater, Cow Palace
6:30 PM to 8:30 PM	Cocktail Party, Continental Ballroom, Hilton Hotel

Wednesday, August 25

8:30 AM to 6:00 PM	IEEE Board of Directors Meeting, Walnut Room, Hilton Hotel
9:00 AM to 5:00 PM	Women's Hospitality Room, Rosewood Suite, Hilton Hotel
9:00 AM to 4:00 PM	IEEE Region 6 Committee Meeting, Shasta Suite, Hilton Hotel
9:30 AM to 1:30 PM	SLAC Technical Tour; buses depart from east entrance of Cow Palace
9:00 AM to 12:00 Noon	IEEE New Technical Activities Advisory Committee Meeting, Tamalpais Room, Cow Palace
9:30 AM to 9:30 PM	WESCON Exhibits, Cow Palace
9:30 AM to 9:30 PM	Industrial Design Exhibit, Cow Palace
10:00 AM to 1:30 PM	Technical Session No. 6, Room A, Cow Palace
10:00 AM to 1:30 PM	Technical Session No. 7, Room B, Cow Palace
10:00 AM to 1:30 PM	Technical Session No. 8, Room E, Cow Palace
10:00 AM to 11:30 AM	Technical Session No. 9, Room C, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 10, Room D, Cow Palace
10:00 AM to 11:22 AM	Film Session No. 1, Science Film Theater, Cow Palace
11:25 AM to 12:52 PM	Film Session No. 2, Science Film Theater, Cow Palace
12:00 Noon	WEMA Annual Meeting and Luncheon, Ballrooms 4 & 5, Hilton Hotel
12:00 Noon to 2:00 PM	IEEE Board of Directors Luncheon, Toyon Suite, Hilton Hotel
12:00 Noon to 9:30 PM	Future Engineers Show, Cow Palace
1:00 PM to 3:00 PM	FES Symposium, Room D, Cow Palace
1:55 PM to 3:15 PM	Film Session No. 3, Science Film Theater, Cow Palace
2:00 PM to 4:00 PM	Women's Activities Flower Arranging Demonstration, Continental Ballroom 6, Hilton Hotel
2:00 PM to 5:00 PM	IEEE New TAB Advisory Committee Meeting, Tamalpais Suite, Hilton Hotel
2:00 PM to 4:30 PM	Technical Session B, Room C, Cow Palace
3:20 PM to 5:15 PM	Film Session No. 4, Science Film Theater, Cow Palace
3:00 PM	Exhibitor's Meeting, Room E, Cow Palace
6:00 PM to 10:00 PM	IEEE Board of Directors Dinner Meeting, Toyon Suite, Hilton Hotel
7:00 PM	FES Evening Tour, Hyatt Music Theater

Thursday, August 26

9:00 AM to 5:00 PM	Women's Hospitality Room, Rosewood Suite, Hilton Hotel
9:00 AM to 6:00 PM	IEEE Board of Directors Meeting, Walnut Suite, Hilton Hotel
9:00 AM to 12:00 Noon	IEEE PMP Sub-Committee on Electronic Power Transformer Standard, Diablo Suite, Hilton Hotel
9:30 AM to 9:30 PM	WESCON Exhibits, Cow Palace
9:30 AM to 9:30 PM	Future Engineers Show, Cow Palace
9:30 AM to 9:30 PM	Industrial Design Exhibit, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 11, Room C, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 12, Room A, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 13, Room B, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 14, Room E, Cow Palace
10:00 AM to 12:30 PM	Technical Session No. 15, Room D, Cow Palace
10:00 AM to 11:22 AM	Film Session No. 1, Science Film Theater, Cow Palace
11:25 AM to 12:52 PM	Film Session No. 2, Science Film Theater, Cow Palace
11:30 AM to 2:00 PM	Women's Fashion Show and Luncheon, Peacock Room, Mark Hopkins Hotel
12:00 Noon to 2:00 PM	IEEE Board of Directors Luncheon, Teakwood Suite, Hilton Hotel
12:00 Noon to 5:00 PM	IEEE Engineering Management ADCOM Meeting, Shasta Suite, Hilton Hotel
12:15 PM to 2:15 PM	FES Awards Luncheon, NCO Club, Presidio

(Continued on page 8)

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SYNCHRONOUS MOTORS

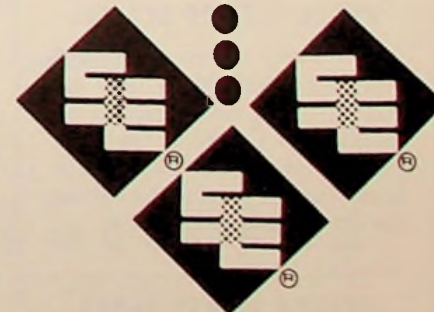
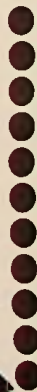
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welcome to WESCON/65

Suddenly it's August, and Wescon explodes on the scene with its excitement and provocative personality. Never willing to trod the old path, this fabulous child of WEMA and the IEEE can be counted upon constantly to experiment and innovate in its quest to improve continually its past successes in the tradition of the dynamic profession and industry which are its heritage in the West.

This year is no exception to the pattern, as even a brief glance at the program will disclose. An "all-new" technical format with its five special invited sessions and its twenty "team" project engineering sessions promises an unusual and technically profitable opportunity to the IEEE member.

Add to this the latest in engineering and scientific motion pictures, a visit to the Stanford 2-mile Linear Accelerator, a product exhibit par excellence, Future Engineers Show, Industrial Design Awards Exhibit, women's program, banquet, and cocktail party, and the result is a professional and industrial extravaganza which Region Six is proud to co-sponsor and indebted to its San Francisco Section for their involvement as this year's representatives.

B. S. Angwin
Region 6 Director



Angwin



Bertolet



Heflin



Melchor

Wescon has traditionally been known as a forward-looking convention for the exchange of ideas in both our industry and profession. This year's program is carrying on in that same tradition, as exemplified by an all-new technical program consisting of five special invited sessions covering a wide interest range, and 20 contributed sessions organized by specialists in their respective fields.

The past few years have seen many changes take place in our fast-moving industry, and it is a challenge to each and every one of us to look ahead to tomorrow by studying well the information we have available to us today. Wescon can be an important link in this endeavor, but it is up to each of us as professionals to determine the extent of our participation.

There are many activities at Wescon, and the Los Angeles District of the IEEE is proud and pleased to join with the San Francisco Section, with the Sixth Region, and with WEMA, in cordially inviting each and every one of you to visit and participate in Wescon 1965 at San Francisco.

Edward C. Bertolet
Los Angeles District Chairman
1965-66

A most cordial welcome to Wescon/65!

WEMA shares with the IEEE, our partner in Wescon, the hope that you will find this year's show and convention the most enlightening and entertaining ever.

We are proud of this, one of the world's major technical meetings, for it is an outgrowth of a small trade exposition launched by WEMA 21 years ago. Through our representatives on the Wescon board of directors and committees, we have helped shape the course of this great event.

Wescon has earned its high stature over the years by consistently offering new and better ways for technical companies to improve their own effectiveness. Many seeds have been planted at Wescon, later to bloom into the technical initiative that is the mark of the industry's leaders.

The electronics industry of the West is pleased that you are here. We urge you to take full advantage of all that will be offered this week.

William H. Heflin
President,
Western Electronic Manufacturers Association

Welcome to Wescon and to San Francisco in the Year of the Snake.

Wescon's new task force technical format and concerted efforts by Wescon management to attract parallel national technical group meetings are indicative of strong emphasis on technical communications. Similarly, the excellent show that you'll see exemplifies the fruits of technical efforts throughout our profession.

We sincerely hope that Wescon, co-sponsored by Region 6, IEEE and WEMA, gives you new perspective and appreciation for our industry's ability to translate yesterday's ideas into today's products for benefit of mankind.

The San Francisco Section of IEEE is proud of its members' contributions to this annual event.

Jack L. Melchor
San Francisco Section Chairman
1965-66

wescon roster

WHERE THEY'RE STAYING

A running roster of Wescon registrants and where they are staying will be maintained in the Information Center at the West entrance of the Cow Palace. The booth may be reached by calling the Cow Palace, JU 4-2480.

social note

WESCON DINNER DANCE

The annual Wescon dinner-dance will be held in the grand ballroom of the San Francisco Hilton, beginning at 8 p.m. on Thursday, August 26, with dinner and dancing to the orchestra of Walt Tolleson for \$7.50 per person.

MORE WESCON QUICK-CHECK LIST

1:55 PM to 3:15 PM
2:00 PM to 4:30 PM
3:20 PM to 5:15 PM
8:00 PM

Film Session No. 3, Science Film Theater, Cow Palace
Technical Session C, Room C, Cow Palace
Film Session No. 4, Science Film Theater, Cow Palace
WESCON Dinner-Dance, Continental Ballroom, Hilton Hotel

Friday, August 27

9:00 AM to 5:00 PM
9:30 AM to 6:30 PM
9:30 AM to 6:30 PM
9:30 AM to 6:30 PM
10:00 AM to 10:45 AM

Women's Hospitality Room, Rosewood Suite, Hilton Hotel
WESCON Exhibits, Cow Palace
Future Engineers Show, Cow Palace
Industrial Design Exhibit, Cow Palace
Women's Continental Breakfast (Remarks by Dr. John V. N. Granger), Rosewood Suite, Hilton Hotel

10:00 AM to 12:00 Noon
10:00 AM to 12:30 PM
10:00 AM to 1:30 PM
10:00 AM to 12:30 PM
10:00 AM to 12:30 PM
10:00 AM to 11:22 AM
10:45 AM
11:25 AM to 12:52 PM
12:00 Noon to 2:00 PM
1:55 PM to 3:15 PM
2:00 PM to 4:30 PM
3:20 PM to 5:15 PM

Technical Session No. 16A, Room A, Cow Palace
Technical Session No. 17, Room B, Cow Palace
Technical Session No. 18, Room D, Cow Palace
Technical Session No. 19, Room C, Cow Palace
Technical Session No. 20, Room E, Cow Palace
Film Session No. 1, Science Film Theater, Cow Palace
Women's Tour of WESCON, Cow Palace
Film Session No. 2, Science Film Theater, Cow Palace
Technical Session No. 16B, Room A, Cow Palace
Film Session No. 3, Science Film Theater, Cow Palace
Technical Session D, Room C, Cow Palace
Film Session No. 4, Science Film Theater, Cow Palace

YOUNGSTERS: Main exhibit areas—No one under 10 admitted. Youngsters 10-18 admitted during entire show if accompanied by registered adult and for \$1 fee.

Future Engineers Show—No age restriction if youngster accompanied by registered adult.

LADIES: \$1 registration fee at Cow Palace.

VARIAN ASSOCIATES

The growth of world-wide demand for Varian products in commercial, military, and industrial markets is providing new career opportunities for engineers. The following positions are among those now available:

LINAC ENGINEERS

Experienced in design of high-power pulse modulators, power distribution systems, or solid-state circuits. Background in high-power microwave system design in the megawatt range helpful.

APPLICATION ENGINEERS

Interesting positions in providing support to marketing functions in the chemical, electronic, and vacuum fields. Duties will include new equipment evaluation, analysis of customer requirements and samples, and direct support of field sales activities.

DESIGN ENGINEERS

B.S. and M.S. levels in circuits and systems. Transistors, servo, RF, or microwave experience desired. Background or interest in physics or chemistry helpful.

