

## EDITOR'S PROFILE of this issue

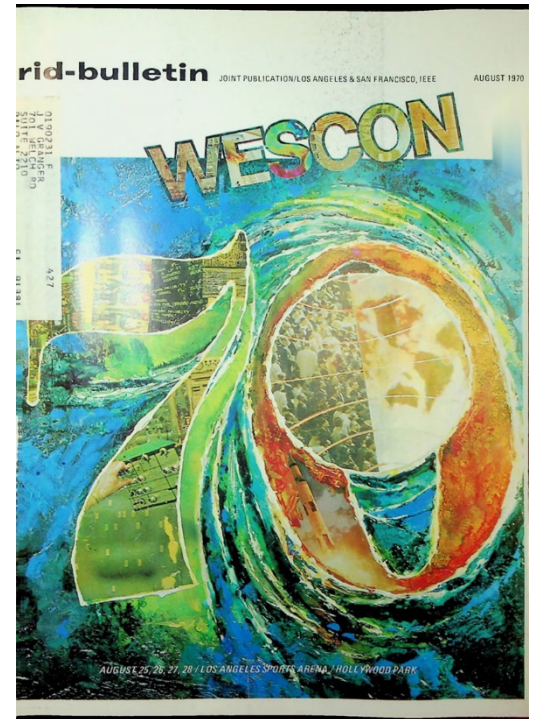
*from a historical perspective ...*

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

August, 1970:

Cover: The graphic image points to WESCON, being held this year in Los Angeles at the Sports Arena and Hollywood Park. More details throughout this issue.

Page 26: Don Hoefler again chairs a session, moderating a panel of speakers including Les Hogan, president of Fairchild. It's at the end of 1970 that Don, after surveying the growth of the semiconductor industry in the Santa Clara Valley, writes his famous column in Electronic News entitled "Silicon Valley USA" (below). We'll now have a name for our dynamic area.



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

[https://ethw.org/IEEE\\_San\\_Francisco\\_Bay\\_Area\\_Council\\_History](https://ethw.org/IEEE_San_Francisco_Bay_Area_Council_History)

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

April, 2025

Contact [p.wesling@ieee.org](mailto:p.wesling@ieee.org)



rid-bulletin

JOINT PUBLICATION/LOS ANGELES & SAN FRANCISCO, IEEE

AUGUST 1970

# WESCON

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AUGUST 25, 26, 27, 28 / LOS ANGELES SPORTS ARENA / HOLLYWOOD PARK



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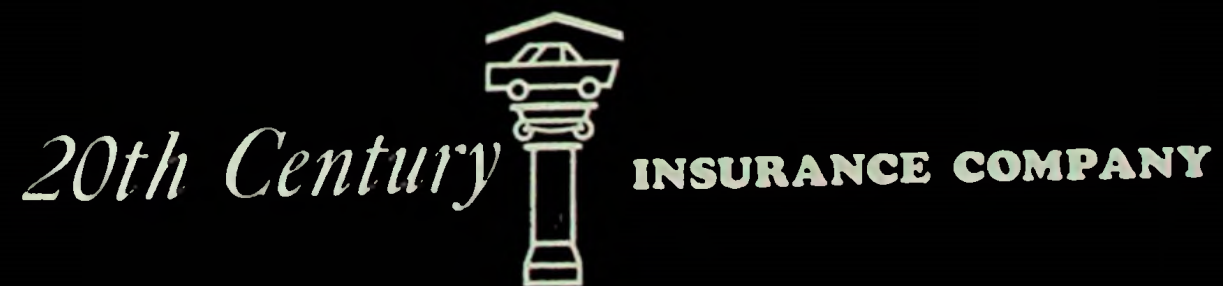
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## WESCON/70 OFFICIALS

It takes about 400 volunteers to run Wescon. From the Chairman of the Board to the last room monitor of the last session on the last day of the show, these people give generously of their time. Wescon could not operate if these people were paid at their work rates. Again, from Wescon, and the Sixth Region IEEE, in whose name Wescon is named by the San Francisco and Los Angeles, IEEE, and also to all of the non-IEEE members who help—a sincere vote of thanks is extended.

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# First wescon marketing-oriented session deals with instrumentation

For the first time in WESCON history, a technical session will be oriented entirely toward marketing. See Session 2 on August 25.

This decision was made because changes in technology are being met with changes in distribution, according to Frank J. Burge, vice-president of Data Technology and organizer—chairman of the session titled "Electronic Instrumentation/Distribution Trends-1970."

"Many of the older, established markets have stopped growing, and economic conditions have slowed growth of others. Selling and distributing the product is more of a challenge than ever before."

"Already we are seeing significant trends in distribution, and this is only the beginning."

Among the changes in distribution to be described by speakers is that of franchising field service representatives. James R. Cunningham, director of marketing for Systron-Donner, was selected to tell his company's experience in this pioneering endeavor.

One year ago a Systron-Donner marketing subsidiary, jointly owned by Systron-Donner and by independent field sales representatives, established regional franchises throughout the United States. Relationships among all concerned exceeded expectations, Cunningham says.

"The customer feels a closer and more specific relationship with Systron-Donner and welcomes the long-term responsibility for service and engineering support."

"The representatives are achieving personnel and financial stability through a new corporate structure that provides additional incentives for sales and profits."

"For Systron-Donner it has been a case of preserving the decentralized entrepreneurial selling atmosphere while gaining a more stable sales organization."

Another speaker, David B. Pivan, president, Pivan Engineering, will point out that broadening markets for instrumentation have brought a requirement to change sales techniques.

"Initially a great many of our sales were made to engineering laboratories. Now we have expanded our markets vertically and horizontally to numerous other departments in many industries."

Penetration of these other markets is helped by adherence to three guidelines:

1. Sell what the instrument "does" rather than what it "is." Pivan cites as an example the insurance salesman who sells a "Salary Continuance Program" or "Income Protection Plan" rather than an "accident policy." A decreasing term life insurance policy is what it "is," but mortgage insurance is what it "does."

2. Sell value, not specifications. For example, in the photocopier field the value concept is developed in cost per copy, reduction of personnel time through speed of copying, quality of the copy and reliability.

3. Sell solutions to problems, not the specific product.

These, and other comments to be made by the speaker, are in recognition of "the classical laws of economics in a maturing industry," he says. "The movement of products and services to the consumer is predicated upon the need and value that the user places upon this need."

The view of a mini-computer terminal manufacturer is represented by Cloyd E. Marvin, vice-president, marketing for Four-Phase Systems. Most sales represent-

atives are black box salesmen, not problem solvers. Marvin contends.

"It takes a problem solver to sell our kind of product. Customers are looking for hardware and software solutions."

As a result, the company decided to set up its own direct OEM sales force and to build from that base.

Marvin points out that the levels of sophistication of peripheral equipment are changing. At the same time, there are fewer and fewer truly professional salesmen available for the many small companies evolving. As a result there are opportunities for manufacturers representatives to tie several manufacturers together and provide an effective marketing organization.

Sales Consultant Ben Anixter, partner in Anixter, Bosch, Russell, will counsel his WESCON audience on "Selling Benefits."

"Products no longer sell themselves. The customer must be shown that the product must serve his need—not just a need, but *his* need."

For example, Anixter says, why emphasize accuracy when the benefit of most value to the owner will be the solution to visibility problems?

"In order to discover true owner benefits the customer's problem must be unearthed. Secondly, the qualities of the product that relate to a solution must be presented."

Taking the point of view of sales representatives, G. E. Moxon, president, Moxon Electronics, says that conventional instruments are so well established in the market place that they are becoming less and less a technical selling situation. "Sell Price and Delivery," his talk will advise.

Moxon says that direct sales are used more often than necessary. Representatives should be used more often because:

1. These instruments are sold to a very broad and diversified market.
2. Their applications and uses have been well defined in the industry.
3. Their complexity is no greater than that of a color television set.

The bulk of Moxon's talk will concern how to select the proper representative for a given company's line of instruments.

Chairman Burge points out that the WESCON session will provide an opportunity for manufacturers and representatives to present their views on distribution trends as they see them.

The point of view of a long-time WESCON spokesman who plans to be in the audience for the session was expressed by John O'Halloran, president of O'Halloran Associates, a leading sales rep firm with offices in Northern and Southern California.

"Because of the buyer's market companies have to step up their person-to-person selling. Many of them are turning to representatives to provide this personalized service."

"We also find that the competitive situation requires that a greater number of calls be made in a given time."

"We can't spend as much time as we used to with one customer," O'Halloran said. "In fact, if he has time to talk it is because nothing is going on at his company and he is not buying anything," he said.



# Two-day symposium aims at applying technology to public problems

By Park H. Irvine  
WESCON Public Relations Committee Co-chairman  
and Public Relations Consultant

Technology as represented in the electronics industry can point the way to solution of many of today's problems.

This is the opinion of Don C. Hoefler, columnist for Fairchild Publications and general chairman of WESCON's new, two-day, blue-ribbon symposium on "Applying Technology to Public Problems."

The four-session special symposium is a departure both in scope and subject matter from traditional WESCON programing, according to Donald C. Duncan, Wescan Board chairman.

The event will be held August 26 and 27 at 10:00 A.M., in the Los Angeles Hilton Hotel. It will focus on the problems, opportunities and limitations in relating technical programs to the solution of the pressing public problems in transportation, communications and urban society.

Chairman Hoefler noted that technology has often been accused of being responsible for many of today's social ills. However, he feels, the special symposium should go a long way in dispelling this idea and perhaps will open doors to better utilizing today's high technology industries in the solving of these ills.

"Management in our high technology industries today has a virtual monopoly in the intellectual power in this country," he said. Hoefler explained such management, which includes engineers, scientists and businessmen, consists no longer of narrow specialists as often found in the previous generation, but of genuinely concerned and interested men who are anxious to play a part in helping solve our many problems.

The keynote session on August 26 will highlight Dr. C. Lester Hogan, Fairchild Camera & Instrument Corp., Prof. Burton H. Klein, California Institute of Technology and two yet unnamed prominent speakers. This session is expected to set the tone for the rest of the symposium.

"Technology and the Mobile Population," will thoroughly explore the transportation crisis now facing many major urban areas. Speakers are the Hon. James M. Beggs, undersecretary, U. S. Department of Transportation; John C. Beckett, Hewlett-Packard Co., and the Bay Area Rapid Transit District (BART); Dr. Albert R. Hibbs, manager, Transportation Technology Office, Jet Propulsion

Laboratory and Herbert H. Brown, V-P, Overview Corp., Washington, D.C.

"Technology and Information Exchange" will deal with the varied communications problems and the panel includes Dr. Peter C. Goldmark, CBS Laboratories; Paul Visser, Hughes Aircraft Space Systems Division; Dr. Daniel E. Noble, Motorola, Inc., and Dr. John R. Pierce, Bell Telephone Labs, New Jersey.

"Technology and the Urban Society" will bring ecology into the WESCON spotlight with speakers Floyd L. Goss, chief electrical engineer, Los Angeles Department of Water and Power; Phillip Berry, president of the Sierra Club, and Frank L. Dimster, William Pereira and Associates (urban planning).

