

## EDITOR'S PROFILE of this issue

*from a historical perspective ...*

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

August, 1968:

Cover: An engineer checks out a Yd:YAG laser, with a converter that changes invisible infrared light to green using second-harmonic generation.

Page 8: Dave Packard presents a "Suggested Code of Ethics" for the electronics industry. He focuses on the development of western civilization, our religious and moral backgrounds, Scouting and service clubs, and the place of private industry. The ideas reflect Dave's own experience at H-P, as documented in his book, "The HP Way", to be published in 1995.

Page 10: Timothy Mulligan, of RCA, discusses obsolescence and lifelong learning in his article "Retooling the Engineer".



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.

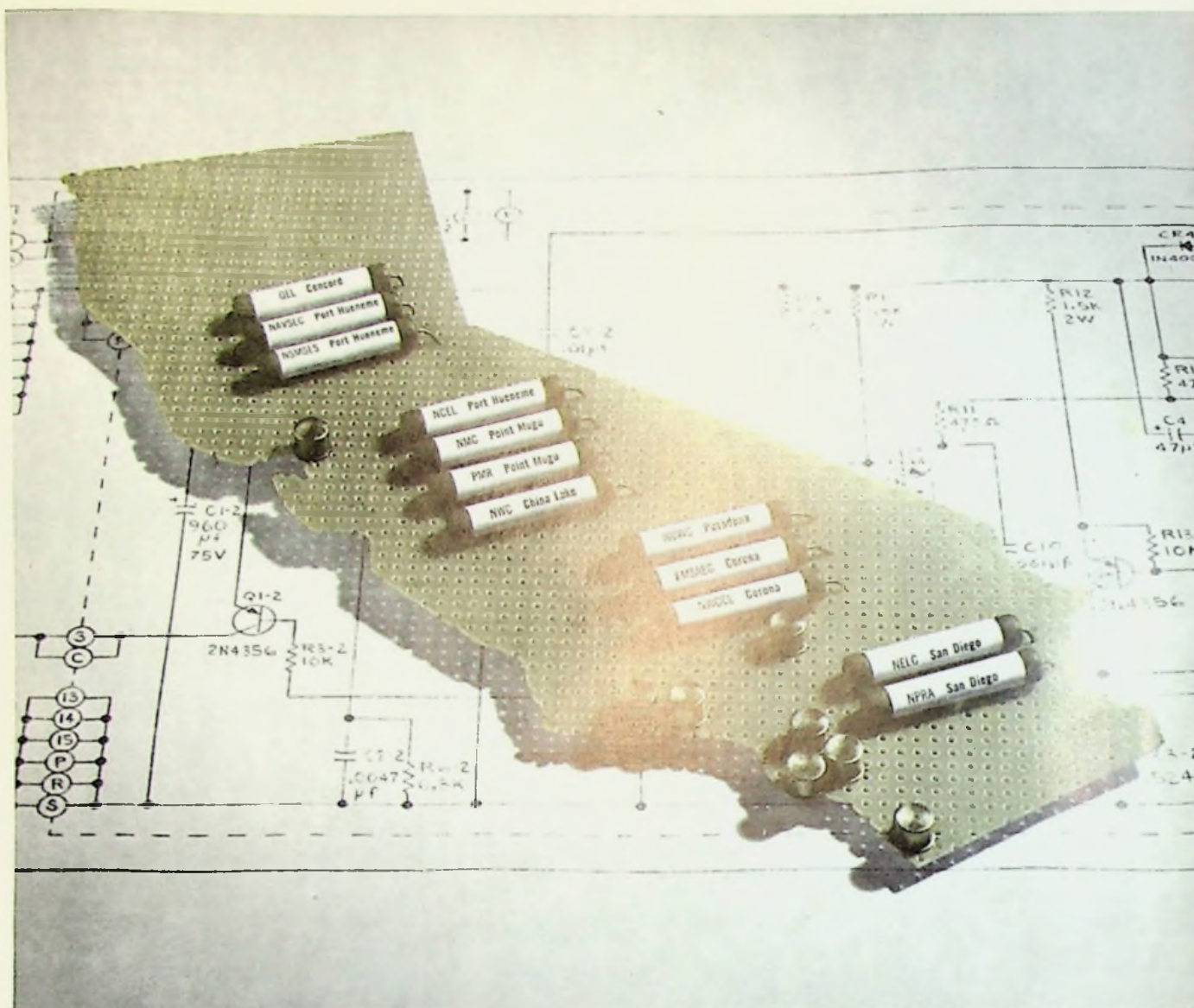
April, 2025

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

WESCON SPECIAL/ WESCON '68—August 20, 21, 22, 23,/ Los Angeles Sports Arena, Hollywood Park, Biltmore Hotel







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## ***Naval Laboratories in California.***



# grid-bulletin

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## ON THE COVER

A Sylvania Electronic Systems engineer checks a small compact Nd:YAG (Neodymium:Yttrium Aluminum Garnet laser). The device, being shown at WESCON, is capable of converting invisible infrared light to green, which is more easily detected, in a process called second harmonic generation.

Engineers interested in lasers and the broader field of electro-optics have been active at Sylvania since 1962.

The scope of electro-optic work has expanded steadily until it now encompasses a wide range of government and industrial systems, components and R&D activities. Sylvania Electric Products, Inc. approved the establishment of an Electro-Optics Organization (EOO) at Mountain View. Dr. Burton J. McMurtry heads the organization as director.

In the systems area, development is proceeding on a unique concept in laser reconnaissance. Sylvania has also constructed a laser optical heterodyne instrument which permits remote optical measurement of vibrations with amplitudes from a few Angstroms to half an inch. Systems engineers have formed a team with Kollsman Instruments and Chrysler to develop laser technology for NASA's future deep space communications requirements in the Optical Technology Apollo Extension System (OTAES).

Sylvania engineers have devised generalized procedures for synthesizing optical birefringent networks and have applied this to the design of extremely narrow-band birefringent filters, improved optical shutters, and amplitude modulators.

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**W**e know that you will find all 8 shows outstanding, with those related to your specialty particularly timely, and helpful in your current assignment. WESCON is designed to provide the engineer and scientists who attend a well balanced exposure to the latest in hardware and technology. It's an ideal environment in which to take stock of your own personal accomplishments and the standing of the organization to which you contribute.

It is interesting to contemplate that if each of you attending goes away with only one new idea, then some 50,000 new devices, systems, problem solutions or technical approaches are potentially in the offering.

Since you are looking ahead, take a new lease on life by visiting the Future Engineers Show. It will give you assurance that the future is in capable hands.

*Los Angeles Council and San Francisco, IEEE*

*WESCON is sponsored by WEMA, and Region 6 IEEE, Stanley Kaisel, Director.  
Los Angeles & San Francisco IEEE represent the Region in this endeavor.*

## Why "Interfaces"?

"**I**nterfaces" is one of those much overworked terms of engineers' parlance, but best describes our editorial effort appearing on pages 8 through 31.

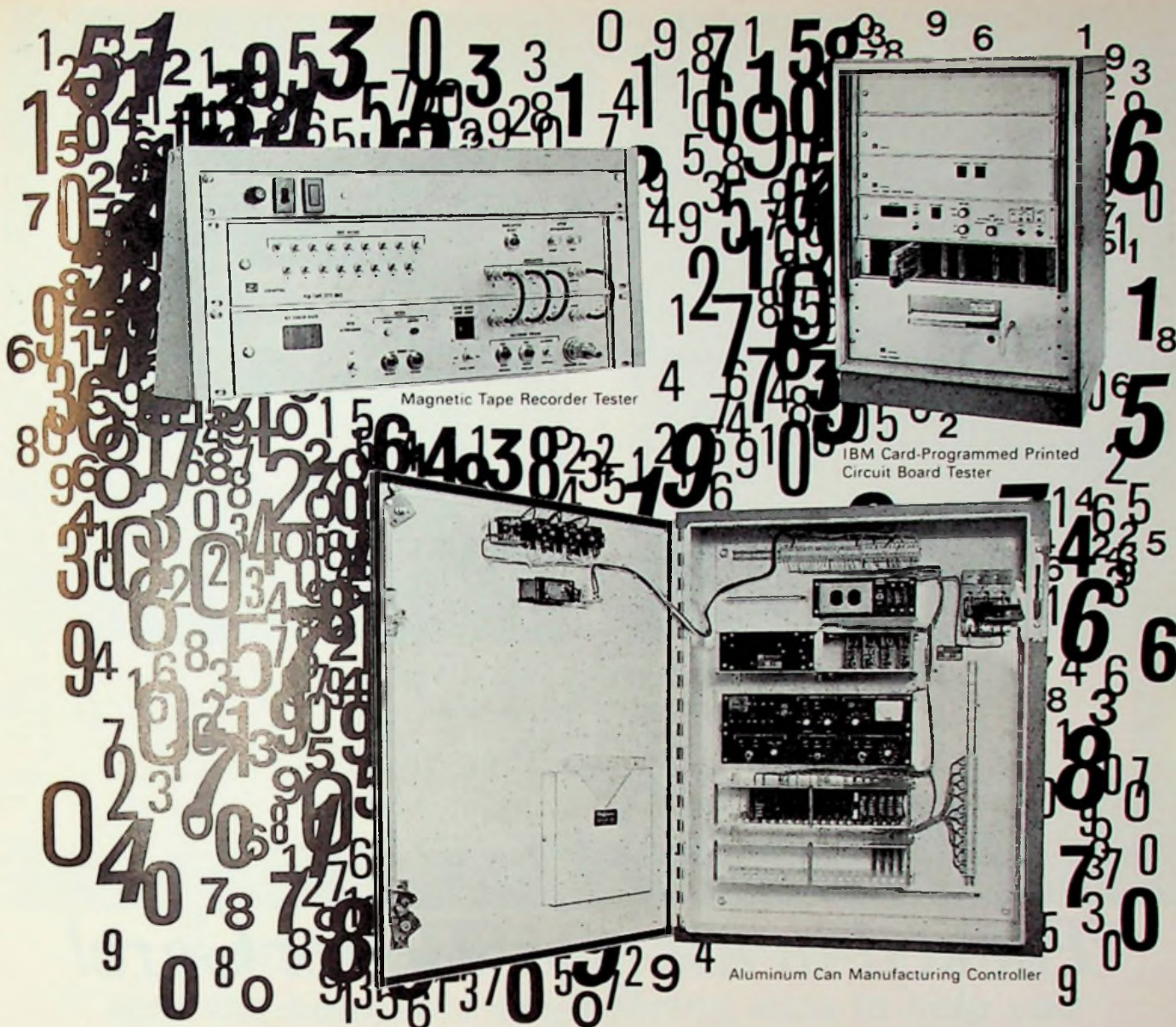
"Systems" requiring interfacing by the electronics industry extend well beyond those of a purely technological nature. They include management, ethics, underprivileged groups, and continuing education, as well as

other topics that will be featured in the Fall issues of the Los Angeles IEEE Bulletin.

Management of WESCON, as well as of participating companies, is vitally concerned with these subjects, and the GRID-BULLETIN seems an ideal vehicle for airing some pertinent thoughts by industry spokesmen.