TUBE ENGINEERS

Experience in design, development, or manufacture of klystrons BWO or TWT's. Should be familiar with microwave techniques and vacuum tube engineering. Experience in systems and evaluation helpful.

MANUFACTURING ENGINEERS

To handle transfer of products from development into manufacturing. Prefer strong background in the electronics or instrumentation field. Experience in production processes and methods necessary.

SERVICE ENGINEERS

Must have strong electronics background in solving service problems on complex electronics equipment, including amplifiers and information and secondary function circuits. To assist in preparing service and maintenance sections of instruction manuals.

Many other technical and professional openings also exist and all inquiries will be welcomed. Successful candidates for these positions will work with technical staff members noted in the industry. Varian is one of the leading employers in Northern California, noted for its unique living, cultural, and educational environment.

For consideration of your qualifications, submit a resumé in confidence to:

Technical Employment Manager



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Last-minute walk-through of Cow Palace facilities is undertaken by Wescon executives Meyer Leifer (left) and John A. Chartz. Show and convention will use main arena plus four exhibit halls. All technical and film sessions will be held in West exhibit hall. Leifer, Wescon board chairman, is vice president of Energy Systems Inc. Chartz, chairman of the Wescon executive committee, is executive vice president of Dalmo Victor Co.

wescon background 400 ON COMMITTEES

Nearly 400 volunteer committee members, primarily members of the San Francisco Section of IEEE and the San Francisco Council of WEMA, provide the vital manpower for Wescon/65.

More than 120 committeemen and women have worked on the event since January. The committees will be supplemented by about 275 more volunteers for the event.

wema luncheon

LOCKHEED'S HAUGHTON ON DIVERSIFICATION

Daniel J. Haughton, president of Lockheed Aircraft Corp., will be the guest speaker at the annual luncheon meeting of the Western Electronic Manufacturers Association.

Date of the luncheon is August 25. The annual event is scheduled for the Continental ballroom of the San Francisco Hilton. More than 400 people, including presidents and top executives of the electronics industry, are expected to attend the meeting.

Haughton will explore the new areas of opportunity for the electronics and aerospace industry, drawing on Lockheed's diversification studies.



David Ross, left, and V. N. Zachariah discuss plans for the Distributor-Manufacturer-Representative Conference. More than 500 participants are expected to take part in all-day marketing confab.

Contributed sessions

SESSION 1

LOW-POWER INTEGRATED CIRCUITS

Tuesday, August 24
10 A.M.-12:30 P.M.

Room A, Convention Hall, Cow Palace

Organized by Westinghouse Electric Corp.

Session Director: A. Burzio
University of Santa Clara

Session Chairman: H. C. Lin
Westinghouse Electric Corp.
Baltimore

1/1 STATIC AND DYNAMIC PERFORMANCE OF MICROPOWER TRANSISTOR LOGIC CIRCUITS

Lawrence F. Wagner and
James D. Meindl
U. S. Army Electronics
Command
Fort Monmouth, New Jersey

1/2 INTEGRATED HIGH-SPEED, LOW-POWER COMPLEMENTARY BIPOLAR TRANSISTOR NAND GATE

R. Y. Hung and H. C. Lin
Westinghouse Electric Corp.
Elkridge, Maryland

1/3 MOS COMPLEMENTARY TRANSISTOR LOGIC

M. M. Mitchell and
R. W. Ahrons
Radio Corporation of
America
Somerville, New Jersey

1/4 A SILICON MONOLITHIC MICROPOWER COMPLEMENTARY FLIP-FLOP

G. Y. Chang
Westinghouse Electric Corp.
Elkridge, Maryland

1/5 A MONOLITHIC SILICON CLASS B HEARING AID AMPLIFIER

M. J. Hellstrom and
J. J. Hsieh
Westinghouse Electric Corp.
Elkridge, Maryland

SESSION 2

AN ADVANCE IN THE DEVELOPMENT OF AIRBORNE DIGITAL COMPUTERS

Tuesday, August 24, 10 A.M.-12:30 P.M.
Room B, Convention Hall, Cow Palace

Organized by Honeywell, Inc.
Session Director: John Newman
University of Santa Clara
Session Chairman: C. E. Collum
Honeywell Inc.
St. Petersburg, Florida

2/1 CONSIDERATIONS IN THE DESIGN OF AIRBORNE DIGITAL COMPUTERS

C. E. Collum
Honeywell, Inc.

2/2 FUNCTIONAL DESIGN OF A HIGH-SPEED AIRBORNE PROCESSOR

R. N. Carpenter
Honeywell, Inc.

2/3 A FAMILY OF HLTTL CIRCUITS FOR USE IN HIGH-SPEED MILITARIZED COMPUTERS

J. W. Martin
Texas Instruments Inc.
Dallas, Texas

2/4 THE MICROBIAX MEMORY ELEMENT

R. W. Beveridge
Raytheon Computer
Santa Ana, California

2/5 AN NDRO AIRBORNE MEMORY SYSTEM UTILIZING THE MICROBIAX ELEMENT

M. G. Petersen
Honeywell Inc.

2/6 PHYSICAL DESIGN OF AN INTEGRATED-CIRCUIT AIRBORNE DIGITAL COMPUTER

W. O. Martin and
E. Steltzer
Honeywell Inc.

2/7 THERMAL CONSIDERATIONS FOR AN ADVANCED AIRBORNE DIGITAL COMPUTER

A. D. Kraus and
R. K. Smith
Honeywell Inc.

2/8 SOFTWARE DEVELOPMENTS FOR AIRBORNE COMPUTER APPLICATIONS

T. R. Jefferies and
C. T. Brown
Honeywell Inc.

SESSION 3

PORTABLE AND STORAGE OSCILLOSCOPES

Tuesday, August 24, 10 A.M.-1:30 P.M.
Room D, Convention Hall, Cow Palace

Organized by Tektronix, Inc., Beaverton, Oregon

Session Director: Michael O'Flynn
San Jose State College

Session Chairman: Orvin Olson
Tektronix, Inc.

3/1 PORTABLE OSCILLOSCOPE DESIGN

Oliver Dalton
Tektronix, Inc.

3/2 VERTICAL AMPLIFIER SYSTEMS OF TYPE 422 AND 453 PORTABLE OSCILLOSCOPES

R. Eugene Andrews
Tektronix, Inc.

3/3 PRINCIPLES OF SIMPLIFIED DIRECT-VIEWING STORAGE TUBES

Orvin Olson
Tektronix, Inc.

3/4 SIMPLIFIED STORAGE TUBE OPERATING MODES AND DESIGN CONSIDERATIONS

Pierre Morinaud
Tektronix, Inc.

3/5 DESIGN CONSIDERATIONS OF THE TYPE 549 STORAGE OSCILLOSCOPE

Russell V. Fillingner
Tektronix, Inc.

3/6 APPLICATIONS

Geoffrey A. Gass
Tektronix, Inc.

MARINER/MARS SCIENCE SUBSYSTEM

Tuesday, August 24, 10 A.M.-1 P.M.
Room C, Convention Hall, Cow Palace
Organized by Jet Propulsion Laboratory
Pasadena, California

Session Director: R. B. Yarbrough
University of Santa Clara
Session Chairman: Frank L. Schutz
Jet Propulsion Laboratory

4/1 INTRODUCTION: THE MISSION; THE SPACECRAFT

Frank L. Schutz
Jet Propulsion Laboratory

4/2 SCIENCE SUBSYSTEM

W. G. Fawcett
Jet Propulsion Laboratory

4/3 COSMIC RAY TELESCOPE

J. A. Simpson and
J. J. O'Gallagher
University of Chicago

4/4 COSMIC DUST DETECTORS

D. K. Schofield
Jet Propulsion Laboratory

4/5 TRAPPED RADIATION DETECTORS

D. K. Schofield
Jet Propulsion Laboratory
D. Chinburg
State University of Iowa
D. Enemark
State University of Iowa

4/6 IONIZATION CHAMBER

L. G. Despain and
H. A. Andersen
Jet Propulsion Laboratory

4/7 PLASMA PROBE

R. A. Graham
Jet Propulsion Laboratory

4/8 MAGNETOMETER

Donald D. Norris,
James S. Bunn
Jet Propulsion Laboratory
James L. Lawrence
Analog Technology Corp.

4/9 TELEVISION SYSTEM

J. Denton Allen and
L. Malling
Jet Propulsion Laboratory

4/10 DATA AUTOMATION SYSTEM

W. J. Schneider and
D. L. Nay
Jet Propulsion Laboratory

4/11 PLANETARY SCAN SYSTEM

R. Y. Wong
Jet Propulsion Laboratory

4/12 SCIENCE DATA PROCESSING

Stephen Z. Gunter and
M. J. Sander
Jet Propulsion Laboratory

BRUSHLESS DC MOTORS

Tuesday, August 24, 10 A.M.-12:30 P.M.
Room E, Convention Hall, Cow Palace
Organized by Sperry Farragut Co., Bristol, Tenn.

Session Director: Lincoln D. Jones
San Jose State College
Session Chairman: R. D. Kincer
Sperry Farragut

5/1 PRINCIPLES OF BRUSHLESS DC MOTOR OPERATION

R. D. Kincer and
R. G. Rakes
Sperry Farragut

5/2 MODIFICATIONS OF BASIC DRIVE MOTORS IN APPLICATIONS

R. D. Kincer and
B. F. DeWitt
Sperry Farragut

5/3 CONTROL OF BRUSHLESS DC TORQUER-REACTION WHEEL

Philip A. Studer (Part A)
NASA Goddard Space Flight
Center
Greenbelt, Maryland

5/4

W. M. Casaday (Part B)
Sperry Farragut

FIELD EFFECT TRANSISTORS

Wednesday, August 25, 10 A.M.-1:30 P.M.
Room A, West Hall, Cow Palace

Authors from two engineering teams will discuss FET characteristics, design of FET circuits and patterns of performance, and recent developments in complex metal-oxide-silicon FET and their application to electronic systems.
Session Chairman:

R. L. Pritchard
Stanford University

6/1 FIELD EFFECT TRANSISTOR APPLICATIONS

Dean C. Bailey
Union Carbide Electronics
Mountain View, California

6/2 FIELD EFFECT DEVICE RELIABILITY

Richard C. McCoy
Quality Assurance Manager
Union Carbide Electronics
Mountain View, California

6/3 USE OF MOS TECHNOLOGY IN THE MANUFACTURE OF MOS CIRCUIT FUNCTIONS

D. E. Farina
General Micro-Electronics
Inc.
Santa Clara, California

6/4 USE OF MOS COMPLEX CIRCUIT FUNCTIONS IN ELECTRONIC EQUIPMENT

L. E. Banghart
General Micro-Electronics
Inc.
Santa Clara, California

SIGNIFICANT ELECTRONIC APPLICATIONS AND EXPERIMENTAL RESULTS FROM PROJECT ECHO

Wednesday, August 25, 10 A.M.-1:30 P.M.
Room B, West Hall, Cow Palace
Session organized by NASA Goddard Space Flight Center

Session Director: Glenn H. Keitel
San Jose State College
Session Chairman: H. L. Eaker
NASA/Goddard

7/1 PROJECT OBJECTIVES AND EXPERIMENT PLANS

H. L. Eaker
Goddard Space Flight Center
Greenbelt, Maryland

7/2 FULL SCALE GROUND TESTS OF ECHO II PROTOTYPE SPHERES

James P. Talentino
Goddard Space Flight Center

7/3 INSTRUMENTATION OF ECHO II THROUGH TV TECHNIQUES

John Yagelowich
Goddard Space Flight Center

(more)

DIRECTOR ANGWIN REVIEWS IEEE YEAR

The past year has been one of great action and adjustment within the IEEE. Membership in all grades except student has shown an increase. The headquarters functions have been totally consolidated in the United Engineering Center, and the new computer has been installed and partially programmed to process the tremendous volume of data necessary to accommodate the business functions of the world's largest technical society.