Exemplifying one viewpoint is that of Goss who notes that a solution to pressing urban problems requires more electrical energy, not less. Goss explained such problems as waste disposal, transportation, environmental improvements, poverty, drudgery and illiteracy call for an abundant supply of reliable, low cost electrical energy. Goss believes the problems associated with the production and distribution of electrical energy are subject to solution, to resolution within the available technology or a reasonable extension of it.

Assisting Hoefler has been a WESCON organizing committee including Dr. Lester Field, Hughes Aircraft; Louis B. Horwitz, Xerox Data Systems; Dalton Martin, Vidar Corporation; Dr. Peter Myers, Magnavox Research Laboratories; Dr. Gordon Moore, Intel Corporation; Ross Snyder, Hewlett-Packard, and John P. McAdam, International Electronic Research Corporation and committee chairman.

WESCON's regular sessions run from Tuesday, August 25 through Friday, August 28 and will be held at two locations: the Museum of Science and Industry near the Los Angeles Sports Arena, and in Hollywood Park, where seven computer-related sessions are scheduled.

"Applying Technology to Public Problems" will be a special registration event, with a fee of \$50 for the two days, including luncheon and coffee breaks. The Technical Program appears on page 26.

## Computer technology emphasized at wescon

The increasingly important role played by electronic computers in the life of today's electronic engineer is reflected by the fact that seven of Wescon's 27 technical sessions this year are computer oriented. A special meeting room has been constructed for these seven sessions at Hollywood Park adjacent to the exhibit area where the latest wares of 50 computer-oriented companies will be displayed in 80 exhibit booths. This number represents twice the maximum number of exhibit booths previously allocated to computer related displays at Wescon.

It is obvious that engineers are relying more heavily than ever on time sharing systems and mini-computers and also upon central data banks for routine engineering functions and for complex problem solving. And, of course, it's a two-way street. Producers of computers and peripheral equipment continue looking to the design engineer for smaller, more reliable circuits, components, and subsystems.

Up until this year Wescon sessions related to computers dealt almost exclusively with computer hard-

ware design. Wescon '70 will feature several sessions emphasizing computer software, and computer related management sessions.

For example, in the session entitled Managing the Development of Large Software Systems, one paper outlines software systems management techniques that were developed, utilized, and refined during Gemini and Apollo mission-program developments. In all cases, the techniques discussed are the results of actual experience and were developed through a close relationship between NASA and contractor working managers.

Another paper in the same session deals with the commercial counterparts of large military and government software systems. In discussing the similarities and differences among various types of large data processing systems, the author points out that no basic technological differences exist at the system level among commercial, public, military and scientific systems, and the differences that are found are in management attitudes toward the various types of systems.



WESCON

70

# FRONT RUNNER



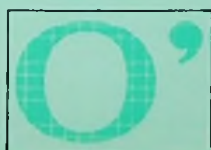
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RF COMMUNICATIONS, INC.

*The manufacturers represented by O'H/A will be grouped in  
Aisle 600 at Hollywood Park for WESCON 70.*

*They are here to present to you the finest in electronic products  
and to discuss with you their applications and measurement  
capabilities. Our O'H/A team will be on hand to personally introduce  
you to these new programs. Come by and meet the  
Front Runner. The track is open daily from August 25 to 28.  
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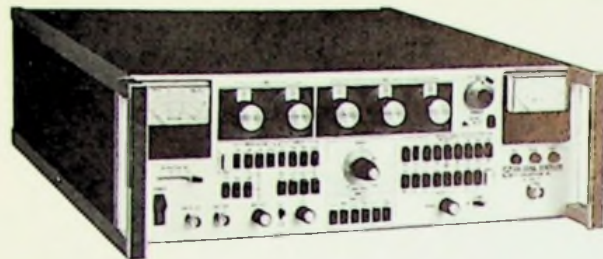
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## 80 MHz SYNTHESIZED GENERATOR/SWEEPER



### MODEL RF-808

**\$2980**

The RF-808 Signal Generator is a synthesizer and sweeper in addition to a standard signal generator covering .05 to 80 mhz in 1 khz steps with a vernier settable to 1 hz. The unit features remote programmability, digital frequency setting, high signal power output, FM, AM, pulse, automatic sweep, and manual sweep.

The RF-808 has digital synthesizer performance, yet retains the manual and vernier tuning and low spurious output of conventional signal generators. Applications include automated test systems where frequency, amplitude, and modulation must be computer controlled; general purpose lab use where high stability, digital or analog tuning, sweep, and modulation versatility are needed; receiver and communication system testing from ultrasonic up into VHF ranges. The unit is intended for bench use, but a standard rack panel adapter is available using only 5 1/4 inches of rack space.

- 50 KHz to 80 MHz
- Stability 5 PP 10<sup>9</sup>/Day
- 0.1  $\mu$ V to 10V into 50 ohms
- AM, FM, or Pulse Modulation
- Manual and Automatic Sweep
- Fully Programmable
- Low Spurious and Harmonics
- All Solid State



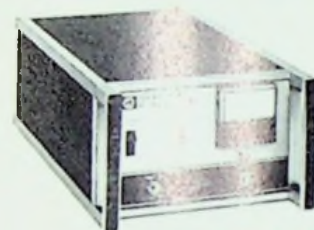
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The RF-805 is a solid state amplifier, broadband from .05 to 80 mhz, producing ten watts with -30 db harmonic and intermodulation distortion, lower distortion at lower output levels. Gain is 47 db minimum, constant within 1 db. Full output is developed with less than 0.1 volt at the 50 ohm input. Accurate output metering and overload protection is provided.

The RF-805 will raise the power of most manual and swept tuned signal generators extending their versatility. Receiver testing, wattmeter calibration, antenna testing, RFI testing, attenuator measurements, and filter and component testing will be aided with this equipment. Optional rack mounting uses 5 1/4" rack height.

### MODEL RF-805

- 10 Watts Output into 50 $\Omega$
- 0.1 Volts In—22.5 Volts Out
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- Flat 47 db Gain
- Solid State
- Low Distortion



**\$980**



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### MODEL RF-815

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WESCON

BOOTH 629



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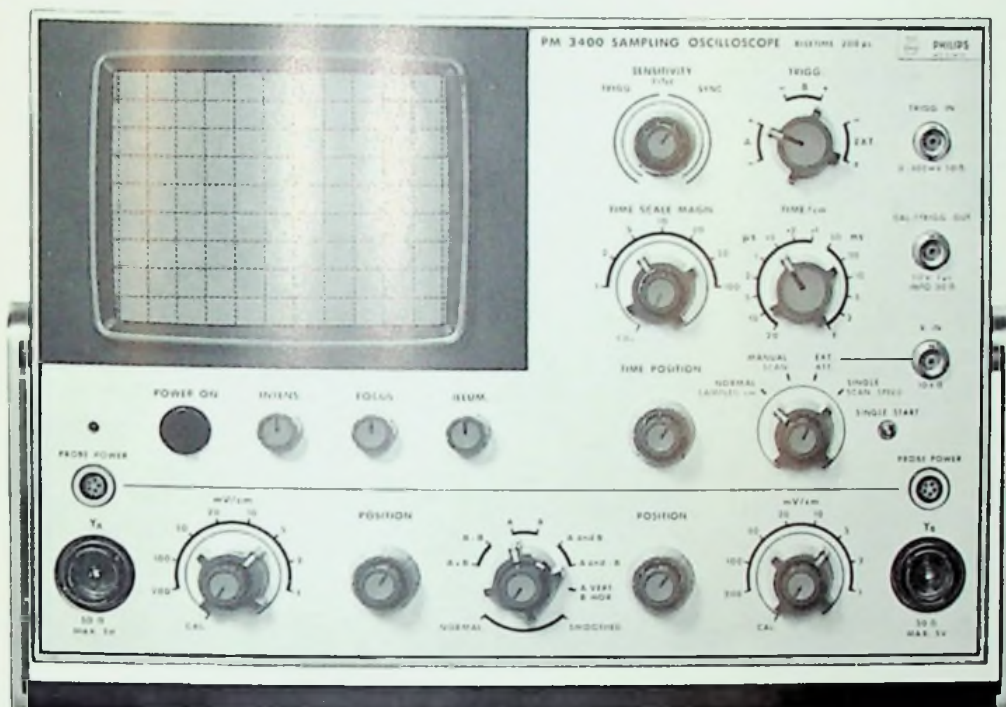


# Samples - Triggers - Displays -

at continuously  
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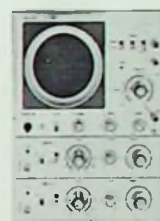
one knob control  
3Mv to 2000MHz.

no ambiguity  
DC to 2000MHz  
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PM 3400  
Sampling Oscilloscope  
\$2,725

More of the Unbeatable  
Philips Scopes



PM 3231  
15MHz 10mV  
Dual Beam  
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PM 3200  
10MHz  
2mV/div  
\$495

**Compact** (9" x 13" x 19") **excellent cost/performance ratio** (\$2,725 is all it takes), **unique circuitry** and design (we list the innovations below) make the new Philips PM 3400 sampling oscilloscope an unusually capable and versatile instrument . . . in fact it's the only one of its class.

The innovations: Continuously adjustable sampling rate. Electronic signal smoothing plus long persistence phosphors give unambiguous display, undistinguishable from real time

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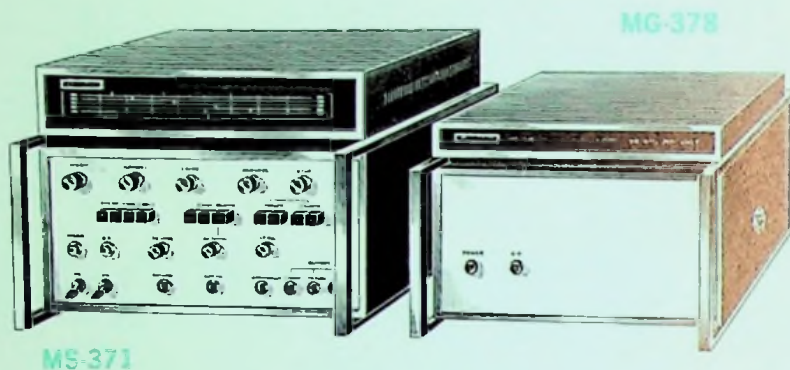