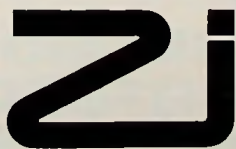
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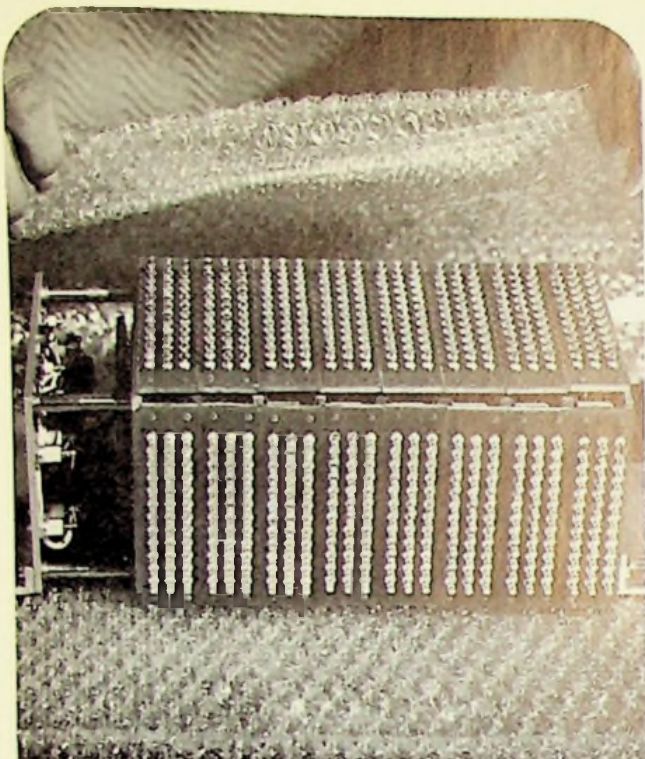
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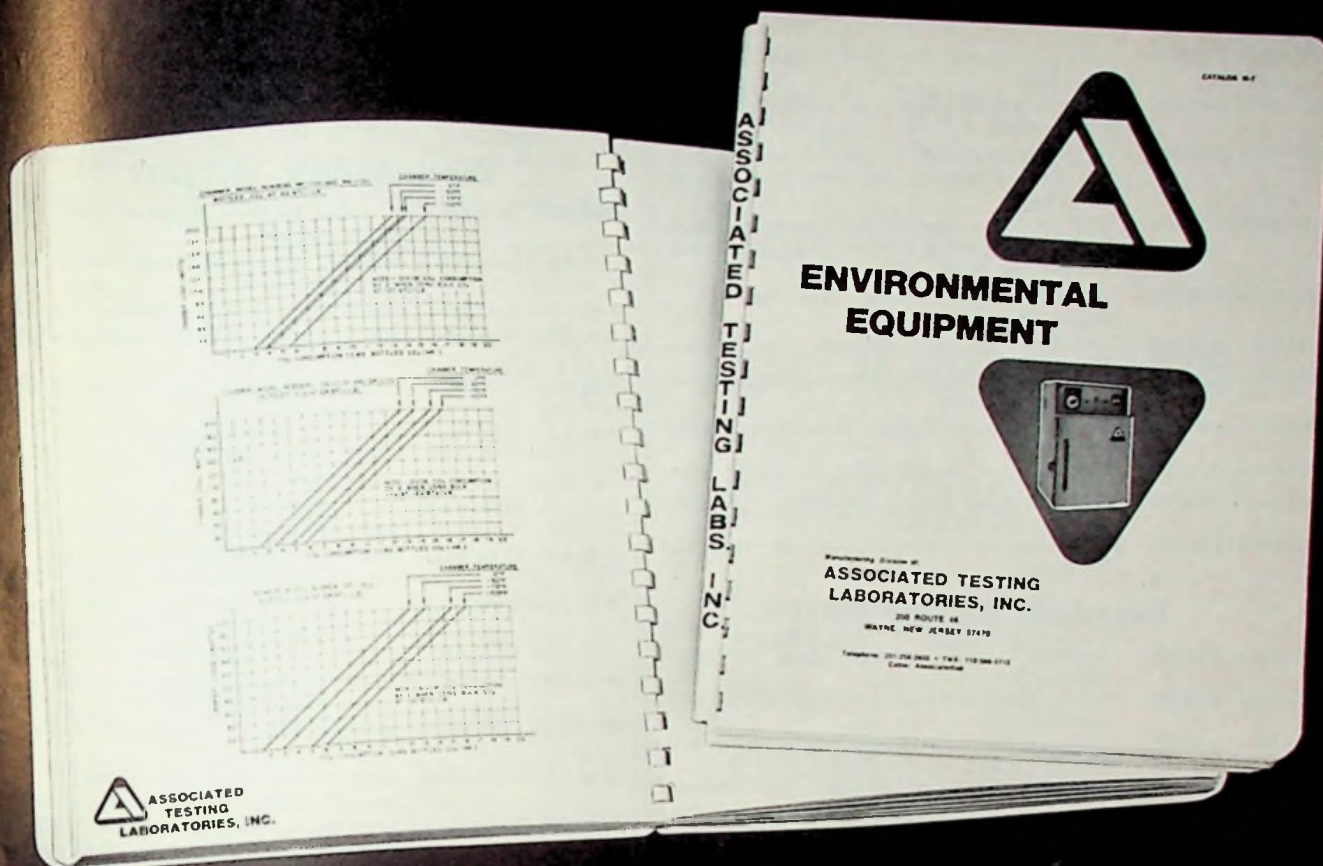
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# WESCON '68 / QUICK CHECK LIST

## Monday, August 19

- 7:30 AM - 5:30 PM: D-M-R Conference, Los Angeles Room, Century Plaza Hotel
- 8:00 AM - 3:00 PM: Technical Program Speakers Room, Rex Room, Biltmore Hotel
- 8:30 AM - 5:45 PM: IEEE Steering Committee for International Electron Devices Meeting, St. Louis Room, Statler Hilton Hotel
- 8:30 AM - 6:00 PM: IEEE Steering Committee for International Electron Devices Meeting, Hartford and Dallas Rooms, Statler Hilton Hotel
- 9:00 AM - 5:00 PM: Women's Hospitality Suite, Room No. 3 & 4, Biltmore Hotel
- 9:00 AM - 5:30 PM: WESCON Press Room, Ballroom Foyer, Biltmore
- 9:00 AM - 6:00 PM: IEEE Board of Directors Meeting, Mission Room, Statler Hilton Hotel
- 9:30 AM - 5:00 PM: IECP Symposium, Golden State Room, Statler Hilton Hotel
- 12:00 Noon - 2:00 PM: IECP Luncheon, Pacific Ballroom, Statler Hilton
- 12:00 Noon - 2:00 PM: IEEE Board of Directors Luncheon, Cleveland Room, Statler Hilton Hotel
- 6:30 PM - 11:00 PM: IEEE Board of Directors Dinner, St. Louis and Foy Rooms

## Tuesday, August 20

- 8:00 AM - 3:00 PM: Technical Program Speakers Room, Rex Room, Biltmore Hotel
- 9:00 AM - 5:30 PM: WEMA Board of Directors Meeting, Room No. 1, Biltmore Hotel
- 9:00 AM - 5:00 PM: Women's Hospitality Suite, Rooms No. 3 & 4, Biltmore Hotel
- 9:00 AM - 5:30 PM: WESCON Press Room, Ballroom Foyer, Biltmore
- 9:00 AM - 5:30 PM: IEEE TAB Operating Committee Meeting, New York Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE CADAR Committee Meeting, Boston Room, Statler Hilton Hotel
- 9:00 AM - 2:30 PM: IEEE Reliability Group Administrative Committee Meeting, Washington Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE PMP ETTC Working Group on Converter Transformers, Buffalo Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE PMP ETTC Working Group on Charging Reactors, Foy Room, Statler Hilton Hotel
- 9:00 AM - 1:00 PM: IEEE Section Chairmen Forum Rehearsal, Sierra Room, Statler Hilton Hotel
- 9:00 AM - 5:00 PM: IEEE Publications Board Meeting, Dallas Room, Statler Hilton Hotel
- 9:30 AM - 5:00 PM: IECP Symposium, Golden State Room, Statler Hilton Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 1, Ballroom Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 2, Renaissance Room, Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 3, Music Room, Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 4, Galeria Room, Biltmore Hotel
- 10:00 AM - 4:00 PM: WESCON Science Film Theater, Hollywood Park
- 10:00 AM - 5:30 PM: WESCON Exhibits, Sports Arena and Hollywood Park
- 12:00 Noon - 2:30 PM: Sponsor's Luncheon, Biltmore Bowl, Biltmore Hotel
- 12:00 Noon - 2:00 PM: IEEE TAB Operating Committee Luncheon, St. Louis Room, Statler Hilton Hotel
- 1:30 PM - 3:30 PM: Women's Tea and Fashion Show, Music Room, Biltmore Hotel (no charge)
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 5, Renaissance Room, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 6, Galeria Room, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Special Session A, Ballroom, Biltmore
- 2:00 PM - 5:00 PM: IEEE PMP ETTC Working Group on Corona Effects, Boston Room, Statler Hilton Hotel
- 2:00 PM - 5:00 PM: IEEE PMP ETTC Working Group on Low Power Pulse Transformers, Buffalo Room, Statler Hilton

- 2:00 PM - 5:00 PM: IEEE PMP ETTC Working Group on Computer Type Transformers, Detroit Room, Statler Hilton
- 6:30 PM - 8:30 PM: WESCON "Bandwagon '68" All Industry Cocktail Party, Pacific Ballroom, Statler Hilton Hotel
- 7:00 PM - 10:00 PM: IEEE Intersociety Relations Committee Dinner Meeting, Foy Room, Statler Hilton Hotel

## Wednesday, August 21

- 8:00 AM - 3:00 PM: Technical Program Speakers Room, Rex Room, Biltmore Hotel
- 9:00 AM - 5:00 PM: Women's Hospitality Suite, Rooms No. 3 & 4, Biltmore Hotel
- 9:00 AM - 5:30 PM: WESCON Press Room, Ballroom Foyer, Biltmore
- 9:00 AM - 1:00 PM: IEEE Sections Committee Meeting, Mission Room, Statler Hilton Hotel
- 9:00 AM - 5:30 PM: IEEE TAB Committee Meeting, Boston Room, Statler Hilton Hotel
- 9:00 AM - 5:00 PM: IEEE Pulse Techniques Subcommittee, High Frequency 1 & M, G-1M Meeting, Foy Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE PMP ETTC Pulse Transformers Subcommittee Meeting, Cleveland Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE PMP ETTC Working Group on Transformer Reliability, Hartford Room, Statler Hilton Hotel
- 9:00 AM - 12:00 Noon: IEEE PMP ETTC Power Transformers Subcommittee Meeting, Dallas Room, Statler Hilton Hotel
- 9:30 AM - 11:30 AM: FES Symposium, Los Angeles Room, Statler Hilton
- 9:30 AM - 5:00 PM: Hybrid Microelectronics Symposium, Golden State Room, Statler Hilton Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 7, Ballroom, Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 8, Renaissance Room, Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 9, Biltmore Bowl, Biltmore Hotel
- 9:30 AM - 12:00 Noon: WESCON Technical Session No. 10, Galeria Room, Biltmore Hotel
- 9:30 AM - 3:30 PM: Women's Universal City Tour
- 10:00 AM - 9:30 PM: WESCON Exhibits, Sports Arena and Hollywood Park
- 10:00 AM - 4:00 PM: WESCON Science Film Theater, Hollywood Park
- 12:00 Noon - 2:00 PM: IEEE TAB Committee Luncheon, Buffalo Room, Statler Hilton Hotel
- 12:15 PM - 2:00 PM: Hybrid Microelectronics Symposium Luncheon, Pacific Ballroom, Statler Hilton Hotel
- 1:00 PM - 4:00 PM: WESCON Field Trip No. 1 (JPL)
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 11, Biltmore Bowl, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 12, Renaissance Room, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 13, Music Room, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Technical Session No. 14, Galeria Room, Biltmore Hotel
- 2:00 PM - 4:30 PM: WESCON Special Session B, Ballroom, Biltmore
- 2:00 PM - 5:00 PM: IEEE PMP ETTC Insulation Systems Subcommittee Meeting, Washington Room, Statler Hilton Hotel
- 2:00 PM - 5:00 PM: IEEE Region 6 Student Activities, New York Room
- 2:00 PM - 5:00 PM: IEEE PMP ETTC Frequency Range Subcommittee Meeting, Detroit Room, Statler Hilton Hotel
- 2:00 PM - 5:00 PM: IEEE PMP ETTC Definitions & Nominating Subcommittee Meeting, Hartford Room, Statler Hilton
- 2:30 PM - 6:00 PM: IEEE Forum for Section Chairmen, Sierra Room, Statler Hilton Hotel
- 6:00 PM - 8:00 PM: IEEE Information Theory ADCOM Dinner Meeting, Dallas Room, Statler Hilton Hotel

## Thursday, August 22

- 8:00 AM - 3:00 PM: Technical Program Speakers Room, Rex Room, Biltmore Hotel
- 8:30 AM - 5:30 PM: IEEE 6th Region Committee Meeting, New York Room, Statler Hilton Hotel