The editorial programs of the institute are now pretty well merged and stabilized with some major additions, removals, and consolidations of individual publications. Each publication is now growing in quality and effectiveness as the polishing process proceeds.

The Internal Revenue Service, some time ago, expressed certain disturbing opinions regarding the taxable position of IEEE's activities. These have been carefully studied, and appropriate and vigorous action has been and will be taken.

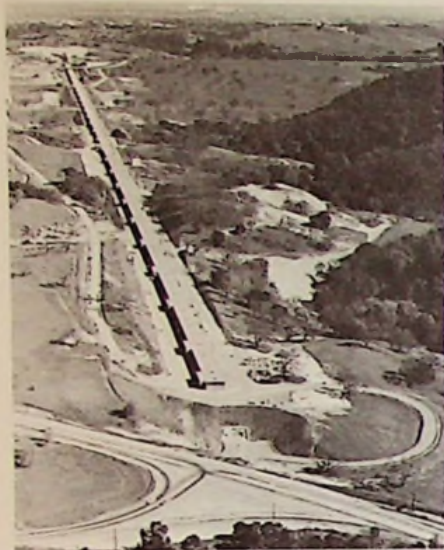
Most of these developments have been covered in considerable detail in the June issue of the Spectrum. I urge every member to carefully read that issue, in particular.

The most complex, and therefore last, merger problem to be resolved by the IEEE has been the blending of the technical activities of the AIEE and IRE. This has finally been accomplished with the formation of TAB, the Technical Activities Board. At last, these activities are truly consolidated and centralized, based upon the groups, with accommodation for necessary general committees, including the Committee on IEEE Standards. We are now seeing a healthful and logical consolidation of several groups with overlapping interests. When completed, the IEEE member should have an even greater opportunity to participate in and benefit from a more highly concentrated choice of activities in his fields of specialized interest with far less dispersion of these activities through a multiplicity of concurrent and competing meetings.

The IEEE is truly an organization of which its members can be proud. Its value to the individual is now proportional to the extent of his participation. How about you?

B. S. ANGWIN
REGION 6 DIRECTOR

Wescon visitors should visit the Future Engineers Show to encourage these bright, promising young engineers.



Two-mile-long Stanford Linear Accelerator will be scene of a Wescon technical tour on August 25. SLAC team will provide full briefing on the accelerator, conduct tour of completed portions.

concurrent symposium
ELECTRON DEVICES

The IEEE Group on Electron Devices will hold a two-day, three-session symposium August 23 and 24 at the Fairmont Hotel.

GED responded to an invitation to IEEE Groups by Wescon's directors to present a program concurrent with Wescon week in San Francisco. The result is a schedule of 13 papers, organized into an electron devices symposium. GED sponsors anticipate a registration of 500 for the event.

concurrent symposium
ELECTRONIC CIRCUIT PACKAGING

The Sixth International Electronic Circuit Packaging Symposium, being presented at the San Francisco Hilton concurrent with Wescon, has its own special format, its own point-of-view, and its own long record of high-quality programming.

The symposium will mount five technical sessions in two days, made up of 21 technical presentations. All are scheduled for the ballrooms of the Hilton on Monday and Tuesday, August 23 and 24.



Wescon executive committee, left to right: John S. McCullough, Philip Gundy, John Chartz, Don Larson, Mike Leifer.

7/4 APPLICATION OF A BEACON TELEMETRY SYSTEM FOR MEASURING ORBITAL PERFORMANCE OF THE ECHO II SATELLITE

N. Martin and
Harold Moriuchi
Goddard Space Flight Center

7/5 RESULTS OF THE COMMUNICATION EXPERIMENTS CONDUCTED WITH THE ECHO II SATELLITE

W. C. Nyberg
Goddard Space Flight Center

7/6 THE NEED FOR A CALIBRATION SATELLITE

H. L. Eaker
Goddard Space Flight Center
Greenbelt, Maryland

7/7 SUMMARY OF THE OVERALL RESULTS OF THE ECHO PROJECT

H. L. Eaker
Goddard Space Flight Center
Greenbelt, Maryland

SESSION 8

TIME DOMAIN REFLECTOMETRY AND VOLTAGE MEASUREMENTS —DC TO MICROWAVE

Wednesday, August 25, 10-A.M.-1:30 P.M.

Room E, West Hall, Cow Palace

Organized by Hewlett-Packard Co.

Session Director: J. D. Bruce
University of Santa Clara

Session Chairmen: Darwin Howard
Hewlett-Packard
Colorado Springs, Colorado
Marco R. Negrete
Hewlett-Packard
Loveland, Colorado

8/1 TRANSMISSION LINE PULSE REFLECTOMETRY

Lawrence S. Kreyer
Edgerton, Germeshausen
& Grier
Las Vegas, Nevada

8/2 TIME DOMAIN REFLECTOMETRY AS A DESIGN TOOL

Carl Sontheimer
Anzac Electronics
Norwalk, Connecticut

8/3 MECHANICAL SCALING ENHANCES TIME DOMAIN REFLECTOMETRY USE

Howard Poulter
Hewlett-Packard Co.
Palo Alto, California

8/4 COAXIAL LINE STANDARDS FOR MEASUREMENT OF REFLECTIONS WITH A TIME DOMAIN REFLECTOMETER SYSTEM

J. E. Cruz and
R. L. Brooke
National Bureau of
Standards
Boulder, Colorado

8/5 DC VOLTMETERS — SPECIFICATION, TRACEABILITY, VERIFICATION

Donald F. Schultz
Hewlett-Packard Co.
Loveland, Colorado

8/6 EXTRANEOUS NOISE AND DC VOLTAGE MEASUREMENTS

Paul G. Baird
Hewlett-Packard Co.
Loveland, Colorado

8/7 THE EFFECTS OF DISTORTION ON AC VOLTMETERS

Marco R. Negrete
Hewlett-Packard Co.
Loveland, Colorado

8/8 VOLTMETER CALIBRATION TO 1 GHZ

M. C. Selby, W. J. Blank,
and R. P. Chariton
National Bureau of
Standards
Boulder, Colorado

SESSION 9

THE NORAD STORY —THE AEROSPACE DEFENSE OF THE NORTH AMERICAN CONTINENT

Tuesday, August 24, 10-11:30 A.M.

Room B, Convention Hall, Cow Palace

Session Director: R. E. Humphrey,
University of California
Berkeley, Calif.

Session Chairman: Major A. H. Davis, Jr. USAF

PART I: THE MISSION OF NORAD

Flight Lieutenant L. G. Jenks
Royal Canadian Air Force

PART II: CURRENT AEROSPACE DEFENSE OPERATIONS

Major H. A. Davis, Jr.
United States Air Force

PART III: THE FUTURE OF AEROSPACE DEFENSE

Lt. Commander
N. H. Scawthorn, U. S. Navy

SESSION 10

ELECTRONIC PACKAGING IN THE PERSHING WEAPON SYSTEM

Wednesday, August 25, 10 A.M.-12:30 P.M.

Room D, Convention Hall, Cow Palace

Organized by The Martin Co., Orlando, Fla.

Session Director: Rajinder P. Loomba
San Jose State College

Session Chairman: J. W. Chasteen
Martin Company
Orlando, Fla.

10/1 THE PERSHING WEAPON SYSTEM

J. W. Chasteen
Martin/Orlando

10/2 PACKAGING TRADEOFFS FOR PERSHING GROUND SUPPORT EQUIPMENT

William J. Kahn
Martin/Orlando

10/3 PERSHING GSE PACKAGING

R. H. Carlson
Martin/Orlando

10/4 RELIABILITY EVALUATION OF MULTILAYER PRINTED WIRING SYSTEMS

W. S. Rigling
Martin/Orlando

10/5 TRANSFER MOLDING

Hugo L. Uglione, Jr. and
Allen R. Bell, Jr.
Martin/Orlando

10/6 PRODUCIBILITY — THE KEY TO LOW COST ELECTRONIC SYSTEMS

L. M. Schneider
Martin/Orlando

10/7 DOES MINIATURIZATION REALLY HELP RELIABILITY?

W. P. Wood
Martin/Orlando

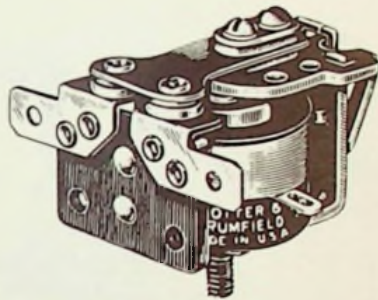
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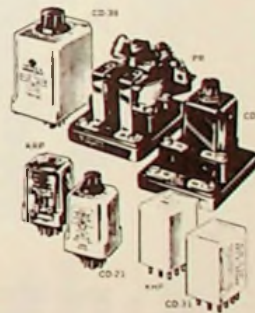


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SESSION 11

INTEGRATED CIRCUITS

Thursday, August 26, 10 A.M.-12:30 P.M.

Room C, Convention Hall, Cow Palace

Session Director: R. M. White
University of California
Berkeley, Calif.

Session Chairman: C. H. Phipps
Texas Instruments, Inc.,
Dallas, Texas

11/1 THE EVOLUTION OF SATURATED DIGITAL DESIGN

J. W. Martin
Texas Instruments

11/2 DESIGN CONSIDERATIONS FOR HIGH SPEED UNSATURATED LOGIC

Hector Cardenas
Texas Instruments

11/3 STATE-OF-THE-ART OF LINEAR INTEGRATED CIRCUITS

W. L. Fowler
Texas Instruments

11/4 AN INTEGRATED SENSE AMPLIFIER

James R. Talley
Texas Instruments

11/5 TRENDS IN INTEGRATED CIRCUIT PACKAGING

C. H. Phipps
Texas Instruments

SESSION 12

A NEW GENERATION OF DATA PROCESSING SYSTEMS

Thursday, August 26, 10 A.M.-12:30 P.M.

Room A, Convention Hall, Cow Palace

Organized by Radio Corporation of America,
Princeton, New Jersey

12/1 SPECTRA-70, BASIC DESIGN AND PHILOSOPHY OF OPERATION

A. D. Beard
RCA Electronic Data
Processing
Camden, New Jersey

12/2 INTEGRATED CIRCUITS DESIGN FOR THE SPECTRA-70

R. D. Lohman
RCA Electronic Components
and Devices
Somerville, New Jersey

12/3 EMULATION ON RCA SPECTRA-70

W. R. Lonergan
RCA Electronic Data
Processing
Cherry Hill, New Jersey

12/4 MEMORIES IN PRESENT AND FUTURE GENERATIONS OF COMPUTERS

Jan A. Rajchman
RCA Laboratories
Princeton, New Jersey

12/5 HIGH SPEED OPTICAL CHARACTER READERS

J. A. Torre
RCA Electronic Data
Processing
Camden, New Jersey

SESSION 13

LASER APPLICATIONS

Thursday, August 26, 10 A.M.-12:30 P.M.

Room B, Convention Hall, Cow Palace

Organized by Stanford Electronics Laboratories,
Stanford, Calif.