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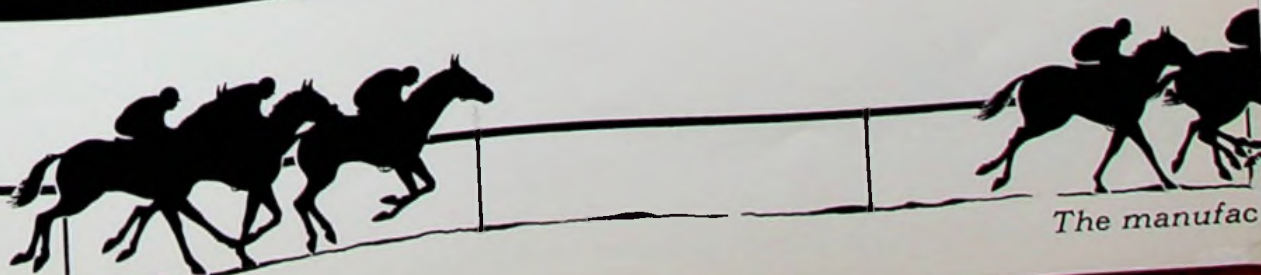
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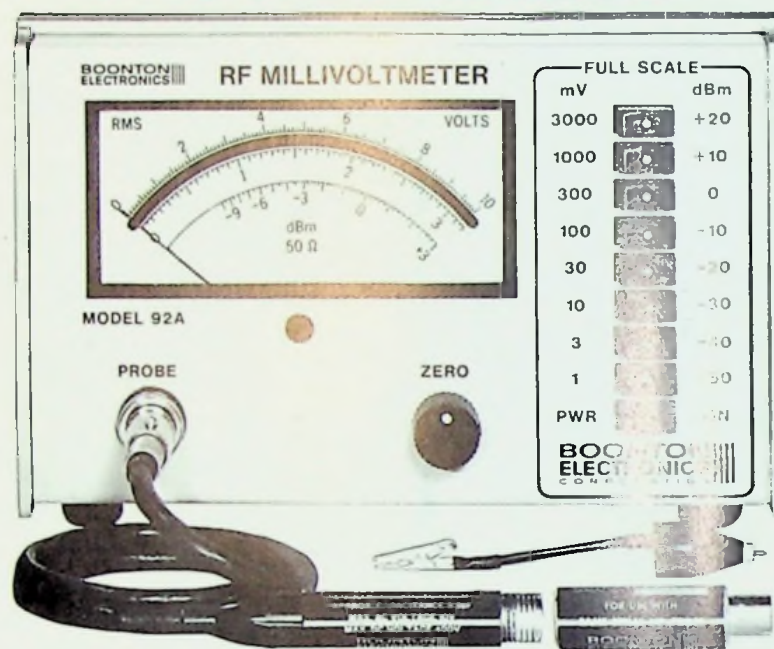
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# Guidelines for survival in today's

## TREACHEROUS

### aerospace-electronics industry

*Walter J. Zable  
President and Chief Executive  
Cubic Corporation  
San Diego, California*

Times are tough, money is hard to get, the stockmarket is going to pot, unemployment is high, interest rates are out of sight, we're in a recession, some say, a depression. People are asking each other, "what can we do about it?" Others relate, "how could this have ever happened to my company?" Well, I can't answer the how's and why's for another company, but I can tell you how our company has not been affected by these trends. In fact, 1970 will be the most successful year in our 18 year history.

It is not a matter of being pompous, which we have no intention of being, nor a matter of saying, "I told you so". In fact, several individuals from many different aspects of business have questioned why we are doing so well. Not too very long ago, a leading electronics magazine sent one of their editors all the way from New York to ask me the same question.

What I have told them as an answer and what I write here to you is a recipe of basic horse sense mixed with technical skill and financial excellence topped with marketing know how, which brewed together comes out people management.

First, let's think technical. I am an engineer who thought it might be interesting to pick up a degree in Physics because mathematics is a long time love. I think, for many years engineers have been reduced to being white collar machines. In many companies there is little chance to advance until the fellow in charge dies or retires; so, consequently, the individual's incentives are curtailed. It could be a case where a fine young engineer, after a few years of sitting, drawing lines or designing some widget for something, loses interest in his chosen profession.

Sometimes, technical people, including management personnel, don't really know what profit means and that each engineer must contribute to the overall profitability of the company. At Cubic an engineer is not just an educated machine; he is given direct responsibility. We start him out with limited authority but as he gains experience

he is given more responsibility and authority. Each engineer, and there are more than 350 on our staff, has his own office. It's not elaborate but it's not a "bull pen" either. Technical people must feel they are a part of the total system. You must have efficient management to see that each person performs and is rewarded. Management must know who and when to cut if necessary. In a profit oriented company you can't afford the luxury of technical people who cannot accept responsibility.

Another very basic but often overlooked item is knowing what your technical capabilities really are and working in these areas. Just because we know how to delegate responsibility and authority through the ranks does not mean we are experts in every technical discipline. Another thing is, we don't have technical personnel around because their names look good in proposals.

A long time ago we discovered that financial management is vital to a growing business. With that, I don't mean a good accounting system efficiently run by high-speed super-star computers. It means being able to look ahead and follow the trends in industry to see if it is smarter to expand rapidly through borrowing money or progress at a slower pace without having to pay interest rates on borrowed money. Our analyses have been right. We took the second way. Our debt is very low, under \$3 million, and we have \$18 million in working capital. We just completed expanding our total corporate facility to the tune of \$2 million, which we paid for. We feel we saved in the battle of high interest and it is a fact that when we began building there wasn't even any local money around. Because we have dollars, we were able to build and move our commercial division to larger quarters, increase our production and turn the dollar one more time. The same holds true for our defense business. Both our commercial and military systems divisions operated out of one large building. Today, there are two main facilities, both working at peak efficiency. All this because we could afford to make them that way.

CONTINUED ON PAGE 16



Of course, there are many ways of getting money, and we have done it many different ways. In early 1968, when we anticipated that the dollar would become more difficult to get, we projected that to continue at our planned growth rate additional finances would be required. A secondary stock offering was issued through our underwriter which raised almost \$8 million additional dollars. This excellent financial position does more than just allow us to build plants. It also permits us to finance our customers to buy the company's products. For example, in our commercial division, which accounts for about 50 per cent of our total sales, we sell electronic equipment to small civil engineering firms and surveyors who many times do not have the capital to outright purchase our device. We have the money to build the equipment and have him pay for the equipment over an extended period of time at a reasonable interest rate. We also have other similar products which can be sold in the same manner, some of them high-dollar items. We have done such things as form a network of passenger elevator franchises. The franchise works something like the ones Colonel Sanders talks about.

Our good financial position has put us in an excellent marketing position. It has helped us grow into a commercially oriented company, which in no way is dependent on the fickle defense business. Now, don't get me wrong, there is nothing wrong with having the United States Government for a customer . . . his credit is very good as far as we are concerned. The major problem, strictly from a dollars and cents standpoint, of doing business with a federal agency is that some contracts have very high risks attached to them. Case in point is one of this country's largest aerospace firms who took a contract with a liability that far exceeded the company's assets . . . contract difficulties and zap! . . . the contractor is in financial trouble. And that financial trouble is not necessarily the contractor's fault, but there is the difficulty nevertheless. But this company is not alone. The aerospace industry has many such companies in a similar situation. Some of these firms, no doubt, will suffer a great deal, possibly a few will go out of business. The others must try to keep their heads above water by taking contracts they normally would never consider, or cutting their work force so as to almost deplete their company's strength.

Some of the trouble stems from companies "buying in contracts" hoping for follow-on work that will offset their low dollar return on the initial contract.

When you are strong financially the game changes a little. For instance, we don't buy into contracts. We don't take high risk jobs; we can, if desired, deal on our terms. Today, we have enough working capital to reach sales volume in excess of \$100 million. In 1970, our sales will be in the \$40-45 million range and we will be very profitable.

The size of your company and how large you want to make it depends almost on a philosophy. The decision is this. Do you want to be a high sales volume company which employs many many people and is world famous, but whose profit margins are very slim, or do you want relatively high earnings, moderate sales and not be one of the community's largest employers. In this case, we have chosen the latter with the exception being that our long range plans call for us to grow at a steady pace to at least the \$100 million sales level, and we'll do it according to our basic plan conceived 10 years ago.

When we speak of marketing . . . we don't mean salesmen. We mean business men who can commit the company and who are profit oriented. At our company, the first thing our marketeers must know and thoroughly understand is our technical capabilities. In the aerospace business, for example, our marketing department is very discreet on what programs they will bid . . . and, today, in so called troubled times, they're even more selective than in the past. That wasn't always the case though. Ten years ago we sent out more than 300 proposals. This year the number will be more like 30 and the odds are we'll receive 80 per cent of those we go after. One method that has proven profitable for us is a thing called applications engineering. Here's what that much-banded word means to us. We'll win a relatively small program for agreement sake in the one to five million dollar range. The job is most likely right down our alley technically. Our marketing philosophy is not one of get the small job performing well and turning the product over to the customer. Even before the contract is considered for bid we have gathered enough marketing intelligence to determine how this program can be expanded, and if there are funds for more business in this product or system area. If there is, or if we think it can be budgeted by our customer, we will go ahead on what is here called applications engineering. Some places it might be called research. We always meet or exceed customer specifications. But our engineers are working under company sponsorship, developing new and more advanced products which we will propose in the future. The development, however, is not trying to change the state of any art, but use our talent to work in the technical areas that we are strong in.

Through this technique we have virtually captured a major portion of the instant data link type reconnaissance business in this country. These types of programs go on for many years and become bread and butter contracts. In marketing, long term production is what we want. It's difficult to make money on custom items that are shortlived.

In short, business success is the management of people.



## About The Author . . .

Walter J. Zable is President, Chief Executive Officer and Founder of Cubic Corporation. Under Zable's Guidance, Cubic has become the largest electronics firm based in San Diego.

Zable holds a degree in electrical engineering from William and Mary College and a Master's degree in Physics from the University of Florida.



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PROVIDES GOOD  
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SCREWDRIVER  
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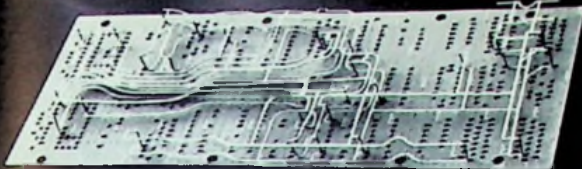


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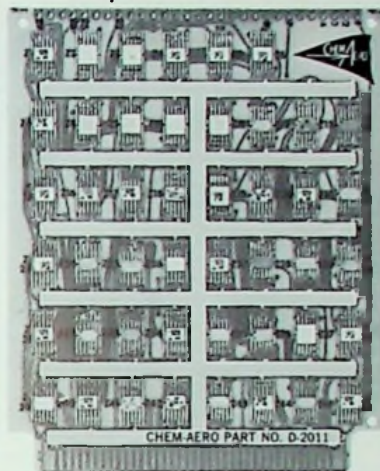
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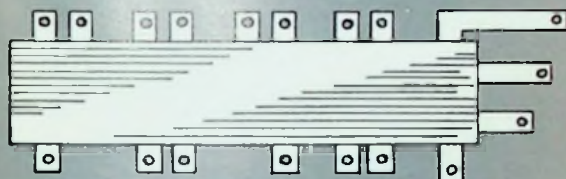
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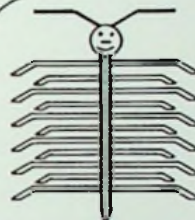


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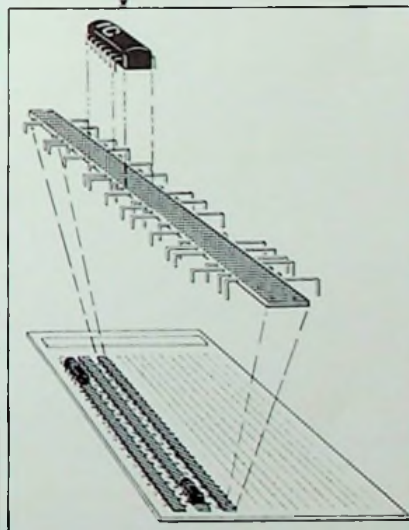
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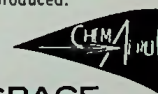
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Museum of Science and Industry

1

**Integrated Circuits for Consumer Electronics**

10am-12:30pm, Meeting Room I

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

1/1 THE NEW VIDEO IF FOR TELEVISION. Gerald Lunn, Motorola Inc.