9:00 AM - 5:00 PM: Women's Hospitality Suite, Rooms 3 & 4, Biltmore  
 9:00 AM - 5:30 PM: WESCON Press Room, Ballroom Foyer, Biltmore  
 9:00 AM - 12:00 Noon: IEEE Circuit Theory Group ADCOM, Buffalo Room, Statler Hilton Hotel  
 9:30 AM - 5:00 PM: IEEE Subcommittee 3.02A Electrical Power Conditioning Group, St. Louis Room, Statler Hilton  
 9:30 AM - 5:30 PM: Hybrid Microelectronics Symposium, Golden State Room, Statler Hilton Hotel  
 9:30 AM - 5:00 PM: IEEE GED ADCOM, Washington Room, Statler Hilton Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 15, Biltmore Bowl, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 16, Music Room, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 17, Galeria Room, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Special Session C, Ballroom, Biltmore  
 10:00 AM - 9:30 PM: WESCON Exhibits, Sports Arena and Hollywood Park  
 10:00 AM - 9:30 PM: WESCON Science Film Theater, Hollywood Park  
 11:30 AM - 2:00 PM: IEEE GED ADCOM Luncheon, Detroit Room, Statler Hilton Hotel  
 12:00 Noon - 2:00 PM: Eta Kappa Nu Luncheon, Garden West, Statler Hilton Hotel  
 12:00 Noon - 2:00 PM: FES LUNCHEON, Los Angeles Room, Statler Hilton  
 1:00 PM - 4:00 PM: WESCON Technical Tour No. 2 (TRW)  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 18, Ballroom, Biltmore Hotel  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 19, Biltmore Bowl, Biltmore Hotel  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 20, Renaissance Room, Biltmore Hotel  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 21, Music Room, Biltmore Hotel  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 22, Galeria Room, Biltmore Hotel  
 2:00 PM - 5:00 PM: IEEE PMP ETTC Test Codes Subcommittee Meeting, Buffalo Room, Statler Hilton Hotel  
 2:00 PM - 5:00 PM: IEEE PMP ETTC Steering Committee Meeting, Cleveland Room, Statler Hilton Hotel  
 2:00 PM - 5:00 PM: IEEE Administrative Committee, PMP Group, Dallas Room, Statler Hilton Hotel  
 8:00 PM: Dodger Baseball Game, Dodger Stadium

### Friday, August 23

8:00 AM - 3:00 PM: Technical Program Speakers Room, Rex Room, Biltmore Hotel  
 8:00 AM - 9:30 PM: IEEE Inter Group on Electronic Materials, Dallas Room, Statler Hilton Hotel  
 9:00 AM - 5:00 PM: Women's Hospitality Suite, Rooms 3 & 4, Biltmore  
 9:00 AM - 5:30 PM: WESCON Press Room, Ballroom Foyer, Biltmore  
 9:00 AM - 5:00 PM: IEEE Subcommittee 3.02A Electrical Power Conditioning Group Meeting, St. Louis Room, Statler Hilton Hotel  
 9:00 AM - 12:00 Noon: IEEE PMP Electronic Transformers Technical Committee Meeting, Mission Room, Statler Hilton Hotel  
 9:30 AM: Women's Brunch and Tour of FES Exhibits, Hollywood Park  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 23, Biltmore Bowl, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 24, Renaissance Room, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 25, Music Room, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Technical Session No. 26, Galeria Room, Biltmore Hotel  
 9:30 AM - 12:00 Noon: WESCON Special Session D, Ballroom, Biltmore Hotel  
 10:00 AM - 5:30 PM: WESCON Exhibits, Sports Arena and Hollywood Park  
 10:00 AM - 4:00 PM: WESCON Science Film Theater, Hollywood Park  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 27, Renaissance Room, Biltmore Hotel  
 2:00 PM - 4:30 PM: WESCON Technical Session No. 28, Music Room, Biltmore Hotel

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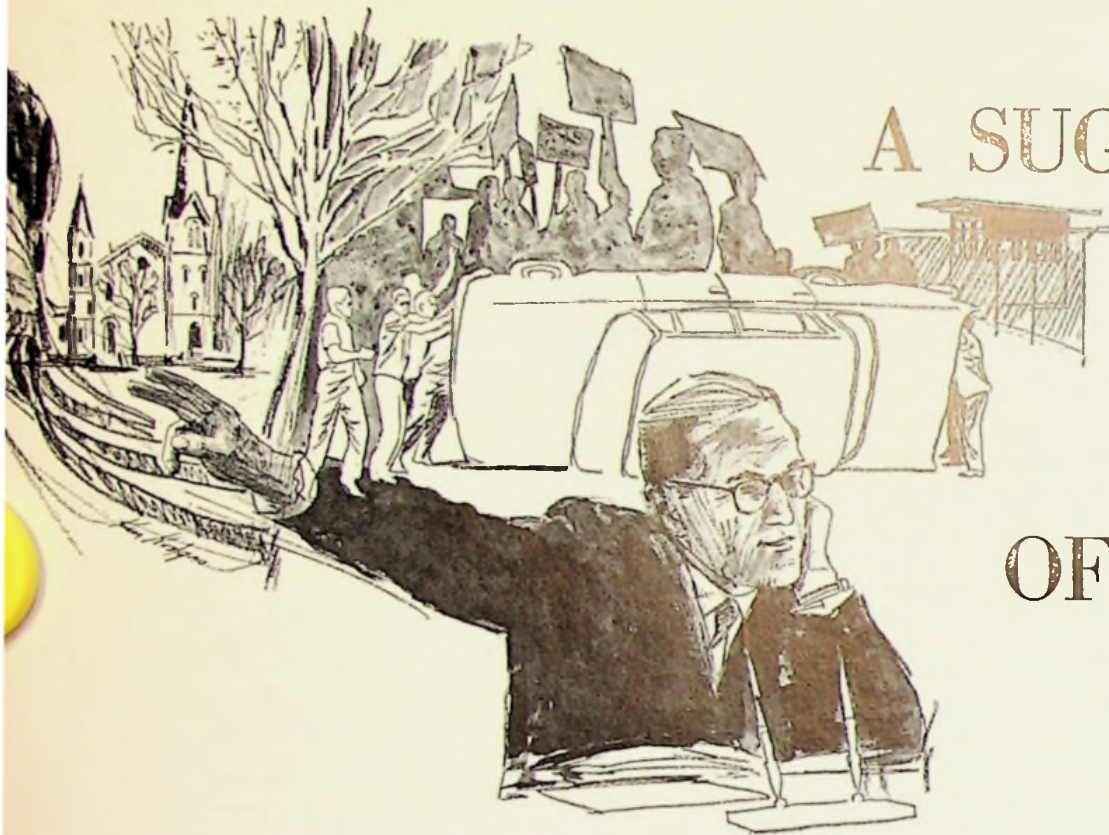
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# For The Electronics Industry...



## A SUGGESTED CODE OF ETHICS

by David Packard  
Hewlett-Packard Company

*Profits are great! But over the years, leaders of our industry have been stressing other aspects of business, as well as the balance sheet. HP's board chairman re-emphasizes some of those he recently summarized for the American Management Association.*

One of our country's greatest assets — and perhaps its most powerful weapon in the struggle against Communism — is the immense strength and vitality of our economic system.

We need to remind ourselves of this fact from time to time because of the tremendous responsibility it imposes on business and industrial management. This responsibility includes the continuing obligation to produce goods and services of the highest quality, to increase productive efficiency, to maintain high levels of employment, and to do the many other things required to keep our economy strong and growing.

The modern role of management, however, extends far beyond these traditional concepts. It includes broader social responsibilities which, until recent years, went either unnoticed or unheeded. Not until World War II was there any noticeable effort by business and industrial leaders to participate in local, national and foreign affairs — outside of normal business activity. During the first 40 or 50 years of this century the great majority of managers had one overriding objective in the conduct of their businesses. That objective was to make a profit.

These men shaped and guided the business and industrial force of America. They have given us a rich and valuable heritage.

Today's business manager must

add to this heritage, not merely use it. He can best do this by first realizing that profit is not the proper end and aim of management, but only that which makes all of the proper ends and aims possible. And a very proper end is social progress.

Evolution of social progress is achieved through three mechanisms. One is a build-up of countervailing forces of power. The union movement is one example, while another, and more recent example, is the civil rights movement.

A second mechanism is the intervention of a super authority, such as our federal government.

The third, and most constructive mechanism, is one where the people in a position to improve a social situation, do so by a process of self-enlightened action.

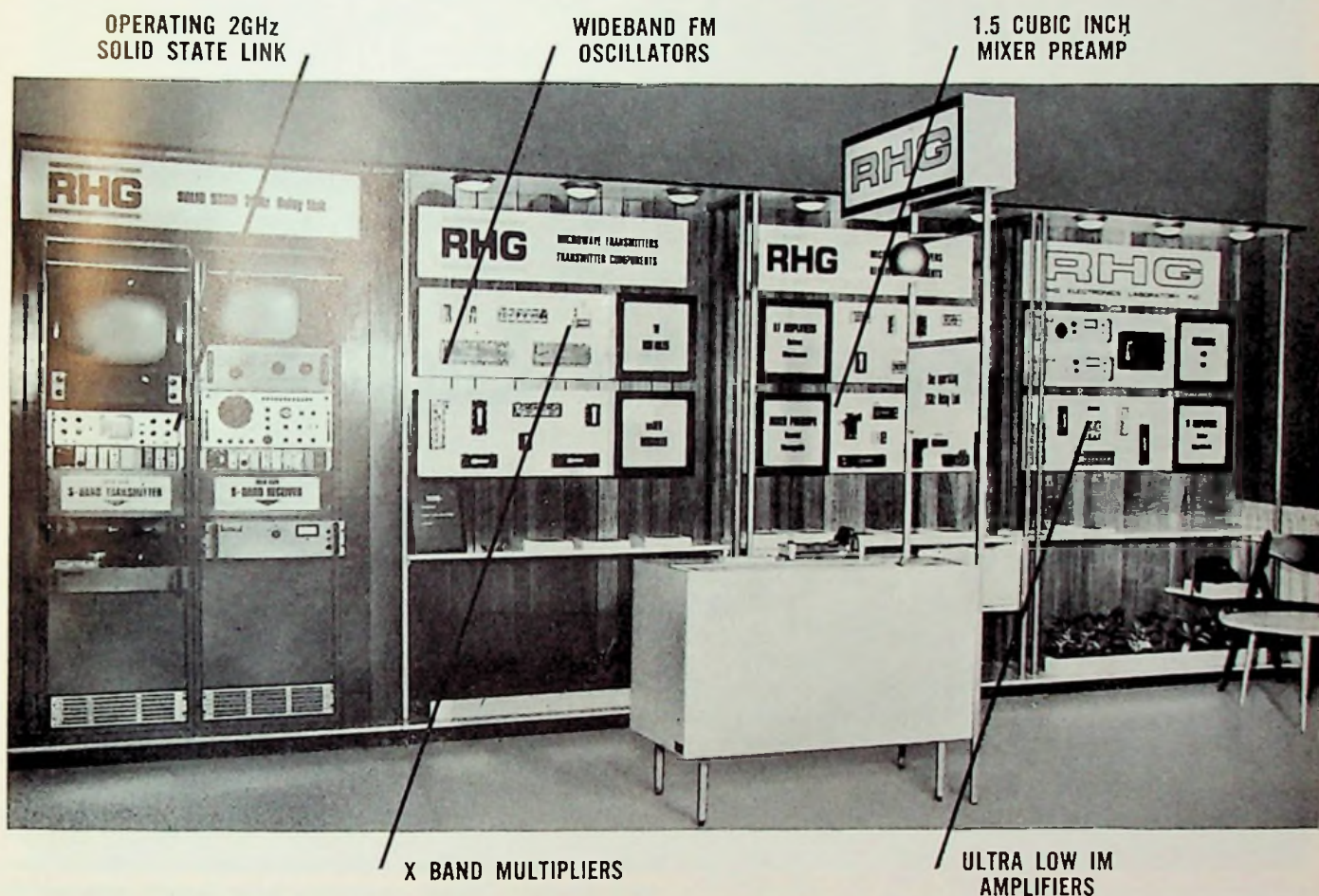
It appears that within the past 10 or 15 years a large section of American management has acknowledged the superiority of the latter method, has begun adjusting to the concept, and has, in some cases, made an attempt to disclose this new posture to the various publics with which it deals.