Session Chairman: W. H. Huntley, Jr.
Stanford Electronics
Laboratories

13/1 THE ROLE OF COHERENT OPTICS IN ELECTRICAL ENGINEERING

J. W. Goodman
Stanford Electronics
Laboratories

13/2 OPTICAL DEVICES AND TECHNIQUES

D. W. Jackson
Stanford Electronics
Laboratories

13/3 PHOTOGRAPHY FOR OPTICAL MEASUREMENTS

Matt Lehmann
Stanford Electronics
Laboratories

13/4 SURVEY OF U.S. LASER APPLICATIONS PROGRAMS

W. H. Huntley, Jr.
Stanford Electronics
Laboratories

13/5 OPTICAL SIGNAL PROCESSING AND APPLICATIONS TO PATTERN RECOGNITION

Charles Weaver
Stanford Electronics
Laboratories

13/6 OPTICAL RADAR TECHNIQUES

J. W. Goodman
Stanford Electronics
Laboratories

SESSION 14

TRENDS IN AEROSPACE COMMUNICATIONS AND TELEMETRY

Thursday, August 26, 10 A.M.-12:30 P.M.

Room E, Convention Hall, Cow Palace

Session organized by Lockheed Missiles & Space
Co., Sunnyvale, California

Session Director: D. J. Angelakos
University of California
Berkeley, California

Session Chairman: D. Hochman
Lockheed Missiles & Space
Co.
Sunnyvale, California

14/1 ADVANCED ANTENNAS FOR SPACE APPLICATION

A. M. Berkman and
W. M. Young
Lockheed Missiles & Space
Co.

14/2 WIDE BANDWIDTH TRANSMITTERS AND RF-TO-RF REPEATERS FOR SPACE APPLICATIONS

R. T. Murphy
Lockheed Missiles & Space
Co.

14/3 PROGRAMMABLE TELEMETRY FOR AEROSPACE MISSIONS

N. N. Berger and
R. W. Ulrickson
Lockheed Missiles & Space
Co.

14/4 DATA COMPRESSION AND ADAPTIVE TELEMETRY

C. M. Kortman
Lockheed Missiles & Space
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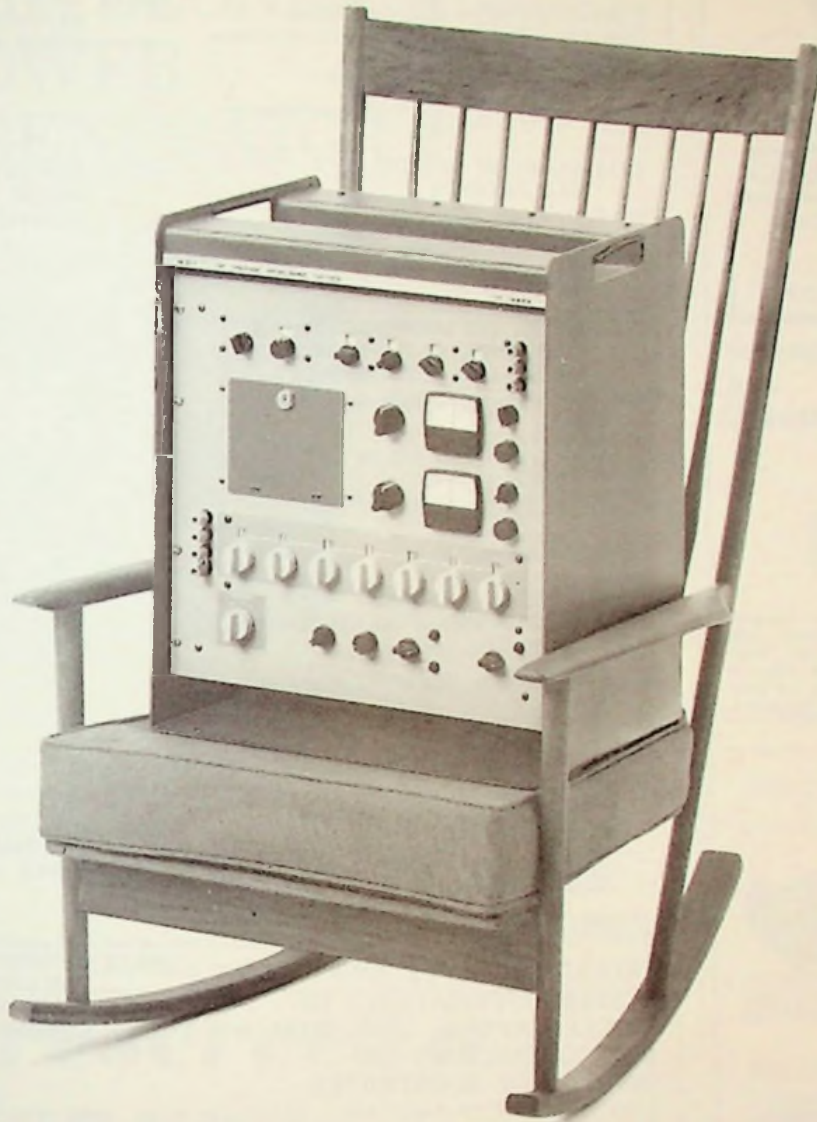
14/5 MASS MEMORIES

Mark M. Siera
Lockheed Missiles & Space
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SESSION 15

MANUFACTURING AND MARKETING OF MEDICAL ELECTRONIC DEVICES

(more)



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Our new 1045A DC Voltage Measuring System is designed to serve as your final authority on voltages ranging from above 1100 volts down to less than a volt. This range used to require two or more separate instruments.

The system's accuracy—5 ppm with 7 place resolution—is the best you can get. For all this range and accuracy, you don't have to be a fuss-budget with the 1045A. Even a fledgling technician can fly with six-place accuracy.

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meters, X-Y Recorders, pH meters, thermocouples, electrometers, reference voltage power supplies...

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The ESI 1045A Voltage Measuring System combines a direct-reading potentiometer, direct-reading standard cell comparator, and guarded voltbox. Price: \$4,200

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*At least one-half of all measurements will be more accurate than the probable error.

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Thursday, August 26, 10 A.M.-12:30 P.M.

Room D, Convention Hall, Cow Palace

Organized by Palo Alto Medical Research Foundation, Palo Alto, California

Session Organizer and Chairman: Noel P. Thompson M.D., M.S.E.E. Palo Alto Medical Research Foundation

15/1 CLINICAL MEDICAL ELECTRONICS

Noel P. Thompson, M.D.
Palo Alto Medical Research Foundation,
Palo Alto Medical Clinic, and
Physiology and Electrical Engineering Depts.
Stanford University

15/2 PANEL ON MANUFACTURING, LICENSING, AND PATENTING OF MEDICAL ELECTRONIC DEVICES

Elliott Farnsworth, Corbin-Farnsworth, Inc.
Palo Alto

Richard Holmes
Counsel for Smith Kline & French, Inc.
Philadelphia

Lawrence Rivken, M.D., Mt. Zion Hospital
San Francisco

Noel P. Thompson, M.D.
Stanford University

15/3 PANEL ON MEDICAL ELECTRONIC MARKETING

Richard Bischoff, Will Ross, Inc.
San Jose

Sergius Bryner, M.D., Palo Alto Medical Clinic
Palo Alto

Frank C. Culver, Hewlett-Packard Co.
Palo Alto

Austin Reblin, Neely Sales Div.,
Hewlett-Packard Co.
San Carlos

Martin Shiner, Electronics for Medicine
White Plains, New York

SESSION 16A

LATEST CONCEPTS AND SYSTEM APPLICATIONS OF SINGLE CRYSTAL THIN FILM SEMICONDUCTORS ON INSULATING SUBSTRATES

Friday, August 27, 10 A.M.-Noon
Room A, Convention Hall, Cow Palace

Session Organizer and Chairman: Dr. Arnold Miller
Physical Research Dept.
Autonetics, a Division of
North American Aviation,
Inc.
Anaheim, California

16A/1 THIN FILM EPITAXIAL SINGLE CRYSTAL SEMICONDUCTORS ON INSULATING SUBSTRATES: BACKGROUND, CONCEPTS, APPLICATIONS

Arnold Miller
Autonetics
Anaheim, California

16A/2 SINGLE CRYSTAL SILICON ON SAPPHIRE; A NEW DIMENSION IN MICROELECTRONICS FLEXIBILITY

D. H. Forbes and
H. M. Manasevit
Autonetics
Anaheim, California

16A/3 SILICON ON SAPPHIRE DEVICE AND INTEGRATED CIRCUIT PROCESSING TECHNOLOGY

P. J. Hagon
Autonetics
Anaheim, California

16A/4 SILICON/SAPPHIRE INTEGRATED MICROCIRCUIT AND MICROPOWER CONCEPTS

R. W. Downing
Autonetics
Anaheim, California

16A/5 THIN FILM SILICON-ON- SAPPHIRE DIODE MATRIX FIXED MEMORY

T. J. La Chapelle and
F. L. Morritz
Autonetics
Anaheim, California

16A/6 CIRCUIT APPLICATIONS OF DIODE MATRICES FOR COMPUTER FIXED MEMORIES

R. H. Drew
Autonetics
Anaheim, California

16A/7 TRANSIENT RADIATION EFFECTS ON FIELD EFFECT TRANSISTORS

A. F. Krueger and
E. E. Griffin, Jr.
Autonetics
Anaheim, California

SESSION 16B

A FAILURE MECHANISM OF GOLD-ALUMINUM INTEGRATED CIRCUIT BONDS

Friday, August 27, 12-2 P.M.

Room A, Convention Hall, Cow Palace

Session Organizer and Chairman: D. G. Cummings
Autonetics, a Division of
North American Aviation,
Inc.
Anaheim, California

16B/1 IDENTIFICATION OF THE THERMAL COMPRESSION BOND FAILURES

D. G. Cummings
Autonetics
Anaheim, California

16B/2 CHARACTERIZATION OF FAILURE MODES IN GOLD- ALUMINUM THERMO- COMPRESSION BONDS

L. E. Colteryahn and
D. D. Shaffer
Autonetics
Anaheim, California

16B/3 FAILURE MECHANISMS AND KINETICS OF INTERMETALLIC FORMATION

J. L. Kersey and
L. E. Colteryahn
Autonetics
Anaheim, California

16B/4 TIME-TEMPERATURE EFFECTS ON GOLD-ALUMINUM THERMOCOMPRESSION BONDS

J. R. Howell and
J. W. Kanz
Autonetics
Anaheim, California

16B/5 THERMAL COMPRESSION BOND MATRIX STUDY

D. G. Cummings
Autonetics
Anaheim, California

SESSION 17

COMPUTER-CONTROLLED INDUSTRIAL SYSTEMS

Friday, August 27, 10 A.M.-12:30 P.M.
Room B, Convention Hall, Cow Palace

Organized jointly by
University of Santa Clara
Santa Clara, California
Electronic Associates Inc.
Palo Alto, California

Session Chairman: Dr. Richard C. Dorf
University of Santa Clara

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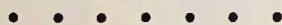
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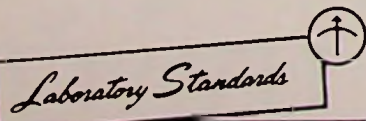
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17/1 INTRODUCTION TO COMPUTER CONTROL SYSTEMS

Richard C. Dorf
University of Santa Clara

17/2 THE ANALYSIS AND MODEL OF A SPECIFIC PROCESS — A DISTILLATION COLUMN

Irwin R. Etter
Electronic Associates, Inc.
Palo Alto, California

17/3 THE APPLICATION AND DESIGN OF AN ELECTRONIC ANALOG COMPUTER CONTROL SYSTEM FOR THE DISTILLATION COLUMN

Robert E. Finnigan
Electronic Associates, Inc.
Palo Alto, California

17/4 THE APPLICATION AND DESIGN OF A DIGITAL COMPUTER CONTROL SYSTEM FOR THE DISTILLATION COLUMN

Richard C. Dorf
University of Santa Clara

17/5 THE APPLICATION AND DESIGN OF AN ELECTRONIC HYBRID COMPUTER CONTROL SYSTEM FOR THE DISTILLATION COLUMN

Irwin R. Etter
Electronic Associates, Inc.