1/2 MONOLITHIC AND HYBRID ICs IN AUTOMOTIVE ELECTRONICS. Sumner B. Marshall, Sprague Electric Co.

1/3 CONSUMER INTEGRATION—DOES IT NEED FEDERAL INTERVENTION? Norman Doyle, Fairchild Semiconductor.

1/4 CHROMINANCE SIGNAL PROCESSING WITH INTEGRATED CIRCUITS. Gary Kelsen, Signetics Corp.

2

**Electronic Instrumentation/Distribution Trends—1970**

10am-12:30pm, Meeting Room II

Session Organizer and Chairman: Frank J. Burge, Data Technology Corporation.

2/1 CORPORATE MARKETING. James Cunningham, Syston Donner Corporation.

2/2 SYSTEMS SALES REPRESENTATIVE. D. B. Pivan, Pivan Engineering.

2/3 MINI-COMPUTER TERMINAL MANUFACTURER. Cloyd Marvin, Four Phase Systems.

2/4 SALES CONSULTANTS. Ben Anixter, Anixter, Bosch & Russell Inc.

2/5 SALES REPRESENTATIVES. Gaylord Moxon, Moxon Electronics.

3

**Millimeter Systems, Devices and Guides**

10am-12:30pm, Meeting Room III

Session Organizer and Chairman: Robert M. Knox, IIT Research Institute.

3/1 MILLIMETER WAVE SYSTEMS—AN OVERVIEW. Alan J. Simmons, Control Data.

3/2 A DIGITAL TRANSMISSION SYSTEM USING CIRCULAR ELECTRIC MODE WAVEGUIDE.

J. H. Mullins, Bell Telephone Laboratories.

3/3 RECTANGULAR DIELECTRIC IMAGE LINES FOR MILLIMETER INTEGRATED CIRCUITS.

P. P. Toullos and R. M. Knox, IIT Research Institute.

3/4 MILLIMETER WAVE IMPATT POWER SOURCES. N. B. Kramer, Hughes Research Laboratories.

4

**Optimizing Selection of Vacuum Deposition Equipment**

2-4:30pm, Meeting Room I

Session Organizer: William C. Wiley, Bendix Corp.

4/1 THE CASE FOR AIR-TO-AIR IN-LINE SYSTEMS. W. D. Holt, Bendix Scientific Instruments.

4/2 HIGH VOLUME BATCH PRODUCTION. Court Skinner, American Micro Systems, Inc.

4/3 COMPARISONS OF BATCH AND CONTINUOUS PROCESSING IN THIN-FILM MANUFACTURING. John Crane & John Duryee, Univac Div., Sperry Rand.

4/4 IMPACT OF COMPUTER CONTROL OF VACUUM DEPOSITION PROCESSES. R. M. Centner and R. A. Wilson, Bendix Research Laboratories.

5

**Military User Views of Automatic Testing**

2-4:30pm, Meeting Room II

Session Organizer: Fred Liguori, Emerson Electric.

5/1 DIMATE: LESSONS LEARNED THROUGH APPLICATION. William Morris, Tobyhanna Army Depot.

5/2 FUTURE GENERAL PURPOSE AUTOMATIC TEST SETS (GPATS). H. A. Fraser, Kelly AFB.

5/3 THE INTRODUCTION OF VERSATILE AVIONIC SHOP TEST (VAST) SYSTEM. Joseph Carsley, Naval Air Systems Command, and Ralph Lohman, PRD Electronics Inc.

5/4 EXPERIENCE WITH LAND COMBAT SUPPORT SYSTEM (LCSS). William Grunewald, U.S. Army Missile Command, and O. T. Carver, RCA.

5/5 VERSATILE AUTOMATIC TEST EQUIPMENT (VATE). (Speaker to be announced.)

6

**Instrumentation Guidelines for Control of Ecology and Water Pollution**

2-4:30pm, Meeting Room III

Session Organizer: J. R. Ford, Interstate Electronics.

6/1 WATER QUALITY PLANNING. R. C. Timme, IEC Oceanics Division.

6/2 INSTRUMENTATION FOR MARINE ECOLOGICAL MONITORING. Roy D. Gault, Dillingham Corp.

6/3 ELECTRONICS IN A MODERN SEWAGE TREATMENT PLANT LABORATORY. Frank F. Wada, DWP.

6/4 ESTIMATING PARTICULATE MATERIAL SUSPENDED IN THE SEA. J. S. Pearce, Univ. of Calif.

6/5 STREAM ANALYZERS—VITAL TOOLS TO UNDERSTAND AND CONTROL OUR ENVIRONMENT. Thomas J. Kehoe, Beckman Instruments, Inc.

Wednesday, August 26

Museum of Science and Industry

7

**LSI Memories**

10am-12:30pm, Meeting Room I

Session Organizer: A. C. Tickle, Zeion, Inc.

7/1 SILICON GATE MOS TECHNOLOGY AND ITS MEMORY APPLICATIONS. D. Frohman-Bentchkowsky, Intel Corporation.

7/2 PERFORMANCE AND ECONOMIC RELATIONSHIP OF A BEAM LEAD MULTICHIP MEMORY. J. J. Kubinec, Computer Microtechnology, Inc.

7/3 ION IMPLANTATION IN LSI MEMORY MANUFACTURE. L. F. Roman and A. C. Tickle, Zeion, Inc.

7/4 LSI MEMORY DESIGN. W. Mandl, Macrodata Co.

8

**The Integrated Circuit Overseas**

2-4:30pm, Meeting Room II

Session Organizer and Chairman: Sam Weber, Electronics Magazine.

8/1 STIMULATING AND EVALUATING IDEAS FOR NEW PRODUCTS. Lincoln Hays, LTV Electronics Systems Incorporated.

8/2 SCHEDULING AND CONTROLLING PRODUCT DEVELOPMENT. John J. Kopo, Jr., Cimron Division, Lear Siegler Incorporated.

8/3 ENGINEER'S ROLE IN NEW PRODUCT PLANNING. Harley Halversen, Hewlett-Packard.

8/4 TECHNOLOGICAL FORECASTING AND PRODUCT PLANNING. G. E. Peniston, Texas Instruments.

9

**Solutions to Problems of Low-Noise Amplification at Microwave Frequencies**

10am-12:30pm, Meeting Room III

Session Organizer: H. K. Lenfestey, Watkins-Johnson

9/1A RECENT ADVANCES IN LOW-NOISE TRANSISTOR AMPLIFIERS. R. I. Disman, Watkins-Johnson Company.

9/1B SOME NEW DEVELOPMENTS IN LOW-NOISE TWT AMPLIFIERS. J. N. Nelson, Watkins-Johnson Company.

9/2 RECENT ADVANCES IN MIXERS AND TUNNEL DIODE AMPLIFIERS. William W. Raukko and Edmund Moley, Aertech Industries.

9/3 PARAMETRIC UP-CONVERTERS IN RECEIVING SYSTEMS. W. J. Gemulla, Zeta Laboratories.

9/4 COMPONENTS FOR USE IN HIGH PERFORMANCE WIDE BAND RECEIVERS. W. Dale Bush, Sylvania Electric.

Hollywood Park

A

**Managing the Development of Large Software Systems**

10am-12:30pm, Meeting Room IV

Session Organizer: Marvin Luther, TRW Systems.

A/1 BASIC SOFTWARE DEVELOPMENT MANAGEMENT CONCEPTS. Winston W. Royce, TRW Systems.

A/2 MANAGING SOFTWARE DEVELOPMENT FOR THE APOLLO REAL-TIME CONTROL CENTER. Lynwood C. Dunseith, NASA Manned Space Craft Center.

A/3 MANAGING THE DEVELOPMENT OF COMMERCIAL SOFTWARE SYSTEMS. Thomas Steel, Private Consultant.

A/4 MANAGING SOFTWARE DEVELOPMENT FOR A USAF COMMAND SYSTEM. Lt. Col. T. J. DeSchon, SAMSO.

B

**Evaluation of Proprietary Software**

2-4:30pm, Meeting Room IV

Session Organizer and Chairman: John A. Postley, Informatics Incorporated.

B/1 EVALUATING SOFTWARE PRODUCTS FOR COMMERCIAL EDP. Lester G. Miller, Eastman Kodak Company.

B/2 PROPRIETARY SOFTWARE: PROFITABILITY THROUGH EVALUATION. Calvin J. Anderson, Mobil Oil Corporation.

B/3 AN APPROACH TO SOFTWARE SELECTION. John M. Thurlow, ESSO Mathematics & Systems, Incorporated.

B/4 A SUPPLIER LOOKS AT PROPRIETARY SOFTWARE EVALUATION. Fred Braddock, Informatics, Incorporated.

Hollywood Park

C

**Mini-Computers in Process Industries**

10am-12:30pm, Meeting Room IV

Session Organizer and Chairman: Stuart P. Jackson, Jackson Associates.

C/1 MINICOMPUTERS AND PERIPHERAL EQUIPMENT—A CURRENT REVIEW. Ernest T. Roland, Jackson Associates.

C/2 A BATCH CHEMICAL PROCESS CONTROLLER. Robert Young, Emery Industries Inc.

C/3 APPLICATION OF MINI-COMPUTER TO GAS PLANT CONTROL. H. R. Courts, Unitech, Inc., and Michael I. Chiseri, Chem Systems Inc.

C/4 TALKING TO THE MINI-COMPUTER. Sergio Ribeiro, Dicom Industries.

DISCUSSORS: Hubert de Vries, Ferroxcube; Fred Cox, Micro Systems, Inc.; Cy Rutledge, Mead Paper, and Norman Myers, Xerox Data Systems.



REMOVE THIS INSERT  
AND SAVE IT  
FOR A BRAINY DAY!

Now — when OEM costs really count...



RELIABLE PC-BOARD CIRCUITRY WITH WIDE SPACED INTERCONNECT PATTERN

EFFICIENT SOLID-STATE SILICON POWER SERIES-REGULATOR ( $\pm 1\%$ , LINE/LOAD)

COMPUTER-GRADE ELECTROLYTIC CAPACITOR

CURRENT-LIMIT OVERLOAD AND SHORT-CIRCUIT PROTECTION

PRECISION WIRE-WOUND POT.-ADJUSTABLE DC ( $\pm 10\%$ )

SOLDER-EASY CONTACTS (NO EXPENSIVE TERMINAL STRIPS)

FUNCTIONALIZED STRUCTURE HAS NO EXCESSIVE PARTS

# Wanlass “Economy by Design”

A basic OEM Power Supply Concept  
for maximum power at  
minimum size, weight and cost.