Many of these managers are following personal codes of ethics in the conduct of their firms' internal and external affairs. Sometimes these codes are in-

CONTINUED ON PAGE 16



# SEE THESE NEW RHG STATE-OF- THE-ART MICROWAVE PRODUCTS AT WESCON—Booths 3026-3027



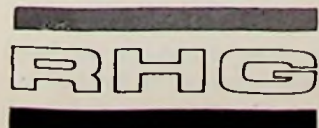
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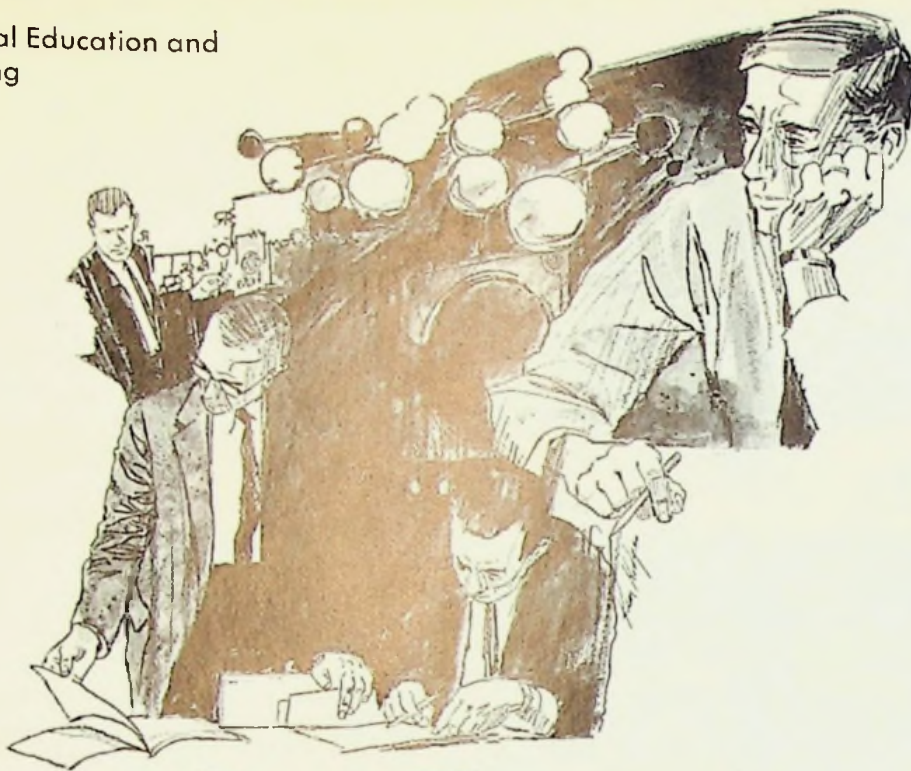
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# Retooling The Engineer

by Timothy H. Mulligan  
Radio Corporation of America

*The battle against obsolescence continues. WESCON has been bolstering the effort for years. A leading public affairs authority reviews what some electronics firms have done, and offers suggestions for the future.*

Today's knowledge explosion has had no greater impact than on the engineer. Every year, 10 percent of his knowledge becomes obsolete because of new technological and scientific discoveries. College engineering textbooks are outdated in some aspects the day they are published. Even the terminology of engineering constantly shifts with each new addition of knowledge.

To cope with this vast intellectual impermanence, engineers by the thousands are returning to school under various sponsorships to update their professional knowledge. The explosive accretion of new knowledge and the accelerating obsolescence of the old have intensified every engineer's need to pursue his education throughout his working life, if only to keep abreast of the literature in the field. Continuing education, moreover, enhances the engineer's total job competence. The valuable engineer of the future, he knows, will be the one who is able to solve engineering problems not yet conceived, and the trends in both undergraduate and graduate education are underlining this.

The engineer who graduated before 1953 concentrated heavily on the how-to-do-it course, what used to be called "cook book" engineering.

But by then a whole set of exciting new technologies were beginning to emerge from the engineering and research laboratories — rocket propulsion, nuclear engineering, and solidstate electronics. By the 1960's,

a new set of "hot" fields had opened up, such as plasma physics, computer technology, and extra-terrestrial engineering. By 1975, the practice of engineering is expected to change further to include such new areas as self-organizing machines and electro-optics.

Under this onslaught of new technologies, the theoretical foundations and tools of engineering have changed. The teacher of college physics, for example, has shifted from the old emphasis on Newtonian mechanics and macroscopic phenomena toward quantum mechanics and phenomena at the atomic and subatomic levels. Semiconductors, a subject of particular importance to the electronics engineers, include such new devices as transistors, injection lasers, thyristors, and tunnel diodes — all unknown until recently. Digital computers have largely replaced the slide rule as the essential engineering tool, and the modern engineers must learn basic programming techniques as well as the fundamentals of computer technology.

On the undergraduate and graduate levels, the subject matter of learning has expanded to keep pace with the "new" engineering. Such courses as introductory physical electronics, transistor circuit design, energy conversion devices, optical systems, masers and microwave devices, modern algebra, communication and control systems, and fundamentals of infrared technology were not even offered a few years ago.

Studies in computer use range from intensive general courses that provide engineers with an over-all appreciation of the application of computers to such specialized needs as numerical methods, optimization techniques, and process simulation.

Today, the emphasis is more and more upon a broad scientific background of fundamental

CONTINUED ON PAGE 20

Adapted from RCA's ELECTRONIC AGE, Winter 1967/68





## How far is up...how fast is down?

The Bendix AN/APN-184(V), a new breed of tactical radar altimeter, measures altitude and altitude rate in a single component. It has proved its versatility in the Hawker Siddeley P1127 V/STOL fighter, during the recently completed flight tests by U.S. Air Force.

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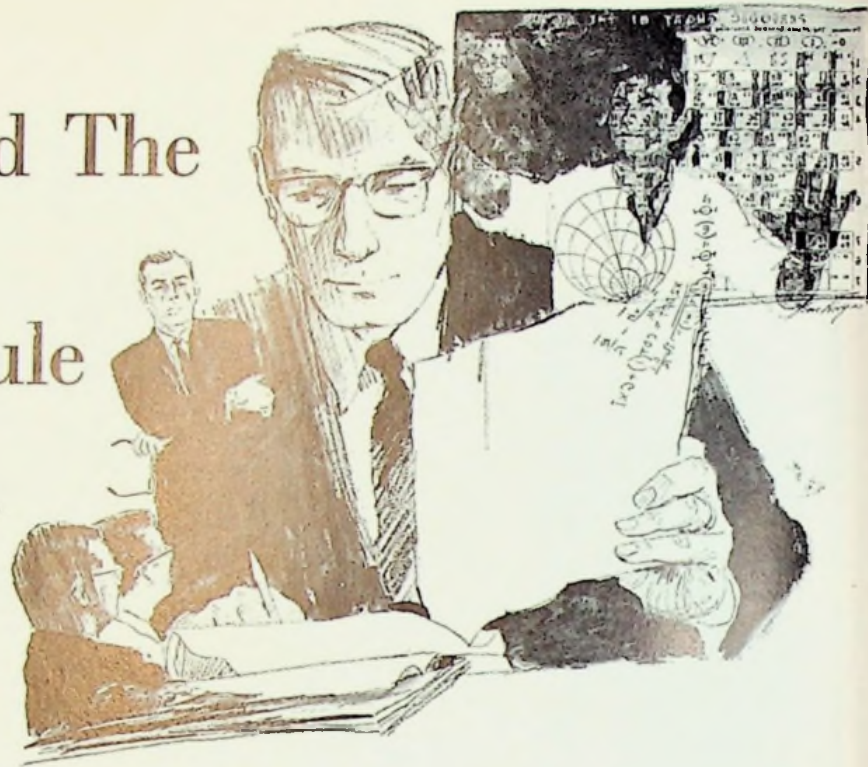
How fast is down? The AN/APN-184(V) delivers accurate altitude rate information for both tactical fighters and helicopters.

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# Beyond The Slide Rule And



# Into Management

by: E. T. Clare, Vice President  
Cohu Electronics, Inc.

*There hasn't been an engineer in the White House since Herbert Hoover. But the number of engineers in top echelon management is soaring. In ten years, the percentage will be significantly higher. Who knows, we may even have another engineer as President!*

As more and more American companies go public, there are fewer and fewer companies left where the founder or one of his sons is president and/or largest single stockholder.

Many of the big corporations have turned to professional management. Up through the decade of 1950, only a small percentage of these managers were scientists and engineers.

But in the decade of the 1960's, salaried managers who are scientists and engineers started to dominate the field. This trend is continuing to the point where a new type of engineer has evolved. This engineer is the optimum manager of our highly technical industry. They have been trained to take the outputs of the scientist and convert them into things of use to mankind. The background of this engineer differs greatly from that of the traditional manager. Most traditional managers can be characterized as "humanities" men. The humanities man, for example, is an extrovert. This is a man who has a high social aspect. This is a man who enjoys being in a group. This is a man who is competitive by nature and usually participates in many

sports. As a matter of fact, he may be so extroverted that if he doesn't have a group around him, he has to go out and start a party. He just can't stand to be alone.

On the opposite side are the men who are engineers. Engineers tend, in general, to be introverts. They are not athletically-oriented. In their youth they received parental approval whenever they did something that indicated they were using their mind above average. In school, teachers tended to emphasize their mental achievements, and the engineers-to-be took a minimal interest in anything connected with athletics.

They learned to think independently. As college men, they worked well with the professors — they work well, in other words, with the generation ahead. They are not at ease with their own generation. Yet they have advanced mentally to the highest state the civilized world has ever seen.

What all this means is that engineers who want to make the breakthrough to management have the obligation to develop management know-how. They've got to be more than an engineer. They must develop certain facilities in the management area.

As long as an engineer realizes what management is, then he really can put his engineering to work on it.

When he is dealing with a management opportunity, he can boil things down to at least

CONTINUED ON PAGE 28



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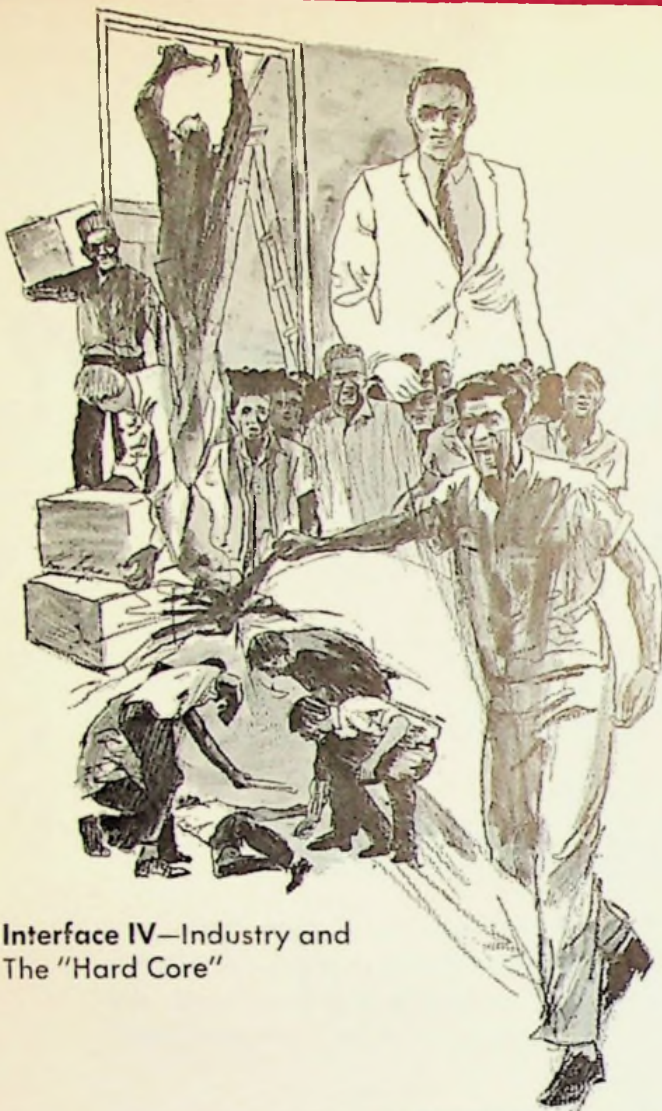
**Applications Engineers:** For defining system specifications, preparing proposals, and customer liaison. 2-5 years experience in logic design for supervisory and telemetry system applications, including proposal or report preparation.