17/6 COMPARISON OF POSSIBLE COMPUTER CONTROL SYSTEMS AND REQUIREMENTS FOR THE FUTURE

A panel discussion.

SESSION 18

ADVANCED TECHNIQUES IN MEMORY DESIGN

Friday, August 27, 10 A.M.-1:30 P.M.
Room D, Convention Hall, Cow Palace

Organized by Ampex Corporation

Session Director: C. A. Desoer
University of California
Berkeley, California

Session Organizer: Lane Wolman
Ampex Computer
Products Division
Culver City, California

18/1 AIRBORNE DIGITAL TAPE TRANSPORT USING A BALANCED TAPE DRIVE

P. D. Georgantas
Ampex Computer
Products Division
Culver City, California

18/2 RUGGED BUFFER-TAPE DATA STORAGE SYSTEM FOR RECORDING DATA ON COMPUTER COMPATIBLE TAPE

D. Cervin
Ampex Computer
Products Division
Culver City, California

18/3 TECHNICAL ADVANCEMENTS IN ROTARY HEAD INSTRUMENTATION RECORDER SYSTEMS

John Lake
Ampex Corporation
Redwood City, California

18/4 A MAGNETIC TAPE CAPSTAN SERVO SYSTEM

Robert W. Allington
Ampex Corporation
Redwood City, California

18/5 FILM SCANNING AND RECORDING BY ELECTRON BEAMS

Charles F. Spitzer
Ampex Corporation
Redwood City, California

18/6 SIGNAL-TO-NOISE RATIO OF ELECTRON BEAM RECORDERS

Bob V. Markevitch
Ampex Corporation
Redwood City, California

18/7 THE ROLE OF THE VIDEOFILE FILING SYSTEM IN THE NASA/ APOLLO RELIABILITY PROGRAM

Charles A. Steinberg
Ampex Corporation
Redwood City, California

SESSION 19

SYNCHRONOUS SATELLITE TECHNOLOGY

Friday, August 27, 10 A.M.-12:30 P.M.
Room C, Convention Hall, Cow Palace

Organized by Hughes Aircraft Co., El Segundo, California

Session Director: Harry M. Engwicht
San Francisco State College

Session Chairman: F. P. Adler
Hughes Aircraft Co.

19/1 SYNCHRONOUS SATELLITES

F. P. Adler
Hughes Aircraft Co.

19/2 ORBIT AND ATTITUDE CONTROL

Donald D. Williams
Hughes Aircraft Co.

19/3 THE EARLY BIRD PROGRAM

Albert T. Owens
Hughes Aircraft Co.

19/4 ADVANCED SYNCHRONOUS SYSTEMS

W. F. Bakemeyer
Hughes Aircraft Co.

SESSION 20

TRENDS IN POWER SUPPLY DESIGN

Friday, August 27, 10 A.M.-12:30 P.M.
Room E, Convention Hall, Cow Palace

Organized by Engineered Magnetics Division
Gulton Industries, Hawthorne, California

Session Director: Byron Thinger
San Francisco State College

Session Chairman: Donald L. McDermott
Engineered Magnetics

20/1 POWER CONDITIONING SYSTEM DESIGN

J. W. Bates
Gulton Industries, Inc.

20/2 SOLAR-ARRAY, BATTERY POWER SYSTEMS

B. Gladstone
Gulton Industries, Inc.

20/3 MINIATURIZED POWER CONVERSION TECHNIQUES

Don E. Wuerflein
Gulton Industries, Inc.

20/4 TRENDS IN RELIABILITY OF SPACE POWER CONDITIONING EQUIPMENT

James E. Comer
Gulton Industries, Inc.

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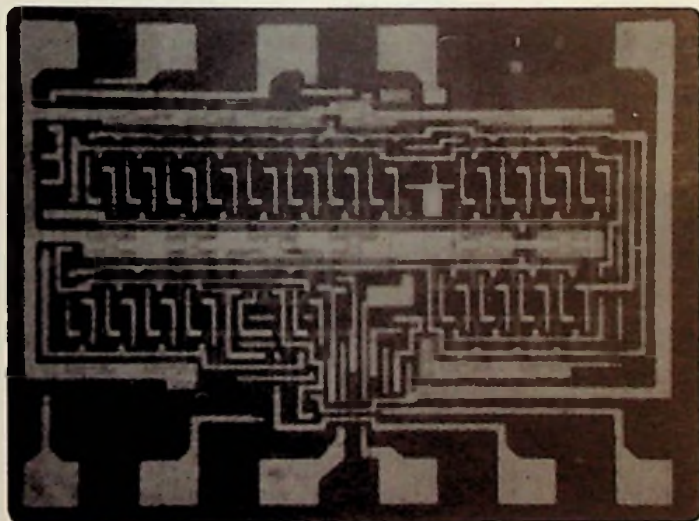
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MEM-501 — New General Instrument MOGISTER, 21-bit MOS shift register, magnified 70 diameters; operating from DC to 500kc. This is the first of a complete line General Instrument will announce shortly. Also available, MEM-521 operating from DC to 1 mc.

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- Fewer interconnections within your system . . . only one hook-up, instead of 21.

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A

NEW POWER SOURCES

Tuesday, August 24, 2-4:30 P.M.
Room C, Convention Hall, Cow Palace

SESSION ORGANIZER: DOUGLAS V. KELLY, PACIFIC GAS & ELECTRIC,
SAN FRANCISCO

SESSION CHAIRMAN: A. W. TRIVELPIECE, UNIVERSITY OF
CALIFORNIA, BERKELEY

Three distinguished authors discuss research and development work in new sources of power.

A/1 NEW USES OF FISSION ENERGY

HANS MARK
UNIVERSITY OF CALIFORNIA
BERKELEY

Several new applications of fission and fusion energy, based on nuclear explosions, have been discussed in recent years. This paper covers some of these applications, including earth-moving, mining, sea-water conversion, scientific programs (precision measurement of neutron cross-sections and the study of seismic waves produced by nuclear explosions, and others), and describes several other possible experiments, including space programs.

A/2 MHD POWER GENERATION

DR. ARTHUR KANTROWITZ
AVCO-EVERETT RESEARCH LABORATORY
EVERETT, MASSACHUSETTS

Discussion will include a general review of the current status of MHD power-generation programs and some of the prospects for this power source in the future.

A/3 HIGHLIGHTS OF RECENT DEVELOPMENTS IN THE FIELD OF CONTROLLED FUSION

A. S. BISHOP
PLASMA PHYSICS LABORATORY
PRINCETON UNIVERSITY

Building on previously presented surveys of the U.S. fusion program, this paper reviews the various approaches being pursued under Project Sherwood, with particular emphasis on the most recent developments. Specifically, it treats the various classes of instability, together with the energy sources available to drive them, and the means by which these instabilities can hopefully be prevented.

SPECIAL SESSION

B

COMPUTER-AIDED ENGINEERING DESIGN

Wednesday, August 25, 2-4:30 P.M.
Room C, Convention Hall, Cow Palace

SESSION ORGANIZER
AND CHAIRMAN: J. F. GIBBONS
ELECTRICAL ENGINEERING DEPT.,
STANFORD UNIVERSITY
STANFORD, CALIFORNIA

B/1 COMPUTER-AIDED DRAFTING TECHNIQUES

J. T. GILMORE
ADAMS ASSOCIATES
BEDFORD, MASSACHUSETTS

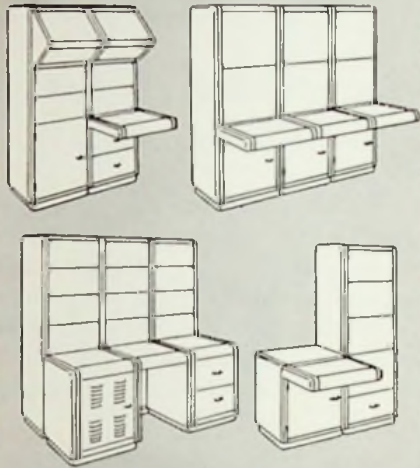
This paper will give a historical review of computer-aided drafting techniques leading to present research problems and existing facilities for computer-aided drafting.

(more)

BUILD

BUILD

BUILD

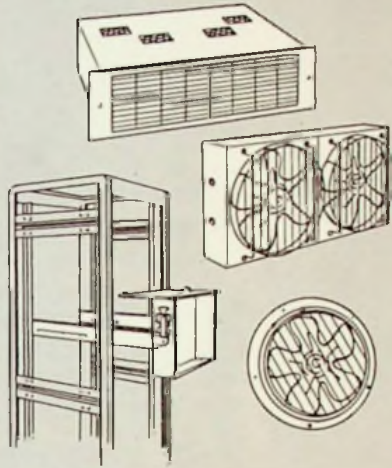


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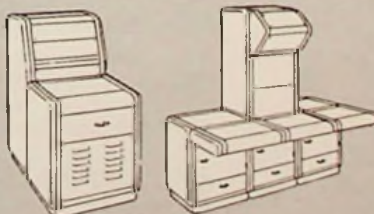
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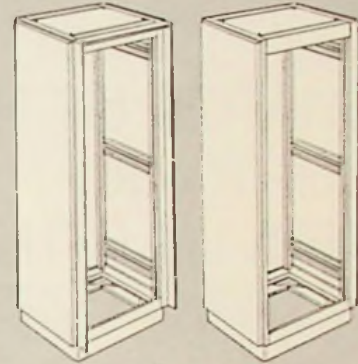
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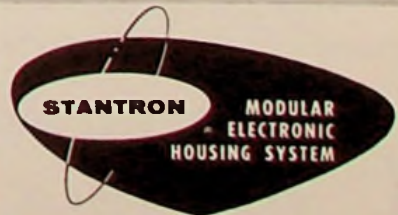
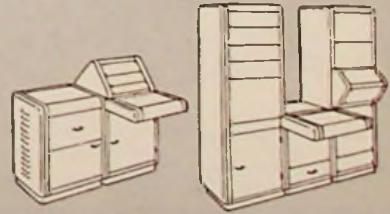
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Users can develop square cornered or ball cornered custom packages from low-cost component parts. Write for information on the new "square corner" design and Stantron's modular enclosure concept.



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B/2 COMPUTER-AIDED DESIGN

PROF. S. COONS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DR. L. ROBERTS
LINCOLN LABORATORIES
MR. T. JOHNSON
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

This paper will describe research work being carried on at MIT and Lincoln Laboratories in which on-line computation techniques using CRT display are used to facilitate engineering design. Stress analysis, linkage motion, and graphic design examples will be described.

B/3 TEXT MANIPULATION AND DESIGN PLANNING

DR. D. N. ENGELBART
STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA

The computer-augmented engineer, besides being helped with computation and graphic design, will be much better able to organize, study, retrieve and modify records containing specifications, constraints, possibilities, plans, etc. pertaining to his work. This will improve his capability for working effectively with complex interrelationships in the cut-and-try evolution of an engineering solution. It will also significantly aid effective group cooperation within a design team.