# Wanlass Standard OEM D.C. Power Supplies\*



ALL-SILICON, SOLID STATE POWER SUPPLIES FOR IC's...

DESIGNED TO PROVIDE MAXIMUM POWER IN MINIMUM SPACE...

PRICED LOWER THAN YOU CAN MAKE THEM YOURSELF!

## DPS-1 SERIES TO 3 AMPS

PRICED FROM

**\$13<sup>00</sup>**

IN FACTORY OEM  
QUANTITIES



## SUPER ECONOMY ALL PURPOSE D.C. POWER SUPPLIES

### 10 & 20W Regulated Power Supplies

No frills, just sound "functionalized" design that offers  $\pm 1\%$  regulation, overload and short-circuit protection, and a high-power to small-package ratio. The DPS-1 has 50% fewer parts, provides 1-Watt/cubic inch, weighs just 1.6 oz./Watt and costs only 65¢/Watt — less than you could build it yourself!

### STANDARD MODELS AND RATINGS

Wanlass Model	D.C. Output	Distributor 1-9 Price	Factory OEM Quantity Price
DPS-1	5 & 6V @ 3.0A	\$24.95	\$13.00
DPS-5	5 & 6V @ 1.5A	19.95	12.00
DPS-2	12 & 15V @ 1.5A	24.95	13.00
DPS-6	12 & 15V @ 0.75A	19.95	12.00
DPS-3	24V @ 1.0A	24.95	13.00
DPS-7	24V @ 0.4A	19.95	12.00
DPS-4	180-220V @ 100mA	36.00	26.00

## PHASE I SERIES TO 5 AMPS

PRICED FROM

**\$34<sup>50</sup>**

IN FACTORY OEM  
QUANTITIES



## PHASE I OEM D.C. POWER SUPPLIES

### 60W Power Supplies

Available in eight E-I combinations, ranging from 5-28V/2.1-5A, these popular power supplies have been "functionalized" to provide optimum performance at low cost (less than 60¢/W)! Line/load regulation is  $\pm 1\%$  and ripple is less than 0.1%. They also have built-in overload and short-circuit protection.

### STANDARD MODELS AND RATINGS

Wanlass Model	D.C. Output	Distributor 1-9 Price	Factory OEM Quantity Price
1-OEM 5-5	5V @ 5A	\$60.00	\$34.50
1-OEM 6-5	6V @ 5A	60.00	34.50
1-OEM 10-5	10V @ 5A	60.00	34.50
1-OEM 12-5	12V @ 5A	60.00	34.50
1-OEM 15-4	15V @ 4A	60.00	34.50
1-OEM 18-3	18V @ 3.3A	60.00	34.50
1-OEM 24-2.5	24V @ 2.5A	60.00	34.50
1-OEM 28-2	28V @ 2A	60.00	34.50

## PHASE II SERIES TO 10 AMPS

PRICED FROM

**\$62<sup>00</sup>**

IN FACTORY OEM  
QUANTITIES



## PHASE II OEM D.C. POWER SUPPLIES

### 30-60-120W Power Supplies

Offering a choice of three power ratings — 30-60-120W — with 4 voltage ranges in each (3.6-9V/9-17V/17-30V/30-60V), these floating-output supplies provide design flexibility and peak performance at low prices! Line/load regulation is just  $\pm 1\%$ , they have automatic short-circuit protection.

### STANDARD MODELS AND RATINGS

Wanlass Model	D.C. Output	Distributor 1-9 Price	Factory OEM Quantity Price
30-OEM-1	3.6-9V @ 2.5A	\$46.00	\$32.00
30-OEM-2	9-17V @ 2.5A		
30-OEM-3	17-30V @ 2.5A		
30-OEM-4	30-60V @ 2.5A		
60-OEM-1	3.6-9V @ 5A	\$57.50	\$40.00
60-OEM-2	9-17V @ 5A		
60-OEM-3	17-30V @ 5A		
60-OEM-4	30-60V @ 5A		
120-OEM-1	3.6-9V @ 10A	\$86.25	\$62.00
120-OEM-2	9-17V @ 10A		
120-OEM-3	17-30V @ 10A		
120-OEM-4	30-60V @ 10A		

## MARK III SERIES TO 10 AMPS

PRICED FROM

**\$80<sup>00</sup>**

IN FACTORY OEM  
QUANTITIES



## MARK III PRECISION OEM SLOT SUPPLIES

### 60-120W Power Supplies

Ideal for IC, OP-AMP and MOS/FETS or other voltage sensitive loads. Features dual 115/230V A.C. input, regulation to  $\pm 0.1\%$ , ripple of 1 mV or less RMS at full load, and adjustable voltage. Built-in adjustable overvoltage crowbar provides overvoltage protection. Overload protection is automatic and adjustable.

### STANDARD MODELS AND RATINGS

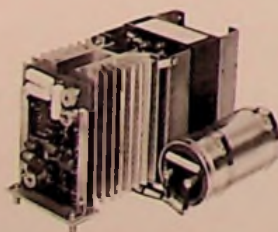
Wanlass Model	D.C. Output	Distributor 1-9 Price	Factory OEM Quantity Price
III OEM 5-5	5V @ 5A	\$ 89.50	\$50.00
III OEM 6-5	6V @ 5A	89.50	50.00
III OEM 12-5	12V @ 5A	89.50	50.00
III OEM 15-4	15V @ 4A	89.50	50.00
III OEM 18-3	18V @ 3A	89.50	50.00
III OEM 24-2.5	24V @ 2.5A	89.50	50.00
III OEM 28-2	28V @ 2A	89.50	50.00
III OEM 5-10	5V @ 10A	137.50	80.00
III OEM 12-10	12V @ 10A	137.50	80.00
III OEM 24-5	24V @ 5A	137.50	80.00

## "BRUTE" SERIES TO 50 AMPS

PRICED FROM

**\$220<sup>00</sup>**

IN FACTORY OEM  
QUANTITIES



## "BRUTES" — HIGH POWER OEM D.C. SLOT SUPPLIES

### 300-600-1200W Power Supplies

Choose any one of the three BRUTE power ranges — 300-600-1200W — and you'll get a single unit that provides two continuously adjustable voltage ranges (2-25V or 5-50V), SCR closed-loop control assures  $\pm 0.1\%$  line/load regulation. Adjustable current limiting protects against overload and "shorts". All this at lower than "slot supply" prices!

### STANDARD MODELS AND RATINGS

Wanlass Model	D.C. Output	Distributor 1-9 Price	Factory OEM Quantity Price
BRUTE I	5-50/2-25V* @ 6/12A	\$148.00	\$111.00
BRUTE II	5-50/2-25V* @ 12/24A	195.00	141.00
BRUTE III	5-50/2-25V* @ 24/50A	315.00	220.00

\*Can be connected either for 5 to 50V or 2 to 25V depending upon output current desired

\* Contact Wanlass Distributors for immediate delivery of any of these units.



# Wanlass Standard OEM Power Conditioners

**Wanlass  
"Economy  
by Design"**

PRODUCTS OF WANLASS ADVANCED PARAX™,  
VARAX™, AND CLIP-AC™ TECHNOLOGY FOR UNEQUALLED  
PERFORMANCE AND RELIABILITY AT LOW COST.

## STANDARD PEC-150 PARAX™ 150VA/60Hz A.C. LINE FILTER

50DB NOISE  
ATTENUATION

ONLY **\$5000**  
IN FACTORY OEM QUANTITIES



The Model PEC-150 PARAX™ Filter/Regulator controls AC power electrically, without mechanical or solid-state elements, by utilizing parametric techniques to eliminate the need for mutual inductance in electrical energy transformation. A design featuring Wanlass PARAFORMER™ technology, it achieves transient free energy transfer without relying on mutual inductance, regulates voltage, exhibits minimum waveform distortion, provides electrical isolation and transforms voltage. Ask about other PEC units rated to 1000VA.

### PEC-150 SPECIFICATIONS:

A.C. INPUT: 105-125V, Single Phase, 60Hz  
A.C. OUTPUT: 117V, Single Phase, 60Hz, 150VA.  
NOISE ATTENUATION: Over 50DB (0-1 MHz)  
REGULATION:  $\pm 0.5\%$  Line:  $\pm 2\%$  Load.  
SIZE: 5.5"H x 4 5/8"W x 14 1/8"L.  
WEIGHT: 21 Pounds  
DISTRIBUTOR 1-9 PRICE: \$150.00  
Several Models in 60Hz and 400Hz Ratings av

## STANDARD VVR-1500 VARAX™ VARIABLE INDUCTANCE A.C. VOLTAGE REGULATORS

STATIC-REGULATED A.C.

POWER AT LESS

**THAN 7¢ A WATT!**  
IN FACTORY OEM QUANTITIES



Wanlass VARAX™, magnetic A.C. Line Voltage Regulators are generically related to the PARAFORMER™, and are significantly different in concept and performance from the classical saturable reactor. Because no SCR's or transistors are used in the power circuits, reliability is much greater. Designed to replace ferroresonant type constant voltage transformers and SCR type A.C. regulators, VARAX™ units are lower in cost, lighter in weight and smaller in size. Frequency insensitive, they provide spike free rms regulation for line and load with efficiency up to 95% at maximum load, without conducted RFI.

### TYPICAL VVR SPECIFICATIONS:

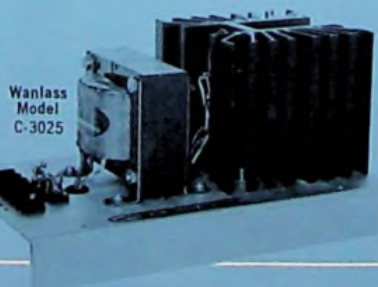
A.C. INPUT: 105-130V, 47-63Hz, Single Phase  
A.C. OUTPUT: 120V RMS  
REGULATION:  
Line  $\pm 1\%$ , 105 to 130V Line Change  
Load  $\pm 1\%$ , 400 to 1500 W Load Change.  
EFFICIENCY: More than 90% at full load.  
DISTRIBUTOR 1-9 PRICE: \$172.50.  
Several standard models available.

## STANDARD C-3000 CLIP-AC™ TRUE RMS 117V A.C. VOLTAGE REGULATORS

30VA MODEL

ONLY **\$2000**

IN FACTORY OEM QUANTITIES



Wanlass CLIP-AC™ A.C. Regulators are the logical successors to the ferroresonant transformer for the majority of A.C. regulation requirements up to 1KVA. Regulation is achieved by symmetrically clipping the peaks of the incidental sinusoidal waveform. Output voltage is monitored by a sensor which uses a zener diode as a reference. In turn, control circuitry adjusts the clipping level of a pass transistor to maintain the desired constant peak-to-peak output waveform. The voltage can then be transformed into a variety of regulated output voltages through the use of an appropriate transformer. Frequency insensitive, they offer several advantages, such as adjustable voltage output, low cost, small size, 50% weight savings and line regulation to 0.1%.