Please write or phone Wayne Earl, Moore Associates, 815 American Street, San Carlos, California 94070. (415) 591-5363.



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Interface IV—Industry and  
The "Hard Core"

# The "Core" Is Not as Hard as It Might Appear

by: Darrell Maddox  
McGraw-Hill Newsbureau

*The electronics industry, among others, is in an ideal position to help the nation with one of its major social problems. In showing the way from hopelessness to rewarding productivity, it derives material benefits, too. Look what some of our companies are doing . . .*

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The tough-talking Italian-American gave up a comfortable job with Los Angeles public

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"You'd be surprised how fast these kids with a fifth grade education learn complex math when I relate it to batting averages or a racing tote board."

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"At this moment in 1968 we are in a demilitarized time zone of discontent," Samuel C. Johnson of Johnson Wax told the Economic Club of Oklahoma. "We better invest in solutions or else be forced to respond to demands and terms that will not be entirely palatable."

"The American businessman is trained to solve problems and oriented to economic solutions. He has the opportunity and the duty to step into this vacuum and help to provide assistance on realistic and economic terms."

Industry, together with government and Negro leadership, is beginning to pull against that "spiral of failure" cited by the McCone Commission as the central cause for discontent.

A dramatic step was Aerojet-General's founding Watts Manufacturing Co. under Negro management in the heart of the burned out curfew area. Dropping most hiring barriers, instituting training with a second-mile attitude and capitalizing on community pride, Watts manufacturing got out of the red six months after production started. It showed business the hard core could be hard working, given tools and motivation.

Other companies are showing "a genuine commitment to improve the lot of the poor," according to Princeton University's Engineering Council which cited:

— IBM's decision to locate a cable-making plant in Bedford-Stuyvesant, a Manhattan ghetto. And IBM set its lowest wage there one-third above the legal minimum.

— Western Electric establishing a training plant in trouble-riddled Newark slums. The company operated on a deficit until local manpower could be trained to put the plant on-stream.

— Atlantic Richfield's longtime in-house training to help low-wage employees advance to higher positions. Recently three Negro cleanup foremen achieved plant management posts, thanks to the off-hours training program.

— Eastman Kodak supplying cameras to urban elementary school children, helping them overcome difficulties with written communication. In its Rochester, N.Y., plant, Eastman Kodak since 1946 has enrolled 500 ghetto dwellers in pre-apprentice training and graduated more than 334. Once criticized for having too few minority employees too low on the ladder, Eastman Kodak today has a minority payroll over 1,800.

Motivating the jobless is the biggest problem. He has been conditioned to failure in school, at work, in family life. One method used by industry is to show him others who have made it. Success is possible but not easy.

Gene Cox has spent most of his life working with the hard core as a teacher, probation officer and Job Corps supervisor. Now a "principal" of a unique training-employment research project, Whittaker Corp. "instant hiring," Cox is not sure how success is measured in the human experiment.

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# IBM at WESCON?

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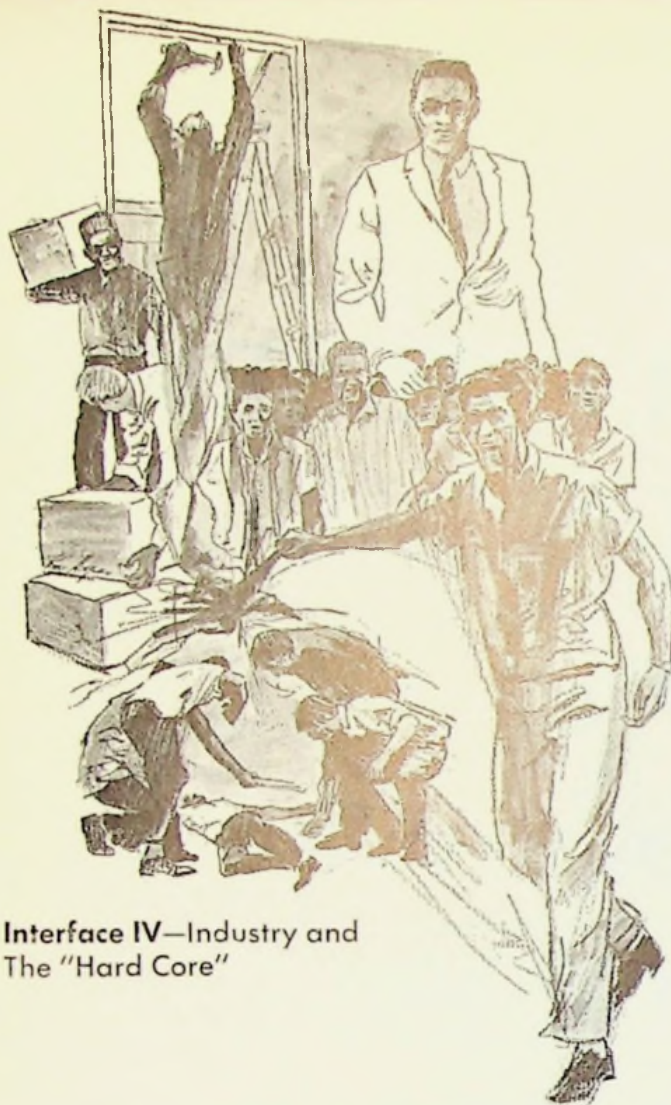
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Interface IV—Industry and  
The "Hard Core"

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formal and highly individualistic. Other times they are formal and reflect a collective performance. In either case, they are valuable and effective.

A code of ethics is a code of conduct not imposed by law, not imposed by common custom, but self-imposed because you believe in it. It comes from a belief in some higher selfless spirit and is directed toward the achievement of a high objective. Individuals can and of course, *do* have ethics and yet it is only when a large number of individuals join under a common code that high objectives are likely to be achieved. Individual businesses have codes of ethics, many of them quite adequate, yet the fulfillment of the objectives which they seek will be attained only when and if the majority of business management can join together under a common code.

The great ethic, around which Western Civilization has developed, is the Judaic-Christian Code. It comes presumably from divine authority and has the highest objective for its individual adherents . . . a place in heaven for eternity.

But more important, it has a high worldly objective, the brotherhood of man. The great accomplishments of the free world come from its broad acceptance. The theme is common for all, whether it be expressed as the "Golden Rule," the "Ten Commandments," the "Sermon on the Mount" or from the teachings of the Talmud. It has had a tremendous impact in a worldly sense. All of those things which we cherish in our Western Civilization have come from the common acceptance of this code throughout the Western world.

And let us never overlook the fact that the rapid spread of Communism comes not from the ruthless power of its dictatorship, but rather from the Communist ethic. We cannot accept this ethic, and we continually refuse to believe so many people do. We assume, and naturally hope, their system will fall when their dictatorship is destroyed.

We can hope that our Strategic Air Command and our missiles will deter them from starting a war — or if one starts, will enable us to defeat them before they destroy

us. We are using a tremendous portion of our productive effort to build and maintain a position of strength. Yet we fail to see that the final decision will be made in our favor only if the vast majority of their people come to accept our ethic as preferable to theirs.

When we look closer at hand at the smaller units in our society — the Rotarians, the Kiwanians, all of the service and fraternal organizations, the Boy Scouts and other youth organizations — we find that nearly every organization in this country has grown around its own code of ethics based generally, of course, upon the Judaic-Christian Code. All are directed toward high principle, in each case having broad acceptance and without question resulting in many substantial achievements.

It seems strange indeed, then, that the great fraternity of business management as a whole has not developed a code of ethics of more common acceptance. It is not only strange, it is unfortunate, because no other group in the country with a common interest has so much influence over so many people. Our influence cuts across party lines; its extent knows no race, color or creed. We affect, in fact control, every media of mass communication.

But, too often we continue to stick to the proposition that we are in business primarily to make a profit. There are some very good reasons for this in the very nature of a corporation. As manager, we are agents of our stockholders; they invest in our business to make a profit. We have a responsibility to do this for them, and we can point with pride at our achievement of producing goods and services that have raised the standard of living in this country to a level almost beyond belief.

People overseas also like our products, but question our ethics.

We in private industry have much to do to improve the image others have of us. Perhaps translation of our own personal code of ethics into our management jobs is not enough. If we are to assume the rather awesome social responsibilities we have at home and abroad, perhaps

CONTINUED ON PAGE 18



*Announcing . . .*

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we need to develop a clear cut management code of ethics which can stand on its own and be accepted and supported throughout the business community.

One of the reasons we have not done this is because we have not yet agreed upon a higher aim — the basis for any true code of ethics.

As a suggestion, here are a few tenets that might be considered for a management code. These are not one man's ideas. They come from statements business leaders have made over the past several years.

One tenet is to manage our business enterprises first and foremost so we make a contribution to society. If we provide a service, it should be the best possible service, oriented toward the public welfare. If we make a product, it should represent the utmost in quality and value. This is, of course, precisely what the most successful businesses do.

Another tenet is to recognize the dignity and personal worth of every person we employ. In subscribing to this tenet, we must provide an opportunity for employees to share in the company's success, provide them job security based on job performance, and most importantly, recognize their need for personal satisfaction that comes from a sense of accomplishment.

This concept has achieved some acceptance. It must be emphasized that the objective of this proposed tenet is not simply to make our organizations more efficient, although this will certainly be one result. This ethic, however we choose to express it, must be based solidly on the premise that labor is not a commodity to be bought and sold in the marketplace.

The third tenet has to do with management's responsibility to society at large. Our churches and schools play a great part in the intellectual and moral training on which we rely every day and rarely give a second thought. Many of the tools and techniques we use in our day-to-day work have emanated from the efforts of our great universities in

## Profits & Ethics

Continued from page 16

extending the frontier of knowledge.