B/4 SOME VISUAL ILLUSTRATIONS OF ENGINEERING PROBLEMS SOLVED WITH ON-LINE COMPUTATION TECHNIQUES

PROF. GLENN CULLER
UNIVERSITY OF CALIFORNIA AT SANTA BARBARA
PROF. BURTON FRIED
UNIVERSITY OF CALIFORNIA AT LOS ANGELES

This paper will describe the use of on-line computation techniques to give visual demonstrations of conformal mapping problems, complex integration and other mathematical tools of importance in engineering problems.

LASERS: THE STATE-OF-THE ART

Thursday, August 26, 2-4:30 P.M.

Room C, Convention Hall, Cow Palace

SESSION ORGANIZER: BURTON J. McMURTRY
SYLVANIA ELECTRONIC SYSTEMS
MOUNTAIN VIEW, CALIFORNIA

SESSION CHAIRMAN: JOHN R. WHINNERY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

C/1 GAS LASERS

C. K. N. PATEL
BELL TELEPHONE LABORATORIES
MURRAY HILL, NEW JERSEY

The present state-of-the-art of gas lasers is reviewed with emphasis on new techniques for obtaining selective excitation of the desired energy levels. Performance and capabilities of high power gas lasers are also discussed.

C/2 LIQUID LASERS

A. LEMPICKI
GENERAL TELEPHONE & ELECTRONICS LABS.
BAYSIDE, L.I., NEW YORK

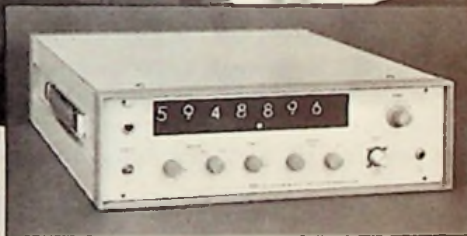
The usual requirements for production of stimulated emission such as intense, narrow band luminescence, adequate pump absorption bands and lifetimes compatible with flash sources are rather rarely met in liquid media. A review of various suggested schemes and materials indicates that rare earth chelates are best suited for the purpose and have led to the only existing liquid laser. The characteristics, limitations, and future prospects of chelate lasers will be discussed.

(more)

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Input sensitivity of the instrument is 50 mv rms into 50 ohms (-13 dbm, 0.05 mw). Measurements are accurate to within ± 1 count \pm oscillator stability, and readings are visually presented on a 7-digit readout while printout signals for all digits and decimal point are simultaneously available in a binary coded decimal format.

Other Eldorado GHz Direct Frequency Counters. **Model 951:** 10 Hz to 6 GHz with 9-digit readout, automatic trigger level, preset reset and selectable resolution. **Model 945:** 10 Hz to 4 GHz with 7-digit readout. **Model 946:** 10 Hz to 4 GHz with 9-digit readout and selectable resolution. **Model 920:** 10 Hz to 2.5 GHz with 7-digit readout; fully automatic operation; IF offset compensation; remote programming; and RFI per MIL-I-26600, Class III.

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C/3 SEMICONDUCTOR LASERS

MARSHALL I. NATHAN
INTERNATIONAL BUSINESS MACHINES CORP.
THOMAS J. WATSON RESEARCH CENTER
YORKTOWN HEIGHTS, NEW YORK

A brief description of the principles of operation will be given, followed by a discussion of pumping methods — their advantages and limitations. Performance characteristics of junction lasers, particularly Gallium Arsenide, will be discussed.

C/4 OPTICALLY PUMPED SOLID-STATE LASERS

J. E. GEUSIC
BELL TELEPHONE LABORATORIES
MURRAY HILL, NEW JERSEY

Recent developments in the area of optically pumped solid-state lasers will be discussed. In particular, the characteristics of Nd:YAG (Neodymium doped Yttrium Aluminum Garnet) laser will be reviewed. In addition, the possible applications of solid-state lasers such as Nd:YAG will be considered.

(more)

social note

COCKTAIL PARTY

The Wescon All-Industry Cocktail Party will be held in the Continental Room of the San Francisco Hilton on Tuesday, August 24, from 6:30 to 8:30 p.m. The price is \$6 per person.

There will be one technical tour (or field trip) during Wescon. It will take visitors to the Stanford Linear Accelerator Center near the Stanford campus in Palo Alto. The accelerator is now about 65 percent completed. It is about two miles long, and will ultimately have a 15-billion-volt electron beam. It is being built at a cost of \$114 million under AEC funding.

TRANSFORMER DESIGN ENGINEER

BSEE required with a minimum of five years' experience in: Small, medium, and large electronics transformers such as d.c. power supply components, and/or pulse transformers and charging reactors, medium and high-power and voltage, and/or oil and dry type distribution transformers.

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future engineers show

BIGGEST STUDENT SHOW TO DATE

The largest Future Engineers Show in the history of Wescon, with 35 student exhibitors announced at press time as participating from throughout Region 6, will take place in the special exhibit area near the east entrance of the Cow Palace.

Transportation and living expenses for the students, selected by their local section, and for their advisors, are provided jointly by the sections and Wescon.

The best exhibit will win the Lee De Forest Award, which provides a \$1000 scholarship.

Five of the students exhibiting in the Future Engineers Show will participate in a symposium in Room D of the Cow Palace on Wednesday, August 25, from 1 to 3 p.m.

Stephen Freiburger, St. Elizabeth's High School, Oakland, will present a paper on his project "A Digital Computer"; Richard Holsclaw, Catalina High School, Tucson, "Hexapawn Machine Related Game Learning"; Leslie Poppe, Pocatello High School, "Bio-electrical Fields in Plants"; Albert Smith, Grossmont High School, San Diego, "Photoelectric Photometry of the Eclipsing Binary BV 267 Auriga"; and Reinhold Ziegler, Sacramento, "Investigation into the Application of Thermomagnetic and Galvanomagnetic Effects."

The winning presentation will be accorded the Frederick Emmons Terman Award, which carries a \$300 scholarship, with \$200 going to the runner-up.

eta kappa nu luncheon

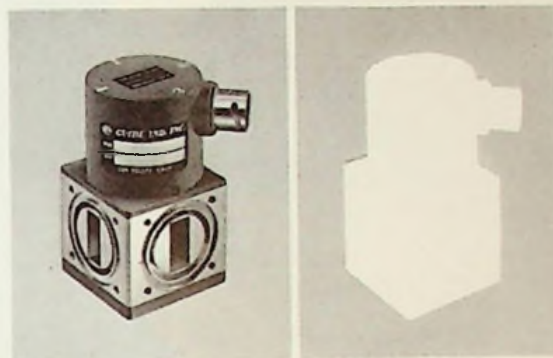
OUTSTANDING U.S. EE STUDENT

Eta Kappa Nu, national electrical engineering honor society dedicated to the advancement of education in the field and improved recognition of the profession, will honor the outstanding electrical engineering student in the United States at a luncheon on the first day of Wescon, August 24.

He is Carl A. Cooper, who received his Bachelor of Science degree in electrical engineering from the University of Southern California in June, having served as president of the student branch of IEEE, vice president of Tau Beta Pi, and corresponding secretary of the Upsilon chapter of Eta Kappa Nu.

The program to select the outstanding electrical engineering student in the United States has been developed during the past four years.

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SESSION

D

COMPUTER-CONTROLLED SYSTEMS

Friday, August 27, 2 P.M.-4:30 P.M.

Room C, Convention Hall, Cow Palace

SESSION CHAIRMAN: W. K. LINVILL
INSTITUTE IN ENGINEERING-ECONOMIC SYSTEMS
STANFORD UNIVERSITY

SESSION ORGANIZER: R. D. SMALLWOOD
STANFORD UNIVERSITY

D/1 SOME PROBLEMS IN INFORMATION RETRIEVAL SYSTEM DESIGN

J. C. R. LICKLIDER
IBM RESEARCH CENTER
YORKTOWN HEIGHTS, NEW YORK

D/2 COMPUTER-BASED INSTRUCTION IN THE ELEMENTARY SCHOOLS

PATRICK C. SUPPES
INSTITUTE FOR MATHEMATICAL STUDIES
IN THE SOCIAL SCIENCES
STANFORD UNIVERSITY

D/3 TIME-SHARED COMPUTERS FOR COMMUNICATION AND CONTROL IN THE HOSPITAL ENVIRONMENT

JOHN H. HUGHES
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CAMBRIDGE, MASSACHUSETTS

D/4 PROCESS CONTROL COMPUTER SYSTEMS — PRESENT STATUS AND FUTURE POTENTIAL

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Wescon women's committee planners made early trip this month to Saks Fifth Avenue to finalize plans for major fashion luncheon at the Mark Hopkins during Wescon. Model Miss Avril of Saks poses in a sheath evening dress for Mrs. E. E. Van Bronkhorst and Mrs. Stanley Kaisel, vice chairman and chairman of the women's program.

special events

PLANS FOR THE LADIES

The ladies who visit Wescon in August will find what most people want when they come to the city by the bay—plenty of time to take in the San Francisco scene.

Women will have their own Wescon headquarters, a special hospitality center to meet friends over continental breakfast, plan excursions, and learn "where to" and "how to get there." The graceful Rosewood Room of the San Francisco Hilton will be available every day—Tuesday through Friday.

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Industrial Products Division, Philadelphia, Pa. 19132
In Canada: Jerrold Electronics, 60 Wingold Ave., Toronto 19, Ont.
Export: Rocke International, 13 E. 40th St., New York, N. Y. 10016

Circle Inquiry Card No. 74



DIRECTORY OF EXHIBITORS

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Booth 2527

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Circle Inquiry Card No. 39

Eldorado Electronics

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686-4200

Booths 4106-4107

Products displayed: Model 950 6Gc Direct frequency counter (7-decade); Model 951 6Gc direct frequency counter (9-decade); Model 920 2.5Gc direct frequency counter (I.F. offset compensation); Model 682 X-band frequency extender; Model 793 1-nanosecond time interval counter; Model 610 1-nanosecond digital delay generator; Model 5210 radar/laser range unit.



ELDORADO ELECTRONICS

Circle Inquiry Card No. 42

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Booths 1512-1513

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Huggins Laboratories, Inc.

999 E. Arques Ave., Sunnyvale; 736-9330

Booths 4203-4204

Products displayed: TWT amplifiers, nanosecond pulse generators, transient detectors, infrared radiometers, TWT's, and ferrite devices.



Circle Inquiry Card No. 43

Hurletron, Inc. Hurletron Control Prod. Div.

750 W. Rivera Road, Whittier, Calif.
698-9824

Booths 2406-2407

Products displayed: Electronic and electro-mechanical control devices; time function devices—fixed or adjustable; sensors & detectors—voltage, current, frequency phase, temperature and speed; fixed or adjustable; military standard balanced armature relays—dry circuit to 25 amperes; micro-miniature power relays; stepping relays, programed rolling contacts; sub-systems, "total energy control."

Circle Inquiry Card No. 46

Luscombe Engineering Co.

610 S. Arroyo Parkway, Pasadena, Calif.
684-2000

Booths 2304, 2305, 2306

Products displayed: Julie Research Laboratories, Inc.—primary standard voltage measurement systems, precision resistors, networks. James Cunningham, Son & Co., Inc.—crossbar scanning systems, crossbar switches, switching systems. Data Device Corp.—solid state, silicon operational amplifiers, AC and DC, boosters. Microsystems Components—integrated circuit logic cards, A to D, D to A converters. Patwin Electronics — magneline electric impulse digital and alpha numeric indicators. Voltron Products, Inc.—full-scale taut band meters, expanded scale meters, voltage, current and power sensors, voltage and frequency trips, wattmeters.