### TYPICAL C-3000 SPECIFICATIONS:

A.C. INPUT: 100-130V, 47-420Hz, Single Phase  
A.C. OUTPUT: 117V Nominal  
REGULATION (RMS):  
 $\pm 0.5\%$  (for  $\pm 10\%$  A.C. Line Change)  
 $\pm 0.5\%$  (for 10% to full Load Change)  
POWER FACTOR REGULATION:  $\pm 0.5\%$   
FREQUENCY REGULATION:  $\pm 0.5\%$   
DISTRIBUTOR 1-9 PRICE: \$39.00  
Available in models rated from 30VA to 1000VA.

**GET THE ALL FACTS: CALL TOLL-FREE (800) 854-3258 NOW!**

In California and Canada Call (714) 545-8467 Collect.

IF A "STANDARD" WON'T SOLVE YOUR PROBLEM DON'T GIVE UP . . . TURN THE PAGE!



# Wanlass Custom OEM Power Supplies

FROM A BASIC POWER SUPPLY TO A  
COMPLETE SYSTEM FOR INTEGRATED POWER  
CONDITIONING AND CONTROL, PRODUCED  
TO ASSURE ULTIMATE ECONOMY BY DESIGN.

## SOLID STATE POWER SUPPLIES

*A capacity to produce 200,000 power supplies per year.*

Wanlass capability in the field of solid-state power supply design has been demonstrated by high volume production runs for such companies as Digital Equipment Corporation, Beckman Instruments, General Electric, Friden, 3M Company, RCA, SCM and Giddings and Lewis. Versatility in design offers a choice of voltage or current regulated supplies with a single output or as many as 10 outputs, in ratings from 1 watt to several kilowatts. Regulation factors from unregulated to  $\pm 0.005\%$  can be achieved using SCR or transistor type regulation according to customer need. All design, production and assembly is accomplished within the Wanlass facility to assure quality standards and adherence to delivery commitments. Pictured at right are typical units produced to meet the specific requirements of Wanlass customers.

Wanlass Electric Company Custom Products Division is fully equipped with automated equipment for high volume production. All fabrication and assembly operations are accomplished within the Wanlass Santa Ana facilities. Products of this division for leading equipment manufacturers in the field include the use of all state-of-the-art techniques such as magnetics, SCR, solid state and high frequency switching, the use of conventional magnetic materials and/or ferrites, and the engineering know-how to produce power conditioning equipment in any rating from microwatts to megawatts.



## MULTI-OUTPUT VOLTAGE REGULATORS

*0.1% line regulation at unit costs as low as \$12.00!*

The adaptation of Wanlass CLIP-AC™ technology to voltage regulators makes it possible to produce multi-output assemblies some 50% smaller and lighter in weight than units designed along ferroresonant principles. Simplicity in design and less material content are two factors that lead to better performance at significant cost savings. An example of this type of unit is pictured at right. The test fixture on which the 6000th unit of a production run is undergoing specialized tests, is typical of the equipment built by Wanlass to support the test procedures required by large custom orders. In addition to CLIP-AC™ techniques, Wanlass has produced thousands of voltage regulators using PARAX™, VARAX™ and conventional SCR and magnetics technology for leading electronic firms including Hughes Aircraft Company, 3M Company, Litton Industries, General Electric and Beckman Instruments, Inc.



## PARAMETRIC SWITCHING SUPPLIES

*40KC high frequency switching with no load transients.*

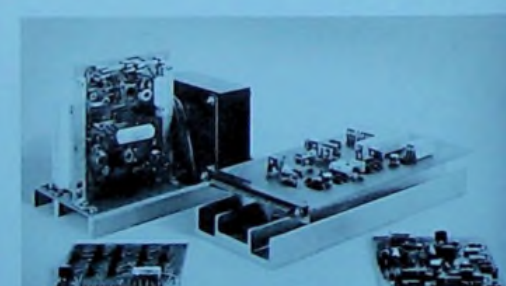
The latest technological breakthrough from Wanlass is pictured in the bread-board stage at right. This high frequency switching supply, based on the Wanlass proprietary parametric principles, operates at 40KC, handles 150 watts of power, and provides 7 precision outputs. The parametric techniques eliminate the troublesome RFI problems that have traditionally plagued switching supplies. When packaged in its final form, this unit measures only 2" x 4" x 4" and weighs approximately 13 ounces. The initial customers for this unique use of parametric technology for high frequency switching are dominantly in the computer, data processing and instrument field, in addition to the military field where its advantages are obvious. Units of this type are termed "PARA-SWITCHERS™".



## COMPLETE SYSTEMS

*A single source of integrated power conditioning and control.*

The breadth of experience gained by the Wanlass engineering staff in the areas of computers, missile systems, radar, motor control, industrial controls and data processing equipment has well equipped the company to undertake complete system projects. The system pictured at right shows the power conversion and control system produced for a commercial photocopy machine. The elements of the system, completely designed and produced by Wanlass, included logic, timing, AC and DC power switching, plus AC and DC power supplies... a complete package from concept to delivery to solve the power and control requirement problems of advanced equipment at a cost compatible with the production economics of today. Over 6000 of these systems have already been manufactured. The sound engineering practice that produced this example has been applied to other system projects with equal success and is available for new challenges.



## WANLASS ELECTRIC COMPANY

A Division of AMBAC Industries, Inc.

1815 S. RITCHEY ST. • SANTA ANA • CALIFORNIA 92705



FOR "ECONOMY BY DESIGN" TO MEET THE OEM MANUFACTURING COST SQUEEZE OF TODAY

**CALL TOLL-FREE (800) 854-3258**

In California and Canada call (714) 545-8467 (collect)



# | The Wescon Technical Program |

Wednesday/Continued

**10**

## Active and Passive Filters and Equalizers

2-4:30pm, Meeting Room I

Session Organizer: R. A. Johnson, Collins Radio.  
Session Chairman: Edward Frymoyer, Collins Radio.  
10/1 NEW SINGLE SIDEBAND MECHANICAL FILTERS. Robert A. Johnson, Collins Radio Co.  
10/2 PHASE MATCHED BANDPASS CRYSTAL FILTERS. C. W. Pond, Hughes Aircraft Co.  
10/3 ACTIVE FILTERS AND EQUALIZERS USING OPERATIONAL AMPLIFIERS. Jerry G. Willford and Jay V. Robertson, Collins Radio.  
10/4 DELAY EQUALIZERS. Charles E. Schmidt, Lenkurt Electronics Company.

**11**

## Product Planning in a Maturing Market

10am-12:30pm, Meeting Room II

Session Organizer: R. D. Speer, Electronic Design.  
11/1 IC PROGRESS IN EUROPE. H. E. J. Finke, Motorola Semiconductor Products.  
11/2 IC APPLICATIONS IN EUROPE. P. Cooke, CETA Electronics Limited.  
11/3 MARKETING ICs OFF-SHORE: PROBLEMS AND SOLUTIONS. Carlos Auriema, Ad Auriema Inc.  
11/4 THE AMERICAN MANUFACTURER IN THE WORLD MARKET. (Speaker to be announced.)

**12**

## Medical Electronics

2-4:30pm, Meeting Room III

Session Organizer: Dr. Morton D. Schwartz, USC.  
Session Chairman: Norman B. Reilly, Computer Marketing Planning and Research.  
12/1 HOW TO DESIGN MEDICAL ELECTRONIC EQUIPMENT FOR PATIENT SAFETY. Allan F. Pacula, Beckman Instruments Incorporated.  
12/2 INSTRUMENTATION SYSTEMS IN MEDICAL SCREENING. Charles A. Broutman and Malcolm G. Ridgway, TRW Systems.  
12/3 MEDICAL ELECTRONICS FOR MULTIPHASIC HEALTH TESTING BY PARAMEDICAL PERSONNEL. Kenneth L. Dufour, Humetrics.  
12/4 COMPUTER TERMINAL AT THE INTENSIVE CARE BEDSIDE. J. A. G. Russell, Cedars-Sinai Center.  
12/5 CLINICAL LABORATORY INSTRUMENTATION. Rodney E. Willard, Loma Linda University.

Thursday, August 27

## Museum of Science and Industry

**13**

## The Next Generation of Satellite Systems

10am-12:30pm, Meeting Room I

Session Organizer: S. H. Durrani, COMSAT Labs.  
13/1 SPACE STATION COMMUNICATIONS. A. Adelman and R. W. Hockenberger, IBM.  
13/2 ADVANCED COMMUNICATIONS EXPERIMENTS FOR THE ATS-F SATELLITE. A. H. Sabelhaus, NASA-Goddard, and Robert P. Pahmeier, General Electric.  
13/3 EARTH RESOURCES TECHNOLOGY SATELLITE SYSTEM. B. T. Bachofer, General Electric.  
13/4 A MULTIFUNCTIONAL SATELLITE FOR THE LATE 1970's. S. H. Durrani, COMSAT Laboratories.  
13/5 SYNCHRONOUS METEOROLOGICAL SATELLITES. Donald Fordyce, NASA-Goddard.

**14**

## Instrumentation for Data Acquisition and Control Systems

10am-12:30pm, Meeting Room II

Session Organizer: G. A. Hellwarth, IBM Corp.  
14/1 A LOW-LEVEL, HIGH-SPEED, SOLID STATE MULTIPLEXER WITH PROGRAMMABLE-GAIN AMPLIFIER. David Hartke, Xerox Data Systems.  
14/2 A VERSATILE INTERFACE CONTROL STATION. Nico H. Roos, Control Systems Division, Motorola.  
14/3 A HIGH-SPEED HIGH-RESOLUTION ANALOG-TO-DIGITAL CONVERTER. Donald Reiss, ECCO.  
14/4 A DATA DISTRIBUTOR WHICH PROVIDES BOTH ANALOG AND DIGITAL OUTPUTS. Brett M. Nordgren and John Mickowski, Hewlett-Packard.

**15**

## Optoelectronic Devices and Applications

10am-12:30pm, Meeting Room III

Session Organizer: L. Merrill Palmer, Centralab Semiconductor Division, Globe-Union Inc.  
15/1 INNOVATIONS WITH LIGHT EMITTING DIODES. Bill Otsuka, Monsanto.  
15/2 SURVEY OF PHOTSENSITIVE MATERIALS AND DEVICES. Al Seck, Centralab.  
15/3 "OPTO-HYBRID" INTEGRATED CIRCUIT PHOTSENSITIVE DEVICES. L. Merrill Palmer, Centralab.  
15/4 SELF-SCANNED PHOTENSOR ARRAYS. R. H. Dyck, Fairchild Semiconductor.

**16**

## Component Manufacturing for the 70s

2-4:30pm, Meeting Room I

Session Organizer: George Palken, Circuits Manufacturing.  
Session Chairman: Robert Dushan, Honeywell.  
16/1 MECHANICAL ENGINEERING ASPECTS OF 1024 BIT MULTI-CHIP SEMICONDUCTOR MEMORY. Kurt M. Striny and Irving Weingrod, Bell Telephone Laboratories.  
16/2 INTERCONNECTIONS BETWEEN CHIP AND PACKAGE MEDIUM: DEVICES AND TECHNIQUES. L. K. Keys, Magnavox Company.  
16/3 THICK AND THIN FILM CIRCUIT MATERIALS. Gerald D. Slawetzki, Sylvania Microelectronics.  
16/4 TIME-SHARED COMPUTER CONTROL OF AUTOMATED TEST STATIONS. P. A. Hogan and A. E. Nelson, Honeywell Aerospace Division.