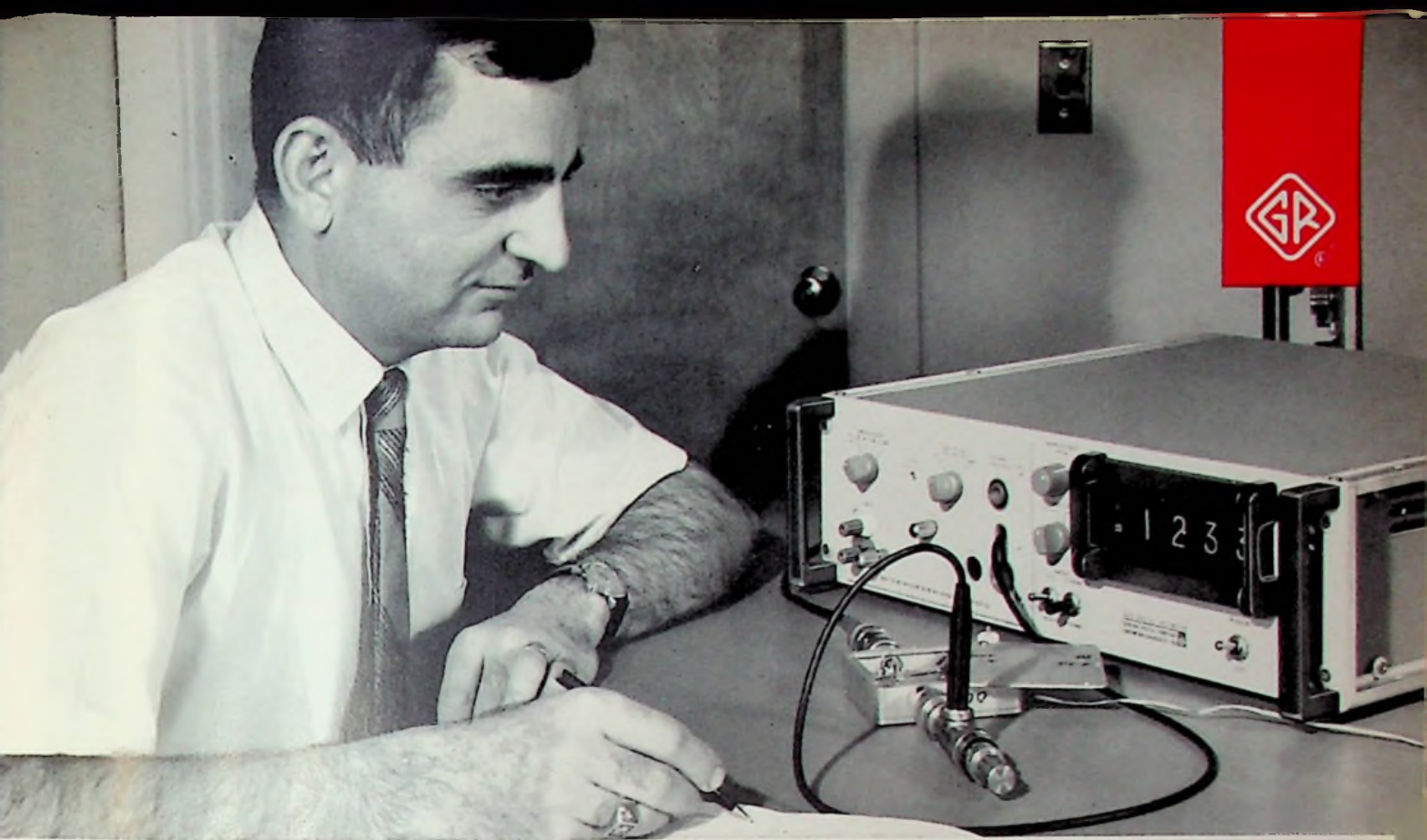
We have a responsibility for our private charities. Not only should we provide them money from our businesses and encourage our employees to give them support, but we should also participate actively in the establishment and achievement of their goals. Whenever possible, social welfare should be the responsibility of privately supported institutions.

The fourth tenet in our code should be directed toward a better understanding of the nature of profit. Profit is the monetary measurement of our contribution to society. It is the difference between the value of the goods and services we give to society, and the value we take from it. Profit is the insurance we have that our business will continue to grow and flourish. With a good profit we can meet our obligations to our customers, to employees, and to the public at large. We can also provide our stockholders with a fair return to encourage their continued investment as well. And, most importantly, it is the wherewithal we need to assist in the furtherance of man's progress.

The contribution of the business community to social and political progress is gradually increasing. But the weight of our contribution will not be felt until we recognize that final and permanent change for the better in all human affairs comes not from strife between people, or groups of people attempting to force acceptance of their views; not from power imposed by a super authority; but rather from self-enlightened action of all concerned — whether they be individuals or nations. This is the challenge and the responsibility of the free society. And, as part of the free society, it is the challenge and the responsibility of American business management as well.

A management code of ethics can provide direction of purpose, and significantly enough, at the same time provide an essential ingredient in the bonding and unification of the business community — a unification so necessary to the advancement of American business, the American economic and political system, and a free and enlightened world.





## DMM (Digital Multimeter)

GR's new 1820 Digital Voltmeter is far more than just another DVM . . . it's really a new breed of digital multimeter. Why? Because with it you can measure:

*ac volts, 200 mV to 200 V, up to 1.5 GHz*  
*ac volts, 10  $\mu$ V to 200 V, up to 2 MHz*  
*dc volts, 5  $\mu$ V to 1000 V*  
*dc current to picoamperes*  
*ac current to nanoamperes*  
*resistance, milliohms to 50 M $\Omega$*

Only two plug-ins are required to make all these measurements, but you certainly don't need both to have a very useful multifunction instrument. Which plug-in you select depends basically upon whether your need is for ultra sensitivity (1  $\mu$ V) or ultrahigh frequency (1.5 GHz). Compare this broad capability with that of an ordinary DVM.

There's much more. Voltage measurements can be read out directly in either volts or dB. Do you know of any other DVM that does this? High input impedance on all ranges, at least 100,000 megohms or 1000 megohms depending on plug-in, virtually eliminates voltmeter loading errors and ensures a true 0.1% measurement because there's no input attenuator to get in the way. The high input impedance also permits direct-reading resistance measurements to 50 M $\Omega$ . Since the ranges and polarity are automatically selected and no external

preamp is needed, a wide variety of voltage measurements can be made rapidly without manual switching or any fussing. This autoranging feature combined with BCD output also permits rapid printout of data that's always measured on the most appropriate range. The 1820-P2 plug-in provides six ranges each for voltage and current, and its picoampere resolution allows the measurement of leakage current in capacitors and semiconductors.

### DC Multimeter/UHF Voltmeter (1820 with 1820-P1 Plug-in)

**DC Voltage**  
 $\pm 220.0$  mV full scale to  $\pm 220.0$  V full scale;  
 $\pm 1000$  V with attenuator. Measures to 0.1 mV on last digit.

**AC Voltage**  
 2.200 V full scale to 220.0 V full scale; 1000 V with attenuator; above 200 MHz, max voltage varies inversely with frequency. Resolution is 1 mV on last digit. Operates as peak voltmeter calibrated to read rms value of sine wave or 0.707 of peak value of a complex wave. Frequency response down 3 dB at 10 Hz and 1.5 GHz.

**Log Voltage Function**  
 AC: 6 to 62 dB (re 100 mV).

**Resistance**  
 0.220 k $\Omega$  full scale to 50 M $\Omega$  full scale  
 (8 overlapping ranges).

### AC/DC Millivoltmeter (1820 with 1820-P2 Plug-in)

**AC/DC Voltage**  
 2.200 mV full scale to 220.0 V full scale;

1000 V with attenuator. Resolution is 1  $\mu$ V on last digit.

**Log Voltage Function**  
 60 to 122 dB (re 100  $\mu$ V).

**Current**  
 DC: 2.200 nA full scale to 220.0  $\mu$ A full scale; resolution is to 1 pA on last digit (with 1-M $\Omega$  internal shunt); 2.200  $\mu$ A full scale to 2.200 mA full scale (with 1-k $\Omega$  internal shunt). AC current can be measured with Tektronix clip-on current probe.

**Resistance**  
 2.200  $\Omega$  full scale to 22 M $\Omega$  full scale  
 (10 overlapping ranges).

### Prices in U.S.A.

1820-A only, \$1965; 1820-P1 Plug-in, \$525;  
 1820-P2 Plug-in, \$550.

Also available . . . 1820-P3 Differential Adaptor (\$90) can be added to either plug-in to convert the 1820 to a fully-balanced differential voltmeter with better than 100-dB common-mode rejection.

For complete information, write General Radio Company, West Concord, Massachusetts 01781; telephone (617) 369-4400. In Europe: Postfach 124, CH 8034 Zurich 34, Switzerland.

## GENERAL RADIO

See this instrument at WESCON,  
 Booth No. 1613-1616.



Continued from Page 10

als. Engineering has evolved into the interdisciplinary field, and boundaries are hard to define. Oceanography, for example, is a combination of several disciplines, among them chemical, mechanical, and electrical engineering. The engineer with a broad background in fundamentals is at least equipped to understand the language

in allied disciplines and can, therefore, assimilate new information that is of value in his own field.

To enable the graduate engineer to continue his education, industry, the universities, and the engineering societies are sponsoring dozens of training and retraining pro-

grams. Costing perhaps \$50 million a year, these programs vary from full-year, in-school graduate courses, to a week or two of intensive work in one specific area, to company courses offered during business hours, to seminars and symposia.

Traditionally, universities have been the stronghold of engineering and scientific education. Today, however, industry is becoming more and more involved in the educational process. Many companies have set up extensive formal programs of in-company engineering education as well as programs with neighboring universities. The general philosophy is to broaden the base of knowledge while helping the engineer to keep abreast of new developments in his specialty as well.

At Western Electric, for example, the program is aimed at familiarizing the new engineer with the complex technical environment of his company in particular as well as the industry at large. For the experienced engineer, the goals are to reinforce and expand his knowledge, not only in his field of specialization, but also in allied fields, and to introduce him to the communications arts. In line with the new concept of engineering needs, general background is emphasized, with strong consideration given to the economic and humanistic aspects of today's environment.

One phase of the program is advanced development. Here the emphasis is on both the fundamental and the theoretical, with the course directed toward the extension of basic knowledge and promoting skills required to meet short and long-range engineering goals. The courses range from fundamental chemistry, to methods of experimental research, to skills in communications—a program designed to help the engineer communicate with the layman.

RCA has also played a long and active role in continuing education for its personnel. But, in 1963, the company felt that the problem had become so important that major new programs should be developed. Out of this grew a program known as "Current Concepts in Science and Engineering."

Its purpose is to update the technical knowledge of the engineering supervisor, develop knowledge of new engineering methods, and promote understanding of the major unifying concepts common to

CONTINUED ON PAGE 22



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The PDC-808 is easy to learn and easy to program. There are no gimmicks. The instruction set is straightforward and powerful. Liberal use of Macro instructions keeps programs short. The logic is in the machine, not in software.

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If your system needs a controller, buy a controller; one that is designed for control applications. Avoid the inefficient, microprogrammable "core burner." An additional 4K memory module may wipe out any potential hardware savings.

Memory utilization in the PDC-808 is the highest in the field. A 12-word bootstrap for instance. The debug package requires only 512 words. Register change, control, skip and shift instructions use only 8 bits of memory, and use only 1 memory cycle. Memory Reference and I/O use 16 bit instructions for power and flexibility.

The PDC-808 interface is the most economical and powerful in the industry. Why spend money in logic outside the machine when the problems have been solved inside the PDC-808. This means bucks saved in parts cost and engineering time. Your bucks.

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## Formal Education & Continued Learning

Continued from page 20

many scientific and engineering disciplines.

Participants are organized into classes of approximately 40 to 50 students, each class meeting for a total of 12 two-day sessions at nominal intervals of three weeks. The program is based on a combination of class work and outside study assignments, with class activities including lectures, films, discussions, and occasional workshop periods. Lectures are delivered by members of the program staff, college professors, specialists from RCA laboratories, and members of various RCA engineering groups.

As background study, each participant receives refresher materials in physics, mathematics, and basic electronics in advance of the first class, as well as study guides, reference manuals, and reprints of articles on specialized topics.

Both the company and the participant benefit from the program. The engineer receives updated knowledge of science and technology necessary to his development as well as an increased awareness of current RCA programs. The company, on the other hand, derives its benefits from increased technological competence in a highly competitive arena.

Universities are offering expanded programs for the working engineer. Northeastern University, for example, gives off-campus courses to engineers who work along Route 28 outside of Boston. The University of California at Los Angeles has a six-week-modern engineering course for technological managers. The Illinois Institute of Technology has "specific action programs" for industry engineers who spend 24 weeks in residence. But perhaps the most interesting development has been at the Massachusetts Institute of Technology.

In 1964, the Institute received a \$5-million grant from the Sloan Foundation for a Center of Advanced Engineering Study for the purpose of "exploring ways of increasing ways of increasing the effectiveness of mature engineers." It is aimed at engineers in two categories: the specialist who is interested in acquiring new skills in a particular field, and the engineer who wants to take a fresh look at a general area.