Circle Inquiry Card No. 34

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240 Main St., San Mateo, Calif.

Circle Inquiry Card No. 35

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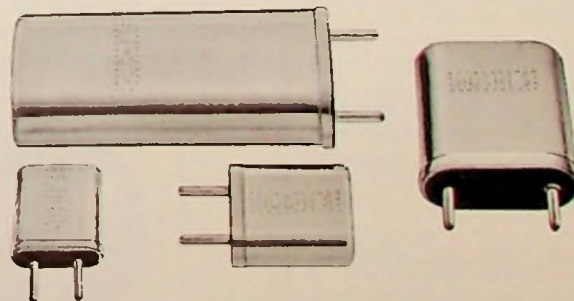
LOW FREQUENCY CRYSTALS — Available frequency range, including NT, 5°X, CT, DT, and S-L cut crystals, is from 10 KC to 750 KC.

HIGH FREQUENCY CRYSTALS — Available frequency range, from below 1 MC/sec. to 125 MC/sec. Special requirements demanding performance beyond MIL specs. are available on request.

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HUGHES

HUGHES AIRCRAFT COMPANY
ELECTRONIC PRODUCTS DIVISION
NEWPORT BEACH, CALIFORNIA

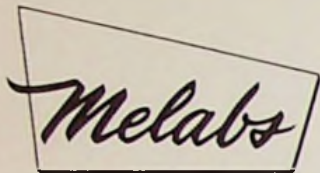
Circle Inquiry Card No. 37

Melabs

3300 Hillview Ave., Palo Alto, Calif.
326-9500

Booth 1813

Products displayed: Tunnel-diode amplifiers, broadband diode switch, ferrite circulators and isolators, telemetry down-converter, mixers, filters, integrated microwave circuits.



Circle Inquiry Card No. 59

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7243 Atoll Ave. North Hollywood

Circle Inquiry Card No. 62

Packard Bell

1920 So. Figueroa St., Los Angeles, Calif.
748-6103

Booths 3816-3817

Products displayed: Television cameras, video monitors, RF modulators, switchers, and other closed-circuit system components.

Packard Bell

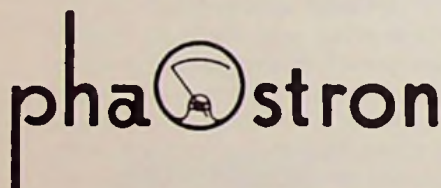
Circle Inquiry Card No. 65

Phaotron Instrument and Electronic Company

151 Pasadena Ave., South Pasadena, Calif.
255-1471

Booths 3810-3811

Products displayed: See Phaotron's new taut band mechanism. New design prevents damage to ligaments. Demonstration shows why Phaotron D'Arsonval Meters exceed MIL-M-10304C specs. Phaotron "the name to measure by." Representatives in all principal cities.



Circle Inquiry Card No. 60

Philbrick Researches, Inc.

Allied Drive at Route 128, Dedham, Mass.

Booth 1914

Products displayed: Electronic analog computing components; operational amplifiers, including differential, chopper stabilized, low-cost, wideband, low-noise, high input impedance, field effect, low power drain, and ultra-compact types; regulated power supplies, and regulators; the new prize-winning Q3 modular packaging system; multipliers, dividers, squarers, rooters, logarithmic devices; amplifier manifolds for educators and experimenters; universal operational modules; publications on applications of the analog art.



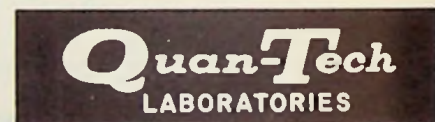
Circle Inquiry Card No. 63

Quan-Tech Laboratories, Inc.

43 So. Jefferson Road, Whippany, N.J.

Booth 3903

Products displayed: Transistor, diode, and resistor noise analyzers; low and medium frequency wave and spectrum analyzers; DC, AC, and instrumentation amplifiers.



Circle Inquiry Card No. 66

Texas Instruments Incorporated

P.O. Box 5012, Dallas 22, Texas

Booths 3101-3103

Products displayed: 3 new families of digital integrated circuits for industrial applications and an optoelectric pulse amplifier; gallium arsenide transistor; gallium arsenide varactor diode; temperature compensated diode; 500 MC N-channel field effect transistor; light sensor arrays; high voltage silicon power transistor; wideband linear amplifier germanium transistor.



Circle Inquiry Card No. 61

Varo, Inc.

2201 Walnut, Garland Texas;
Santa Barbara, Calif.; Chicago, Ill.

Booths 1213-1214

Products displayed: Static power conversion equipment; fractional HP motors; precision optics; integrated bridge rectifiers; high voltage and fast recovery time rectifiers; thin film microcircuit modules (TF circuits).



Circle Inquiry Card No. 64

Vidar Corp.

77 Ortega, Mountain View, Calif.
961-1000

Booths 4418-4419

Products displayed: Vidar 5001 data logging system; Vidar 5202 data logging system; Vidar FM VCOs and discriminators.

VIDAR

Circle Inquiry Card No. 67

The Electronic Representatives Association and the Electronic Sales Managers Association (ESMA) have joined forces in planning a one-day marketing workshop to be held

Wednesday (August 25) at the St. Francis Hotel.

Scientific Apparatus Manufacturers Association (SAMA) will hold a three-hour workshop Monday, August 23, at

the Sheraton-Palace Hotel. The session, titled "New Ideas in Problem Analysis and Decision Making," is the seventh annual SAMA presentation to be made immediately preceding Wescon's formal program.

**Dage Television Division
Dage-Bell Corp.**

4515 Sheridan Ave., Michigan City, Ind.
874-3251

Booth 3920

Products displayed: Television systems for industrial, military, educational, broadcast applications; television cameras with capabilities of 1,000 horizontal lines of resolution; helical scan video tape recorders.

Circle Inquiry Card No. 47

Engelhard Industries, Inc.

113 Astor St., Newark, N.J.

Booths 244-245

Products displayed: Fused quartz and silica, sintered titanium, precious metal plating alloys, platinum clad tungsten wire, aluminum powders and pastes, electrical contacts, steels and metals.

Circle Inquiry Card No. 48

Hull Corp.

Hatboro, Pa.

Booth 511

Products displayed: Model #359-E encapsulation machine; Model #5 AR vacuum potter.

Circle Inquiry Card No. 49

Landis & Gyr, Inc.

45 W. 45th St., New York, N.Y. 10036

Booth 1906

Products displayed: Electromagnetic impulse meters; predetermining counters; monodecade counters, monodecade counters with electronic readout; add/subtract counters; printing meter models for serial and parallel entry (error without time and date register); pulse meters; summation metering equipment.

Circle Inquiry Card No. 50

Littelfuse, Inc.

100 E. Northwest Highway, Des Plaines, Ill.

Booth 1402

Products displayed: Microfuse and picofuses; reliability microfuses and picofuses; zero current defects; complete line standard circuit protective devices.

Circle Inquiry Card No. 51

Technical Wire Products, Inc.

129 Dermody St., Cranford, N.J.

Booth 710

Products displayed: RFI/EMI shielding products including air filters, see-thru panels, toggle shields, tapes, testing, consulting and field production run tests.

Circle Inquiry Card No. 52

Insaco Incorporated

P.O. Box 422, Quakertown, Pa.

Booth 314

Products displayed: Sapphire, ceramics, fused quartz precision ground; sapphire windows, and substrates.

Circle Inquiry Card No. 53

National Beryllia Corp.

First & Haskell Avenues, Haskell, N.J.

Booth 141

Products displayed: Beryllium oxide, alumina oxide, electronic components, ceramic-to-metal seals, beryllium oxide, loaded epoxies.

Circle Inquiry Card No. 54

**Radio Frequency
Laboratories, Inc.**

Powerville Road, Boonton, N.J.

Booths 4501-4502

Products displayed: RFL Model 100 AC calibration system; magnetic measurement and charging systems; electronic proportional controls and electric thermometers.

Circle Inquiry Card No. 55

**Siemens America
Incorporated**

350 Fifth Ave., New York, N.Y.

Booths 3324-3325

Products displayed: Level tracer, level meter, level oscillator, sweep frequency meas. set, cable fault locator, group delay meas. set.

Circle Inquiry Card No. 56

Spectrol Electronics Corp.

1704 So. Del Mar Ave., San Gabriel, Calif.
288-6666

Booths 2409-2410

Products displayed: Precision and trimming potentiometers, both wirewound and non-wirewound; turns-counting dials and miniature rotary indexing switches.

Circle Inquiry Card No. 57

Speer Electronics

800 Theresa St., St. Marys, Pa.

Booth 1020

Products displayed: JXP precision metal film resistors, carbon composition resistors, inductors.

Circle Inquiry Card No. 58

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Circle Inquiry Card No. 69

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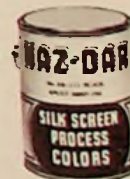
go around in the best circuits.

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Hairline circuit perfection that resists all common etches, washes instantly in solvents, air dries in 30 minutes. May be force dried in 5. **NAZ-DAR CIRCUIT PLATING RESISTS 205 (blue)—8134 (black) for Plated Circuits** For etching or plating. Serves as excellent barrier to copper, nickel, gold and other precious metals used in plating. Air dries in 30 minutes. May be force-dried in 10.

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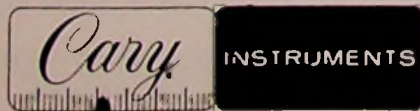
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SERVO AMPLIFIERS

FOR

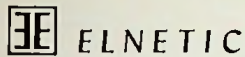
AC and DC MOTORS

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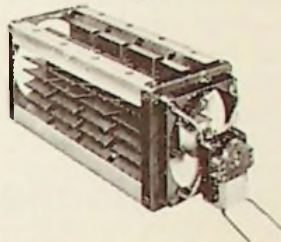
for rent or lease. Atlas Generator Co., 2305 Rosemead, El Monte, Calif., 213-283-6868.

Circle Inquiry Card No. 17

PREPRINTS

Preprints of 18 of 20 Wescon contributed sessions will be available during the conference. Because of the "team" nature of the presentations, papers will be bound by sessions, and will be priced at \$2 per session. There will be no preprints of papers included in five special sessions.

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Circle Inquiry Card No. 72

industrial design awards

17 PRODUCTS SELECTED FROM 152

Seventeen new product designs will make up the 1965 Wescon Industrial Design Awards exhibit, it was announced by Edward W. Vopat of Varian Associates, committee chairman.

Five judges selected the 17 products for the show from entries totaling 152, Vopat said. Entries in the program had submitted photographs, specifications, and descriptions of products for the judging.

Just before Wescon in August, the judges will reassemble, this time with the actual product "hardware" on hand, for judging of final awards of excellence in product design.

The jury of five was headed by Frank T. Walsh, Ampex Corp. director of corporate industrial design, and included John Duddy, Lockheed Missiles and Space Co. (a human factors specialist); Jack Crist, head of industrial design at San Jose State College; Cornelius Sampson, head of the San Francisco design firm of Cornelius Sampson and Associates; and John Crane, of Saffier, Lerner, and Schindler, also of San Francisco.

Criteria for judging included the following statement: The criteria shall include such joint parameters affecting design excellence as visual clarity of function, manufacture, and material via creative product design engineering; possible improvement in lowered manufacturing cost; and such design areas as maintainability and human factors, which improve the competitive marketing position of the product.