**17**

## Advances in Commercial Avionics

2-4:30pm, Meeting Room II

Session Organizer: Joseph Rutkowski, Bendix Corp.  
Session Chairman: Edgar A. Post, Bendix Corp.  
17/1 A PRECISION AREA NAVIGATION SYSTEM. John F. Gilbert and Allen G. Quynn, Boeing Co.  
17/2 AIRBORNE DISPLAY AND ELECTRIC MANAGEMENT SYSTEM. Robert C. Eckenfelder, Bendix Corporation, Electric Power Division.  
17/3 THE NEXT STEPS IN AIR TRAFFIC CONTROL MODERNIZATION. Neal Blake, FAA.  
17/4 ADVANCED AVIONICS ON AIRLINE OPERATIONS. Kenneth B. Olsen, American Airlines.

**18**

## Management Control Systems (MCS), Knight or Dragon?

2-4:30pm, Meeting Room III

Session Organizer: R. V. Morse, Hollander Assoc.  
18/1 OVERVIEW-COMPARISON OF MCS. Robert V. Morse, Hollander Associates.  
18/2 APPLICATIONS OF MANAGEMENT CONTROL SYSTEMS. Robert W. Miller, TRW Systems.  
18/3 COST/SCHEDULE CONTROL SYSTEM CRITERIA (C/SCSC). Capt. Charles C. Manes, AF Systems Command.  
18/4 TOPS, A NEW MCS FOR MAXIMIZING PROFITS. G. L. Hollander and E. A. Titley, Hollander Associates.  
18/5 MCS: THE PROBLEMS OUTWEIGH THE BENEFITS. (Speaker to be announced.)

**D**

## Hands On Programmable Calculators

2-4:30pm, Meeting Room IV

Session Organizer: Robert Koeper, EDN Magazine.  
D/1 ELECTRONIC CALCULATORS: AN ENDURING AID FOR CREATIVE TECHNICAL ASSIGNMENTS. Frank Chen, Wang Laboratories.  
D/2 DELUSIONS OF GENERALITY. Tom Osborne, Hewlett-Packard Company.  
D/3 THE PROGRAMMABLE CALCULATOR AS A TEACHER. Rudy Panholzer, Consultant to Cintra/Physics International.  
D/4 MICRO-MINI-MIDI-MAXI: SYSTEM PARALLELS FOR THE DESKTOP MACHINE. James B. Williams, Olivetti Corporation of America.  
D/5 EVOLUTION AND FUTURE OF PROGRAMMABLE CALCULATORS. Ken Lake, SRI.

## Hollywood Park

**E**

## Evaluation of Timesharing Services

10am-12:30pm, Meeting Room IV

Session Organizer: V. Muglia, Hoffman Electronics.  
Session Chairman: R. Poppe, TRW Systems Group.  
E/1 ENGINEERING EVALUATION OF TIMESHARING. Art Wehry, Tridea Electronics.  
E/2 MILITARY TIME-SHARING EVALUATION. Jerome L. Zaharias, Naval Weapons Center.  
E/3 EVALUATING TIMESHARING FOR THE BUSINESS, CONSULTING, AND PROFESSIONAL SERVICE USER. Bernard Spinrav, Development Research Assoc.; Bruce Sangster, General Electric; Mathias J. Quint, Hoffman Electronics; Robert H. Schneider, Security Pacific Bank.  
E/4 AN OVERVIEW OF THE TIMESHARING INDUSTRY. Victor Muglia, Hoffman Electronics.

**F**

## The Impact of Interactive Computing Systems on Engineering Problem Solving

2-4:30pm, Meeting Room IV

Session Organizer: Juris Reinfelds, Computer Center, University of Georgia.  
F/1 A SURVEY OF INTERACTIVE SYSTEMS. Juris Reinfelds, University of Georgia.  
F/2 THE UC ON-LINE SYSTEM AS A TOOL FOR SOLVING ENGINEERING PROBLEMS. Robert N. Schreiner, TRW, and Burton Fried, UCLA.  
F/3 DEDICATED VERSUS GENERAL PURPOSE TIMESHARING SYSTEMS. Hermann Kopetz, University of Georgia Computer Center.  
F/4 TERMINALS FOR INTERACTIVE COMPUTER SYSTEMS. Hermann Bodenseher, University of Georgia Computer Center.



# The Wescon Technical Program

(Continued)

Friday, August 28

Museum of Science and Industry

19

British Progress in Telecommunications

10am-12:30pm, Meeting Room I

Session Organizer and Chairman: J. R. Pollard, Plessey Company, Limited.

19/1 FURTHER DEVELOPMENTS IN TXE2 PROGRAMMABLE TELEPHONE SYSTEM. A. G. Orbell, British Post Office Corp. and G. H. Taylor, Plessey Co. Ltd.

19/2 STUDIES FOR A UK PUBLIC DATA COMMUNICATIONS NETWORK. N. G. Smith, British Post Office Corp., G. C. Hartley, Standard Telecommunications Research, and R. F. Purton, Plessey Co. Ltd.

19/3 THE TXE4 SYSTEM. J. Tippler, British Post Office Corp., and L. G. S. Clark, Standard Telephones & Cables Limited.

19/4 A REVIEW OF CURRENT UK DEVELOPMENTS IN PULSE CODE MODULATION SWITCHING. J. Martin, British Post Office Corp.

19/5 CCITT NO. 6 SIGNALLING SYSTEM—THE U.K. FIELD TRIAL EQUIPMENT. B. R. Horsfield, British Post Office Corp. and R. F. B. Speed, GEC-AEI Telecommunications Limited.

20

West Coast Environmental Problems

10am-12:30pm, Meeting Room II

Session Organizer and Chairman: William E. Cory, Southwest Research Institute.

20/1 AIR POLLUTION—PROBLEMS AND PROGRESS. Frank Bonamassa, California Air Resources Board.

20/2 HOW TO LIVE WITH FAULTS AND EARTHQUAKES. Robert D. Nason, Environmental Science Services Administration, U.S. Department of Commerce.

20/3 OIL FIELD FIRE AND BLOWOUT PROBLEMS. Red Adair, Red Adair Comp. Incorporated.

20/4 AIRPORT AND FREEWAY NOISE. Karl D. Kryter, Sensory Sciences Research Center, Stanford Research Institute.

Hollywood Park

G

Computer-Aided Design Capability of Digital Logic Blocks

10am-12:30pm, Meeting Room IV

Session Organizer and Chairman: Richard M. Jennings, Telpar Incorporated.

G/1 COMPUTER-AIDED CIRCUIT DESIGN. Nathan Sokol, Design Automation Incorporated, Incorporated.

G/2 FUNCTIONAL TESTING. John Fike, Telpar  
G/3 PRINTED CIRCUIT BOARD DESIGN AND TESTING. Robert Ruggles and Jack DeNauw, Sanders Associates.

G/4 COMPUTER-AIDED LSI DESIGN. L. J. Sevin, Mostek Corporation.

## APPLYING TECHNOLOGY TO PUBLIC PROBLEMS

Problems and Opportunities in  
the Real World

10 am, August 26

Session Moderator:  
DON C. HOEFLE  
Fairchild Publications  
San Francisco, California

This session will keynote the two day symposium. It will try to draw the national priorities, with particular reference to those areas where advanced technological systems may be the optimum—or the only—hope for solution. It will also examine the economics of large-scale programs and discuss the socio-political interfaces with which we must deal in this complex world. Some forecasts of how new systems may influence national life will be presented. (Note: A fourth speaker, representing the Federal government, will be confirmed.)

Speakers:

BURTON H. KLEIN  
Professor of Economics  
California Institute of Technology  
Pasadena, California  
(Topic to be announced)

DR. C. LESTER HOGAN  
President

Fairchild Camera and Instrument Corp.  
Mountain View, California  
"The Second Industrial Revolution"

Technology and the Mobile  
Population

2 pm, August 26

Session Organizers:  
ROSS SNYDER  
Hewlett-Packard Co.  
Palo Alto, California

DALTON MARTIN  
Vidar Corporation  
Mountain View, California

In an urbanized, overpopulated society, the pressing problem of "people-moving" is among the most difficult of problems—along with some of the environmental abuses brought about by present transportation modes. This session reports on work-in-progress, looks to future solutions, and relates both of them to environmental and socio-economic conditions.

Speakers:

HON. JAMES M. BEGGS  
Under Secretary

U.S. Department of Transportation  
Washington, D.C.  
"Department of Transportation R&D Plans"

JOHN C. BECKETT  
Government Relations Manager  
Hewlett-Packard Company  
Palo Alto, California  
(Formerly a director of Bay Area Rapid Transit District)  
"Finding Solutions for Suburban Transportation"

DR. ALBERT R. HIBBS  
Transportation Technology Office Manager  
Jet Propulsion Laboratory  
Pasadena, California  
"The New Engineer vs the Old Transportation"

HERBERT H. BROWN  
Vice President  
Overview Corporation  
Washington, D.C.  
"Transportation Needs & Environmental Quality"

Technology and Information  
Exchange

10 am, August 27

Session Organizers:  
DR. LESTER M. FIELD  
Hughes Research Labs  
Malibu, California

LOUIS B. HOROWITZ  
Xerox Data Systems  
El Segundo, California

A major contribution of technology to public problems is change and improvement in the area of communications. We have a staggering increase in the magnitude and variety of services provided by our telephone systems and television networks. We also have critical effects from an enormous variety of new services—computers, crime prevention communications, mobile communications. What effect will satellites have on education for both advanced and underdeveloped areas? And even with spectacular "hardware," are we sure the message will get through?