The program is full-time and lasts for one year. A variety

CONTINUED ON PAGE 26

## 1968 WESCON Officials



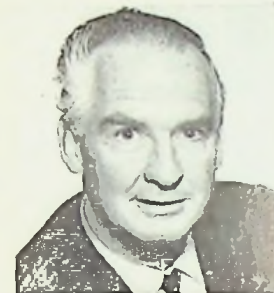
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Chairman of the Board



William J. Moreland  
Chairman of the  
Executive Committee



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Convention Director



Donald C. Duncan  
Show Director



Don Larson  
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Ted Shields  
Asst. General Manager  
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Robert D. Rankin  
Exhibit Manager  
WESCON



Jim Rose  
Symposium Coord  
WESCON



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of the Board



Emmet Cameron  
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Ernest Pappenfus  
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Co-Chairman



Jack Bishop  
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## Facilities



Jack E. Easterbrook  
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S. H. Barnes  
Vice-Chairman

## Registration



Jack L. Kasperek  
Chairman

Robert Lepard, Vice-Chairman

## Cocktail Party



John F. O'Halloran  
Chairman



Larry Courtney  
Vice-Chairman

## Future Engineers Show



N. L. Brotzman  
Chairman



Robert G. Irvine  
Vice-Chairman

## Technical Program



Robert M. Ashby  
Chairman



John M. Salzer  
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## D-M-R Conference



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Don Cassidy  
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## Public Relations



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Vice-Chairman

## Women's Activities



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Mrs. D. Maure  
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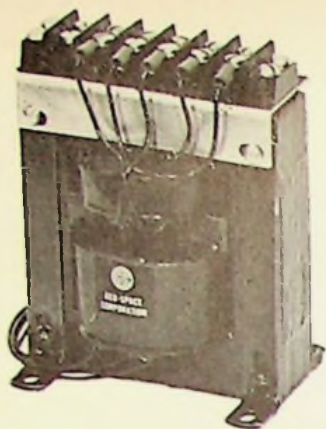


Bob Tetherow  
Vice-Chairman



Beverly Johnson  
Vice-Chairman





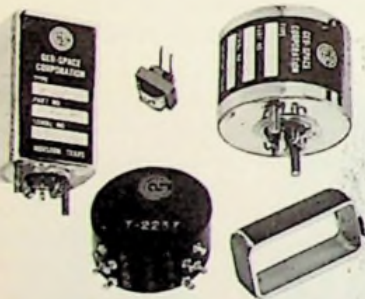
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Quality assurance per MIL T-27B under MIL Q-9858A.

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# WESCON '68

(Registration \$2.00 for all four days. Shuttle bus service between show locations and major hotels.)

Listed below are a few of the most popular WESCON events. Be sure to scan the "Quick Check List", on page 6, for all of the activities that were firmed by press time.

## Exhibits

The number of exhibits has soared to a record 1200, representing 650 companies. LA's Sports Arena houses half. Hollywood Park the balance. Show hours: Tuesday, August 20: 10 am to 5:30 pm. Wednesday, August 21: 10 am to 9:30 pm. Thursday, August 22: 10 am to 9:30 pm. Friday, August 23: 10 am to 5:30 pm.

## Technical Program

An outstanding 32-session program, under the chairmanship of Dr. Robert M. Ashby. Admission by regular WESCON show and convention badge. Location: Five major meeting rooms at the Biltmore Hotel. Hours are 9:30 to Noon, and 2:00 to 4:30 pm, Tuesday through Friday.

## Industrial Design Awards

The 19 IDA displays are viewable daily at the Sports Arena. No charge, and well worth seeing!

## Future Engineers Show

Autonetics President Fred Eyestone will address award-winning Future Engineers at their scholarship luncheon on Thursday at the Statler Hilton. Price per person is \$6. \$3800 in scholarship prizes will be presented. See the 20 finalists demonstrate their entries, all four days at the Sports Arena.

## Eta Kappa Nu Luncheon

At the luncheon Thursday, Jet Propulsion Laboratory's Director Dr. William Pickering will be featured speaker. Outstanding student awards will be presented. Location is the Statler Hilton Hotel, and price per person is \$6.

## Cocktail Party

Don't let party lines separate you the evening of August 20! The doors of the Statler's Pacific Ballroom open at 6:00 pm to this politically-tinged affair which lasts two hours. Tab of \$6.50 includes access to an open bar and deluxe hors d'oeuvres.

## D-M-R Conference

Distributors, Manufacturers and Reps hold their annual get-together at the Century Plaza Hotel on Monday, August 19, 7:30 am to 5:30 pm. Registration, including meals, is only \$9.00 per person. Contrasted with earlier regional affairs, this one is national in scope.

## Sponsors Lunch

Secretary of Commerce C. R. Smith is keynote speaker on Tuesday, August 20, at the Biltmore Ballroom of the Biltmore Hotel. Time is Noon and the price per person is \$6.50. Come and help WEMA celebrate its 25th Anniversary!

## Ladies Program

Opening a fun-filled schedule for feminine visitors to WESCON will be a no-charge fashion show and "welcome" tea at the Biltmore Hotel's Music Room from 2:00 pm to 4:00 pm, Tuesday, August 20. A tour of filmland's Universal City leaves the Biltmore Hotel at 10:00 am. Price of transportation and lunch is included for \$6. Free brunch on Friday at the Biltmore's Ladies Hospitality Suite (8:30 am) is followed by a bus trip to the Future Engineers Show at Hollywood Park.

## Special-Subject Symposia

The 1968 International Electronic Circuit Packaging Symposium is a two-day meeting offering six technical sessions, a luncheon, and full symposium record for the registration fee of \$40. Hours: Monday, August 19: 9:30 am to 11:45 am. 1:15 pm to 5:00 pm. Tuesday, August 20: 8:30 am to 5:00 pm (lunch included). Location: Statler Hilton Hotel.

Designing with Hybrid Microelectronics Symposium offers eight technical sessions, a luncheon, and full symposium record for the registration fee of \$40. Hours: Wednesday, August 21: 9:20 am to 5:00 pm (Lunch, addressed by Motorola's Dr. Daniel E. Noble, included). Thursday, August 22: 9:00 am to Noon, 1:30 pm to 5:00 pm. Location: Statler Hilton Hotel.



# Meet Our New Baby

Midwestern Instruments' LCR is a portable third-generation, direct-recording, light-beam oscillograph, providing a complete recording system with built-in signal conditioning modules matched to single-unit galvo-magnet structures.

It is the lowest cost unit in its class.

The LCR has been designed with simplified controls and front panel input connectors for ease of operation — even by non-technical personnel.

Principal features include: New single-unit galvo-magnet structures ■ plug-in modular electronics ■ 3, 8 or 14 channels ■ 6-inch chart ■ 8 push button selected speeds ■ and a wide range of options.

You won't have to pamper this "Baby" — even though it's small — because it works just like the big boys.

For all the vital statistics, contact your nearest Midwestern Instruments Representative . . . he's handing out cigars.



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The Model 180 covers a wide frequency range of 2 to 400 mcs and Model 180R from 5-475 mcs with accuracy to  $\pm 0.5\%$ . R.F. leakage is negligible so that either unit is suitable for checking the most sensitive receiver. Very accurate output voltages from  $0.1 \mu\text{v}$  to 0.1 volt are obtained at all frequencies by an automatically balanced bolometer bridge circuit. An illuminated indicator assures accuracy of the carrier output with reference to an absolute level of 0.1 volt. A solid-state internal modulator provides frequencies of 400, 1000, and 10,000 cycles. External amplitude or pulse modulation may also be used.

Expertly designed for compactness and ease of operation, manufactured from precision parts and tested to meet rigid specifications, these extremely stable instruments set new standards for signal generator performance. The wide frequency ranges and accuracy make the Models 180 and 180R ideal for laboratory, production and servicing requirements.



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Page 26

## Formal Education & Continued Learning

Continued from page 22

of courses are offered, arranged to correspond to the objectives and background of each man, for at the heart of the program is the desire to tailor each program to the special needs of each participant. In addition to the one-year students, the center also offers a series of programs of shorter duration to technical managers who need to learn how to apply new developments.

The entire offering of regular MIT undergraduate and graduate courses, seminars, and colloquia is offered to qualified engineers. In addition, participation in ongoing research work may be arranged either in the laboratories of individual professors or in the large laboratories. Following satisfactory completion of the program, each participant is granted a certificate. He may also request that he be given a grade in a regular MIT subject.

The vast majority of the nation's 800,000 engineers, however, do not have access to formal industry retraining programs, nor can they avail themselves of many of the university programs which require residence attendance for an extended period of time. The Engineers Joint Council, composed of more than half-a-million engineers in the nation's major engineering societies, has recently undertaken a pilot program that may help these engineers. Recognizing that engineering obsolescence is the result of many factors, the Council undertook a concentrated study that focused on the need of the practicing engineer to stay abreast of the changing technology at a time, place, and pace best suited for him.

One of the key needs, it discovered, was an information center — a clearinghouse for the collection of information regarding available educational resources, such as engineering symposia, short courses and seminars being offered by the professional societies, academic institutions, and industry. The center will also provide individuals and companies with information on where to get appropriate educational materials.

The study further indicated the need for an operational, high-quality, well-coordinated program, and the Council is therefore establishing a Continuing Engineering

CONTINUED ON PAGE 28

GRID-BULLETIN, August, 1968





## WESTERN TERRITORY...

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SALES DIVISION



Continued from page 26

Studies Commission as one of its arms. The Commission's activities will include the development and offering of packaged programs in the interdisciplinary areas of high interest, such as computers and programming, that can be distributed and handled locally by the local sections of engineering societies. There will also be self-administered tests that will enable the individual engineer to determine exactly where he stands in different areas. If he is behind in one or more areas, he could then receive advice and counsel on how to remedy his deficiencies.

Engineers have been responding to these various training programs, convinced that their professional advancement will depend largely on their ability to acquire and apply new knowledge. However, most authorities agree that the need for advanced training exceeds the programs that are available for it. They believe that many more engineers would be motivated to continue their professional development with the greater availability of programs and further encouragement from industry.

In the face of today's rapid obsolescence of theory, methods, and materials, maintaining the quality of engineering staffs, therefore, promises to present a continuing challenge to the engineering educator, the industry he serves, and the engineer himself for many years to come.

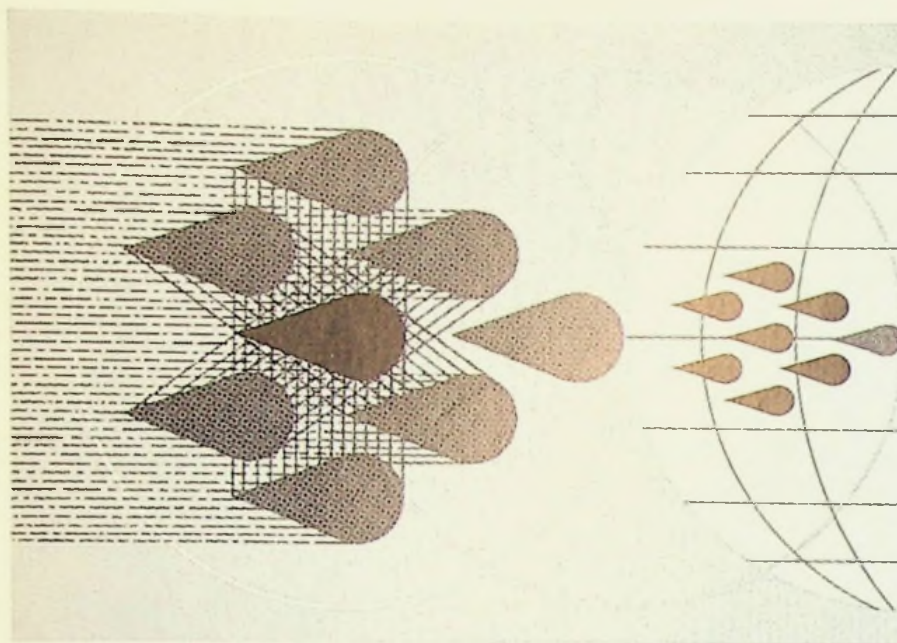
## Technical Management & The Engineer

Continued from page 12

three major considerations—in other words, take the task and reduce it to the elementary: specification, budget and time.

When he has a task to get done through his group, he has a specification that defines it. Most engineers, in fact, are going to prove to the world that they can produce a better specification than they're given. They can make a better product than is asked for.

But the engineer tends to forget about those necessary things called budget and time. Management has to watch all three: speci-



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# RCA



fication, budget and time. It takes a proper balance of the three tasks to make a successful project.

This leads back to professional management requirements and the place that engineering managers must take. Graduates who are technical managers are in the 35-45 year age bracket. Studies from Harvard Business School show that 38% of 6000 business executives sampled had technical degrees. Over recent years, the percentage of degreed men seems to remain constant in technical management, but there is no doubt that technical managers are beginning to lead the industry.