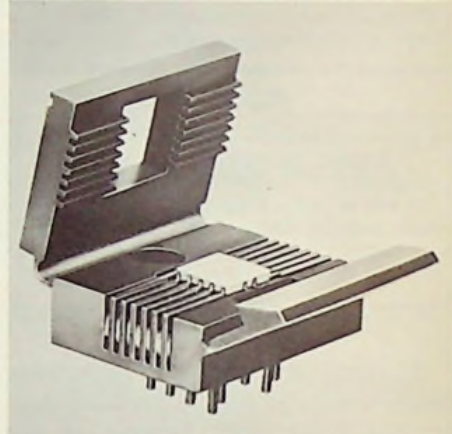
Selected entries, their companies, designer, and product engineer are:



Po₂ electrode catheter, Beckman Instruments/Spinco Div., Palo Alto; Jerome Mahoney; Henry Faigh, Douglas Hillier, Jerome Mahoney.



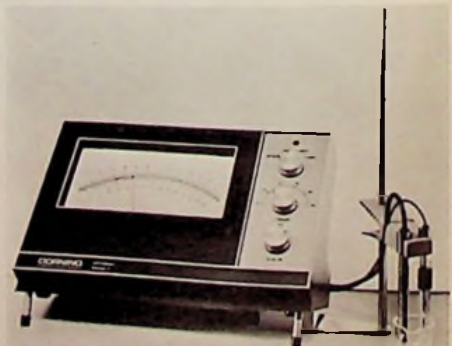
Transolver, Adams-Russell Co., Waltham, Mass.; Gregory Fossella Associates.



Socket for integrated circuit, Barnes Development Co., Lansdowne, Pa.; James W. Barnes; Kenneth E. Blachard.



Digital model 205, Beckman Instruments/Helipot Div., Fullerton; David J. Malk and Hugh O. Brown.



PH meter, Corning Glass Works, New York City; design department.

(Continued on page 38)

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Carpenter electronic, magnetic and glass sealing alloys

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<p>Glass Sealing "52"</p> <p>a 51% nickel-iron alloy developed for glass-to-metal seals with the special soft glasses and certain ceramics. Glass Sealing "52" is available in 8" wide strip in several closely controlled thicknesses.</p>	<p>Vacumet Nicoseal</p> <p>a vacuum induction melted nickel-cobalt-iron alloy for glass-to-metal seals with hard glasses such as 7052 manufactured to ASTM Specification F15-61T. Vacumet Nicoseal is completely vacuum melted from virgin material to assure highest quality. Nicoseal is available either as strip in a variety of widths and controlled thicknesses, or as machining bar stock.</p>	<p>HyMu "80"</p> <p>a nickel-molybdenum-iron alloy which offers very high initial permeability and maximum permeability at low magnetizing forces with minimum hysteresis loss for transformer cores, tape wound toroids, stamped laminations and shields. HyMu "80" is available from stock in the three most commonly used strip thicknesses—.020", .025" & .031".</p>
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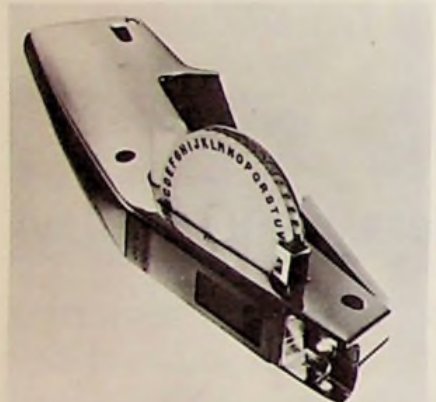
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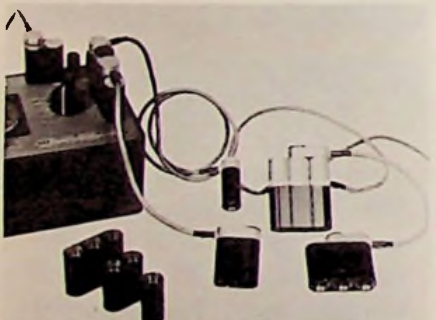
Circle Inquiry Card No. 15



Front access "card cage," Dymec division of Hewlett-Packard Co., Palo Alto; Gerry Priestley; Bob Pierce, Arlan Saunders, Ted Pollard.



Dymo M-10 tapewriter, Dymo Industries, Emeryville; James Lee; Armand Massen and Georg Bremer.



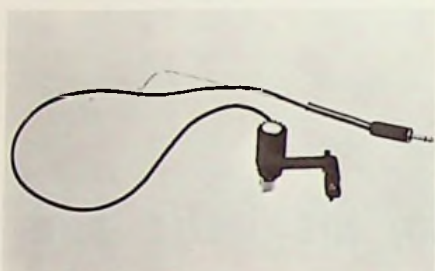
Shielded table and connector system, Electro Scientific Industries, Portland, Ore.; Perry H. Rosen, Rosen/Sirois Industrial Design; Harold Lawson.



Integrating digital meter (and family), Fairchild Instrumentation, Palo Alto; Gruye/Brandt and Associates.



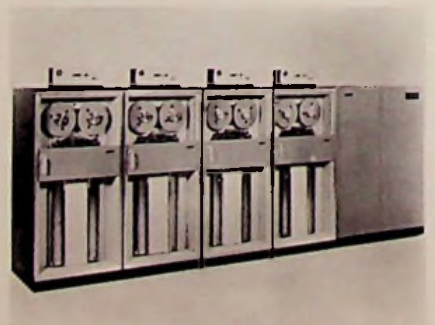
Electronic computer, Friden, Inc., San Leandro; E. Stoltz, E. Salter; A. van den Berg and W. Ates.



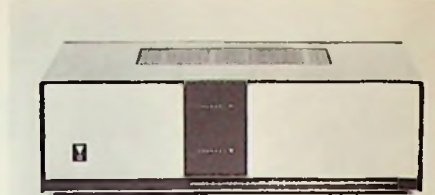
Character printer, Hewlett-Packard, Moseley Division, Pasadena; Richard Kemplin; Thomas Minor.



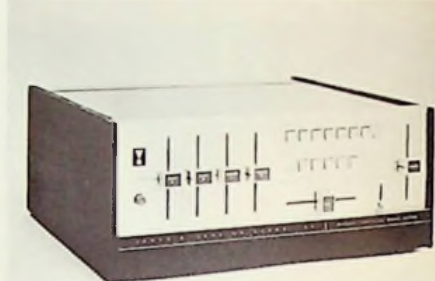
"KB" switch/display system, Honeywell, Micro Switch Div., Freeport, Illinois; William H. Harkins, John F. Graham; Jack A. Cox, Walter R. Ditsworth.



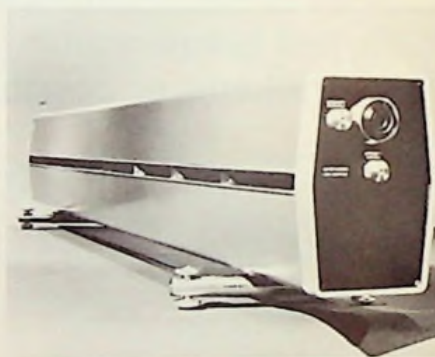
IBM 2400-series magnetic tape units, International Business Machines, Systems Development Div., Poughkeepsie, New York; R. V. Jones.



JBL 80-watt stereo energizer, James B. Lansing Sound, Los Angeles; Arnold Wolf, Arnold Wolf Associates, Berkeley; Lamont J. Seitz.



JBL graphic controller, James B. Lansing Sound, Los Angeles; Arnold Wolf, Arnold Wolf Associates, Berkeley; Lamont J. Seitz.



Helium-neon high-power laser, Spectra-Physics, Mountain View; Carl J. Clement; Robert C. Rempel, David L. Wright, John C. Everitt, Dennie L. Leimer, Carl J. Clement, and James C. Sprout.



Automatic scribing machine, Tempres Research Co., Sunnyvale; Leonhard Albrecht Associates, San Francisco; Frank L. Christensen.

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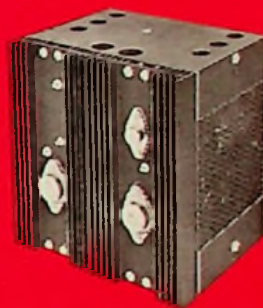
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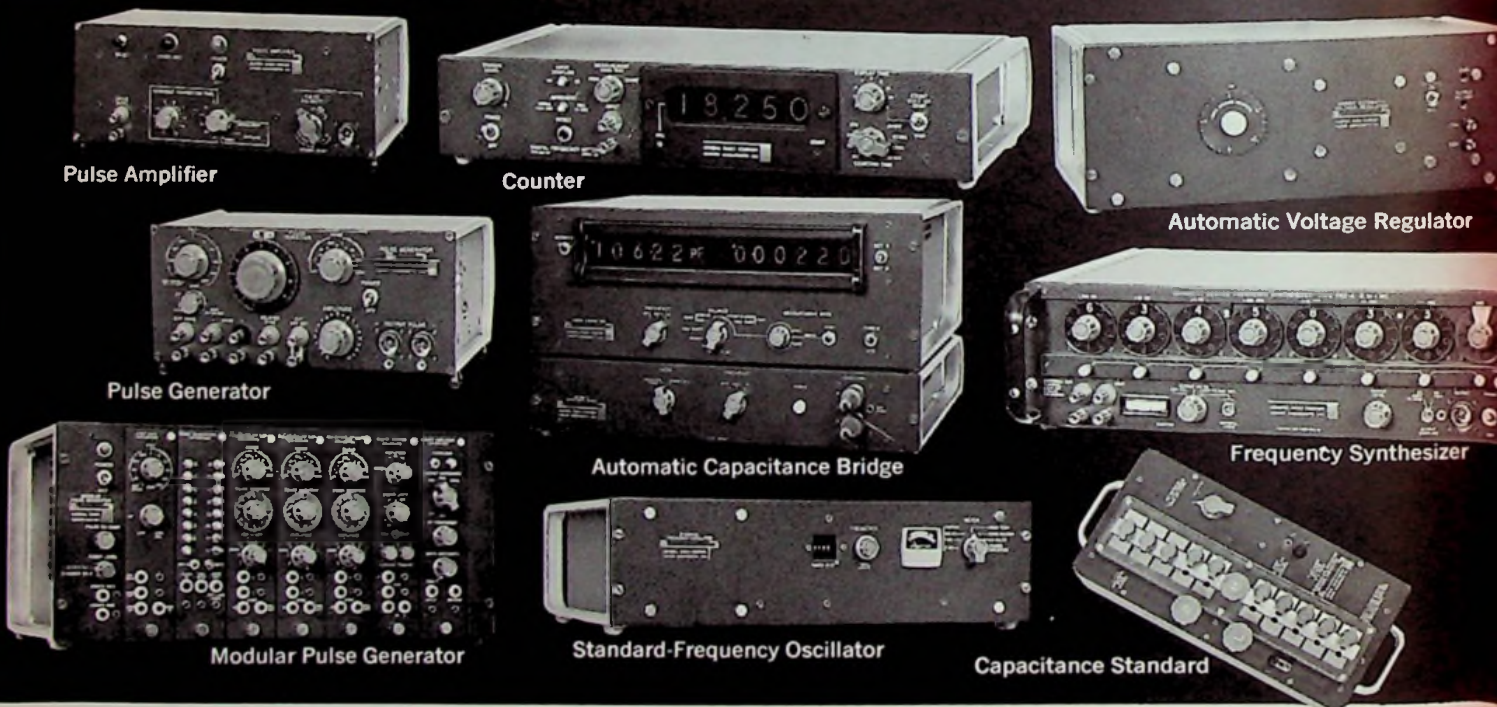
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