Speakers:

DR. PETER C. GOLDMARK  
President and Director of Research  
CBS Laboratories  
Stamford, Connecticut  
"Deadline for Survival"

DR. JOHN R. PIERCE  
Executive Director, Research  
Communications Science Division  
Bell Telephone Laboratories  
Murray Hill, New Jersey  
"Communications: Tools and Problems"

CONTINUED ON PAGE 30



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CEA, a Division of Berktronics, Inc.	Unit B
Celco, Pacific Division	2118-2119
Chemical & Aerospace Products, Inc.	1922
Cherry Electrical Products Corp.	2710-2712
Chicago Dynamic Industries, Inc.	1130
Chicago Miniature Lamp Works	1214
Chicago Switch, Inc.	1411
C & K Components, Inc.	1212
Condenser Products Corporation	2308
Consolidated Transformers Unlimited	2111
Consulate of Finland	2108-2109
Control Data Corporation	1012-1014
Cornell-Dubilier Electronics	2312-2313
Cummings & Associates	2703-2704
Curtis Development & Mfg. Co.	1018
Custom Electronics, Inc.	Unit B
Cutler-Hammer	1301-1304
The Datak Corporation	1506
DeAngelo, Rothman & Company	1712
Del Electronics Corporation	1209
Deltron, Inc.	1311
Dempa Publications Inc.	1520
Device Seals, Inc.	1510
Dialight Corporation	1409-1410
Digital General Corporation	2505
Disc Instruments, Inc.	1507
Dormeyer Industries	1122
Dressen-Barnes Electronics Corporation	1428-1430
Dynamic Gear Company, Inc.	1425
Dynamics Research Corporation	1521
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Eagle-Picher Industries Inc.	1318
Electro-Nuclear Laboratories, Inc.	1423
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Electronic Representatives Ass'n	2700 Aisle
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Government of Ontario, Canada	1219, 1305,
Department of Trade	1509, 1524
and Development	2520-2521
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William J. Purdy Company	2324
Ishimoto Trading Co.	1731
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Renco Corporation	1326
Repex, Inc.	2507
Republic Electronics Corporation	2511
Riker-Maxson Corporation/Components Group	1324-1325
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San Fernando Electric Manufacturing Company	2301-2302
Sanken Electric Company, Ltd.	2113
S.D.C. Electronics (Sales) Ltd.	2303-2304
Sealectro Corporation	2316-2319, 2509
SECS, Incorporated	1017
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Berkeley Glasslab Division of Kensington Scientific Corporation	2418
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BTU Engineering Corporation	2615-2617
Century Engineering Company, Inc.	2419
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Disco Abrasive Systems, Inc.	2803-2804
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Ecotech Inc.	2405
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Electromotion Components Corporation	2024
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Swiss American Precision Imports, Inc.	2002
Tab Products Company	2211



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where the  
action is . . .

## Events

### Monday—August 24:

D-M-R Conference, Century Plaza Hotel.

Distributors—Manufacturers—Representatives get together for a one day session.

Attendance limited to above categories.

### Tuesday—August 25:

Wescon Opens. Registration \$3.00. No advance registration.

Exhibits: Sports Arena & Hollywood Park.

Exhibit Hours:

Tuesday: 10:00 AM to 5:30 PM

Wednesday: 10:00 AM to 9:30 PM

Thursday: 10:00 AM to 9:30 PM

Friday: 10:00 AM to 5:30 PM

Technical Program:

Museum of Science & Industry and Hollywood Park.

Technical Program runs all Four days:

10:00 AM morning sessions

2:00 PM afternoon sessions

Computers & Data Processing sessions all at Hollywood Park

Ladies Program:

Hospitality Room is in the Patio Room, Hilton Hotel.

Tuesday: 8:00 AM to 4:00 PM

Tuesday event—Get-acquainted tea, no charge African motif:

"Safari into the Seventies".

Sierra Room 12—4 PM.

Wednesday: 8:00 AM to 10:00 AM.

3:30 PM to 5:00 PM

Thursday: 8:30 AM to 4:00 PM

Friday: 9:00 AM to 12:00 PM

Sponsor Luncheon:

Pacific Ballroom, Hilton Hotel

Noon: \$6.50 per person.

Dr. John V.N. Granger, President of IEEE, speaker. "Electronics: Past Imperfect, Future Conditional".

All-Industry Cocktail Party:

"Fiesta Electronica" Theme. Mexican motif. \$6.50 per person. Pacific Ballroom, Hilton. 6:00 to 8:00 PM.

Industrial Design Awards Exhibits:

At Hollywood Park. Open during Exhibit Hours. No charge. Shows finest in electronics equipment design.

Science Film Theatre:

Hollywood Park. Same as exhibit hours. Continuous showings of 9 or 10 films shown twice daily, running time: 5-1/2 hours for complete showing. No special charge.

### Wednesday—August 26th

Exhibits: see Tuesday.

Technical Program: see Tuesday.

Industrial Design Show: see Tuesday.

Science Film Theatre: see Tuesday.

Special Symposium: "Applying Technology to Public Problems":

Hilton Hotel Two-day symposium with major figures from HEW, industry and public corporations. Registration: \$50 per person, includes one luncheon. See Technical Program, this issue, for details. Luncheon on Wednesday, Golden State Room, Hilton.

Ladies:

Trip to "Lion Country" pleasure park Balboa Pavilion. Luncheon & tour \$7.50 per person.

Hospitality Room—See Tuesday

Eta Kappa Nu Luncheon:

Honoring engineering students. Dr. Cleo Brunetti, main speaker. Los Angeles Room, Hilton Hotel, Noon. \$6.00 per person.

### Thursday—August 27th

Exhibits: see Tuesday.

Technical Program: see Tuesday.

Industrial Design Show: see Tuesday.

Science Film Theatre: see Tuesday.

Ladies:

9:00 AM Breakfast, \$3.25 per person.

10:00 AM Entertainment: African

Drum Demonstration, UCLA. Also:

10:4:00 PM Cosmetic Demonstration, (Sierra Room) Hilton Hotel.

Special Symposium:

See Wednesday and Technical Program listing. \$50 registration required, includes Wednesday Luncheon.

CONTINUED ON PAGE 33

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September 21, 22  
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## WESCON/70

Continued from page 31

Friday—August 28th

Exhibits: see Tuesday.

Technical Program: see Tuesday.

Industrial Design Show: see Tuesday.

Science Film Theatre: see Tuesday.

Ladies: see Tuesday.

### Summing It Up:

New in Exhibits: At Hollywood Park A special section of exhibits dealing with Computer Equipment and Information Technology.

New in Technical Program: "Applying Technology to Public Problems." A two-day Wescon-sponsored Symposium featuring such widely-known names as C. Lester Hogan, Peter Goldmark, John Pierce, James Beggs and possibly The Deputy Secretary of Health - Education - Welfare. Four sessions. \$50 fee, including luncheon.

Sponsor Luncheon: Held on first day of Wescon, Tuesday. Features major speaker on provocative subject. This year: Dr. John V.N. Granger, president of IEEE and also noted electronic executive "Electronics, Past Imperfect, Future Conditional". Brings together major sponsor figures, IEEE officials and general attendees to sound out the all-over industry feeling this year. Ballroom, Hilton.

Cocktail Party: An excellent chance to meet business associates, discuss problems, and greet old friends and make new ones. In the two hour period 6-8 one may find out who's in town, what they're up to. Intelligently used, it can save hours of phoning and leg-work, since 1500 or so of the important figures in electronics are present in one place at one time, in a relaxed mood, ready and willing to talk. Pacific Ballroom Hilton.

Industrial Design Exhibit. Four criterion are: quality improvement, usability, marketability and esthetic achievement. The deep need of the engineer to reach high standards is stimulated by this display which instructs and inspires. Hollywood Park, not to be missed. The Academy Awards of commercial elegance, with about 20 displays chosen from 100 entries.

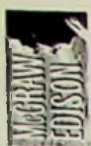
Science Film Theatre: America's favorite form of information absorption, the best of some 80 science films have been screened to an output of 9 or 10 that are important to every engineer. Hollywood Park location. Continuous showings, twice daily. Put on with a generous assist from the Industrial Film Producers' Association.

Eta Kappa Nu Luncheon: This is the national engineering honor fraternity. Each year an Eminent member is inducted, and he serves as the principal speaker. This year Dr. Cleo Brunetti, FMC Corp., executive, teacher and government expert.

Also occasion marks awards of "outstanding college engineering students of 1970", selections made by prominent national judges. Public invited. This event, held on Wednesday, at the Hilton, deserves attendee support and is worth your time and the \$6 per person fee. Full house last year in San Francisco, so buy your ticket early.



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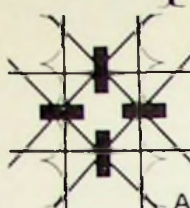
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**Magnetics for 70's  
Announces Program**

The complete program for the 1970-71 G-33, Magnetics Chapter, LA Council has been announced. Last year Chapter won the Chapter of the Year Award for best performance:

**September:** "Economics & Magnetics"—national economy & foreign manufacture.

**October:** "Foreign Magnetic Technology" European-Asian.

**November:** "Digital Magnetics Applications" Magnetics requirements in computers—pulse transformers—delay lines—memory magnetics.

**December:** System Applications. Signal Distribution—Hi Speed Memories—Devices for Power Conversion.

**January:** "Patents and Ethics" Protecting Ideas—selling, licensing patents, copyrights.

**February:** "Magnetic Measurement" Digital Magnetic parameters Magnetic Materials measurement.

**March:** "Core Manufacturing" Ferrite cores Metallic core processes.

**April:** "Computer Aided Design — Updated" Discussion — demonstration.

**May:** "Magnetic Engineering" Ferroresonant transformers solid state devices, computer peripherals.

**June:** Banquet. "Magnetic Technology" Joseph J. Suozzi, Bell Labs.

Technical tours in October and April, a purely social event in December and in Feb. a 2-day workshop — Transformer Design and computer magnetics.

Entire Chapter under operation of Ernest Carlson, Elnetics. \$2 member fee, \$12 non-member.

**One Day  
Seminar**

On Wednesday, August 12th, Airport Marina Hotel, LA, the LA Chapters on Automatic Control, Circuit Theory and Electron Devices present a one-day workshop.

"Digital Filtering & Signal Processing With Applications."

Topics include: Sampled Data Theory, Signal Theory, Discrete Signal & Sampling Theory, Sensor Integration,

Non-recursive Filters, Recursive Filters, Adaptive Filters, Filter Mechanization & Multiplexing, Digital Filter Applications and Digital Filtering Demonstration. Chief Lecturer, Dr. J. E. Olivares, Sysdyne, Inc. and Dr. D. J. Rauch also of CT group has assisted in organizing the symposium. Cost is \$55 IEEE member, \$75 non-member, \$25 student member. For further details:

D.J. Rauch, Sysdyne, Inc.  
6911 Topanga Canyon Blvd,  
Canoga Park, Calif.  
91303 or call (213) 347-8900.

**Call for Papers Region 6  
Sacramento Meeting**

Five hundred (500) word abstracts are needed by December 1st for papers for 1971 Region Six Conference, to be held at Wood Lake Inn, Sacramento, Cal, May 11-13, 1971.

Session topics are:

- Managing, Marketing and Engineering
- Noise Pollution Standards and Measurements
- Computer Hardware and Software
- Computer Applications and Computer-aided Designs
- Power Generation
- Power Systems
- Recent Advances in Solid State Circuits
- Electron and Solid State Devices
- Space Instrumentation Systems
- Spinoffs from Space Technology
- Communications and Microwaves
- Circuits, Systems, Controls and Telemetry
- Biomedical Electronics

Write to:

Ron Soohoo  
Program Chairman  
IEEE Region 6 Conference  
Univ. of California at Davis  
Dept. of Electrical Engineering  
Davis, California 95616

**Council  
Awards:**

This year at its June meeting the Council gave recognition awards to:

Chapter of the Year, *Magnetics* for its integrated program

*Ernest Carlson*, Elnetics, for his service to Magnetics Chapter

*S. H. Gold*, So. Calif. Edison for technical services to several conventions.

*Lyman E. Wood*, TRW, for services to Council and Engineering Management over a period of years.

*Dr. Arnold Levine*, ITT, for Chairmanship, Engineers' Week, 1970.

ITT—Company of the Year for assistance in Wincon.



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