The income of the technical elite reflects society's recognition. While income of doctors and dentists has remained relatively constant — and the farmer's income has gone down along with that of the small business owner — the percentage rate of increase is highest with engineers and scientists.

*Business Week* recently said that "engineers haven't had a man in the White House since Herbert Hoover, but they seem to be taking over a sizeable chunk of the U.S. economy." In another decade or two, the majority of industrial leaders will be men from the scientific and engineering disciplines.

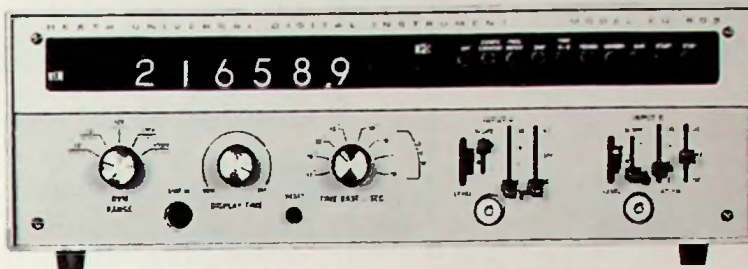
Today and even more so tomorrow, the technical manager must have knowledge of hardware and software and humanware. He must have the ability to accept change and adapt to it. And, of course, he must be able to translate the fruits of our technical developments into the products and profits required in our capitalistic system.

Engineers as optimum managers must take their God-given talents from birth — environment, education and initiative — to move beyond the slide rule into the management areas.

Along with its rewards, management also entails increased responsibility, less time for personal achievements, the need for better communication and the demand for greater general knowledge in fields previously foreign to the slide rule area such as finance, manufacturing costs, marketing and profit.

The typical engineer may say: "Can I become a manager?" The answer is yes, he can if he *wants* to become a manager — within the engineering organization or within the entire company. But the key rests with the engineer. He has to have the will, he has to want to work, and he has to achieve proper balance of all of his talents in order to reach that goal.

# New from HEATH at WESCON...



## Universal Counter + DVM = Heath Universal Digital Instrument

- Frequency Meter
- Events Counter
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### 7 Instruments in one... for \$1250

This high-performance, factory-assembled instrument will make almost any measurement you need. Combining a 12.5 MHz counter with a built-in 0.05% accuracy Digital Voltmeter it has unmatched versatility at an unassuming price and features a unique modular design compatible with the new Heath Digital System.

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## Industry And The "Hard Core"

Continued from page 14

"Two guys started as helpers and two months later were journeymen. Some take jobs and simply don't make it. Six are in jail. Some I don't know what the hell to do with.

"You can't put success on a tally sheet. One fella's in jail now but I think I reached him. If he ever gets out and is given just

an edge of a chance next time around he might catch the bright blue ribbon."

"Instant Hiring" abandoned almost every accepted personnel practice to turn "unemployables" into electronic technicians and appliance installers. Ignored were arrest and criminal records unless very serious, education, previous employ-

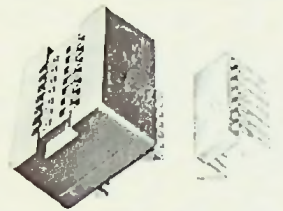
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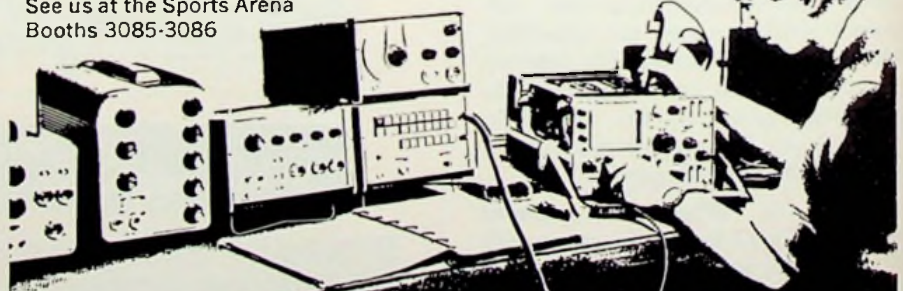
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ment and achievement levels. Those rejected were usually too qualified for the government-funded research project. Only those from unemployment areas were accepted.

Trainees — about 50 Negroes and Mexican-Americans in each of the six-month courses — became instant employees with full-time pay. They took batteries of medical, psychological and educational tests, were individually interviewed and counseled by a team of professionals in medicine, psychiatry, remedial guidance and social work, plus of course vocational skills, learning theory, simulated practice sessions and on-the-job training. In all, each trainee got about 900 hours of attention, usually on an individualized basis.

Transition from street corner to job responsibility is first seen when the trainee learns to control his purse strings, says Cox. "They've been excellent failures. And leaving the poverty cycle is uncomfortable for someone who's been in it all his life. This is unfamiliar ground and they're not sure they trust it. They've been jived too long from this side.

"Still, industry is the best answer to this job situation.

Cox offers these suggestions to companies willing to tackle the job: 1) fully accept the philosophy that answers can be found for hopelessness, then approach that commitment with enthusiasm and a helpful attitude; 2) train for realistic jobs offering substantial rewards in dollars and status; 3) set targets difficult to achieve but possible; 4) keep groups small to allow for individual attention; select a competent staff able to build constructive relationships by combining counselling with instruction; 5) offer a spectrum of job choices and fields so as not to restrict a trainee's potential.

One defunct research project in California used techniques developed with the physically handicapped in training the jobless. In some ways, it was the most realistic because the hard core is vocationally handicapped, disabled in attitude, emotional amputees.

But there is a certain instinct for survival that makes the hard core a nut worth cracking. Given the right direction . . .

Well, having a hard core is not such a terrible thing in this world of business.

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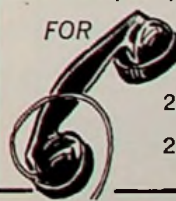
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**QED Underway**—Harry Delaney (left), Bill Lana (center) and Andy Devot look over a print on one of their first contracts for power and EMC Filters in their new plant, Quest Electronic Development (QED), in Sun Valley, California. All three formerly were with Filtron Corporation.

A new engineering and manufacturing company has been formed by William M. Lana, former vice-president of Filtron Corporation, which was recently absorbed

by Liquidonics, Inc.

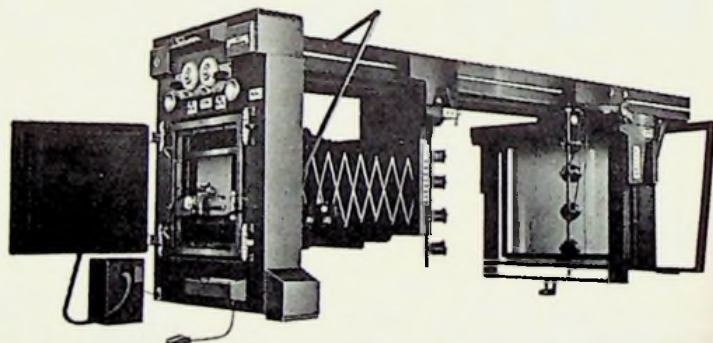
The name of the new firm is Quest Electronic Development which will be shortened to QED in further corporation procedures. As president of the new firm, Lana will

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head a group of engineers and scientists with capabilities in several areas of electronics, components, and systems development.

The company has acquired a manufacturing and testing facility at 11855 Wicks Street, Sun Valley, California.

In announcing formation of the company, Lana stated that new contracts have already been won and that employees are being added daily to maintain production schedules. He also stated that he soon expects to be joined in the new venture by several engineers with reputations and experience in the field of EMI control.

Other officers of the firm are Harry J. Delaney, VP Marketing and Andre J. Devot, VP Engineering & Research. Delaney has managed WINCON (Winter Convention on Aerospace & Electronic Systems) for many years and is also well known to members of IEEE for his work with WESCON and other activities in the organization. He was in engineering at both Hughes and Hoffman before entering the marketing area of the electronics business. Andre Devot is also well known in engineering circles. He holds several basic patents on filters and was a leader in

adapting the principles of the systems approach to RFI/EMC control. He has acted on several standards committees, originating the original standards for the Coast Guard on RFI used by that service for many years. He was, and is, a consultant to the Navy and Coast Guard in the EMC field. He was a project engineer on the Atlas, Polaris and other missiles systems.

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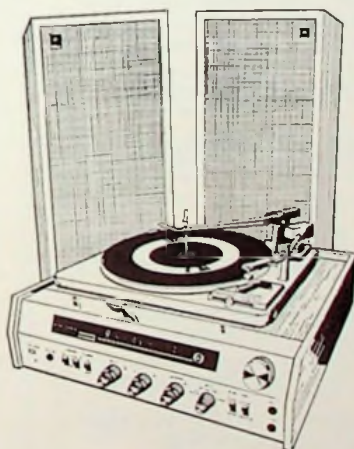
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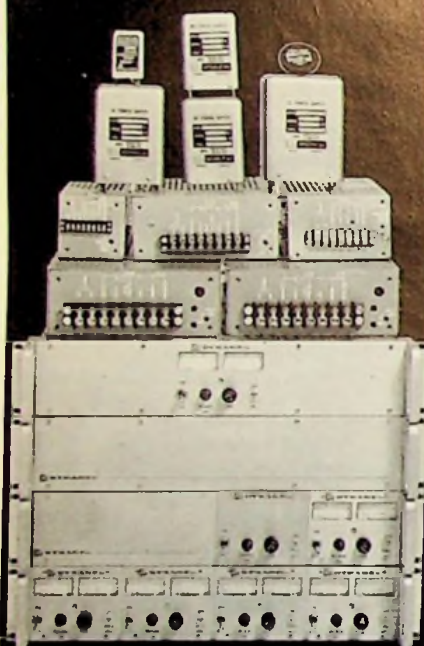
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and talk to us. Or send your resumé along to C. M. Davis, P.O. Box 188, Mountain View, California. Either way you'll enjoy our "Trans-Sylvania" kit showing you, in full color, just what makes being with Sylvania so rewarding. You have a choice of locations: Our R & D facility in Mountain View on the San Francisco Peninsula or our manufacturing facility in the beach city of Santa Cruz. Sylvania is an equal opportunity employer.

**SYLVANIA**  
GENERAL TELEPHONE & ELECTRONICS



# PARAMETRIC POWER

**FROM THE INNOVATORS...**



INNOVATION  
IN  
INSTRUMENTATION

**PARAMETRIC POWER CONVERSION INSTRUMENTS FOR YOUR LABORATORIES**

## AC-DC COMBINATION POWER SUPPLY



### WANLASS MODEL NO. P5505

The new Wanlass Parax Model P5505 A.C./D.C. combination power supply is an ideal laboratory instrument with the flexibility necessary to provide regulated-isolated-fixed (118V.) and variable (0-140V.) filtered A.C. power as well as variable (0-8V.) D.C. power with sufficient refinement for powering most critical voltage sensitive equipment including integrated circuits. For additional data on this very versatile general purpose instrument, ask for detailed data and specifications on Wanlass Model No. P5505.

## 400 HZ PARAMETRIC POWER CONDITIONER



### WANLASS MODEL NO. P4-1405

The Wanlass Model No. P4-1405 is the new 400 HZ version of the very popular 500 VA 60 HZ Parax A.C. power conditioner with which Wanlass introduced parametric power conversion. This laboratory instrument provides 500 VA regulated, transient-free A.C. 400 cycle power while attenuating noise over 50 db from 0 to 1 MHz. For complete detailed specifications and data request Bulletin P4-1405 from Wanlass.

## 60 HZ PARAMETRIC POWER CONDITIONER



### WANLASS MODEL NO. PD-1410

The Wanlass Model No. PD-1410 is a new 1 KVA regulator-noise filter-power conditioner made up of two parametric power devices which can be paralleled to provide 1 KVA of regulated transient-free A.C. power or used as two individual 500 VA outputs are isolated from each other by 100 db each output. Noise attenuation is over 50 db from 0 to 1 MHz. For complete data ask for Bulletin PD-1410 from Wanlass.

PATENTS PENDING.

**Ask us about other WANLASS  
PARAMETRIC POWER CONVERSION PRODUCTS**

**WANLASS ELECTRIC COMPANY**

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