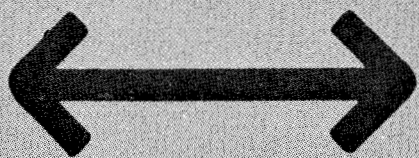


Bailey



Visit



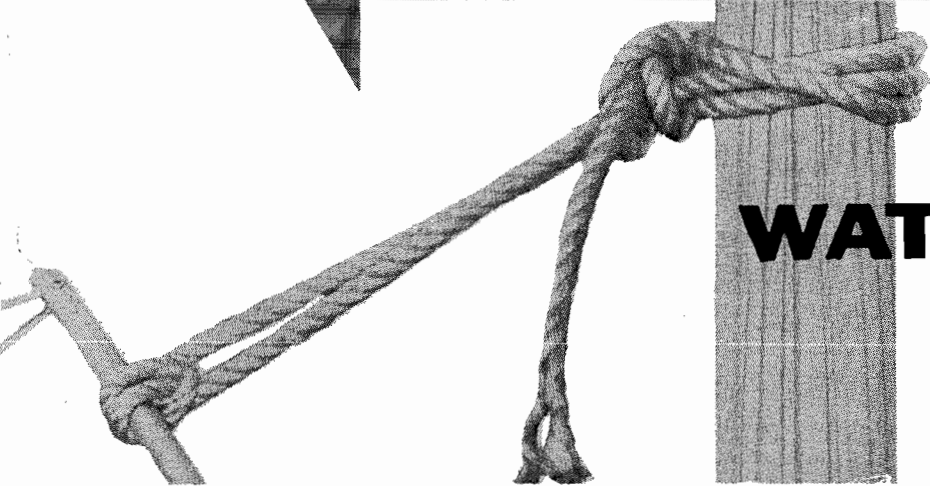
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WATT'S CURRENT

FEBRUARY ISSUE, 1962





WATT'S CURRENT

Published Monthly by

HEWLETT-PACKARD COMPANY

Laboratory Instruments for Speed and Accuracy

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VOL. XVII FEBRUARY, 1962 No. 2

This Month's Front Cover . . .

. . . previews -hp- plans for the New York IRE, March 26-29. The -hp- theme, "Easy Street," emphasizes ease of operation of Hewlett-Packard's entire family of instrumentation. (For complete story, see page 11.)

BACK COVER—Here the familiar "Life-Saver" helps dramatically demonstrate relative size of PAECO's subminiature components used in space-age development for Sandia Corporation. (Please see page 8.)

February Features

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Reliability—Where It Counts	Page 6
Unique Solid State -hp- Paging System	Page 7
Subminiaturization—a "Space Age" MUST	Page 8
"Easy Street"	Page 11

-hp- Organizational Changes

Del Fillmore, formerly chief cost accountant of -hp- Palo Alto, transferred to become chief accountant at Paeco.

Harry Moore, Microwave Division chief accountant, will assume Del's duties in addition to his own on an interim basis.

Nick Mardesich, formerly chief accountant at Paeco, will assume the new position of chief accountant at -hpa-.

Bard Rice has transferred from Waveguide Production Control to Systems and Procedures group in Finance Department. Bard's replacement in Waveguide Production Control is Bob Bonner.

International Organizational Changes

1. Lisa Klaus transferred from HPSA to H-P (Canada) Ltd. 1/1/62.
2. Karen Nelson transferred from HPCO to HPSA 2/1/62.
3. Carol Harvey transferred from HPSA to HPCO 2/1/62.

From Our President's Desk

H-P Instrumentation Plays Important Part In Glenn Space Flight—

Colonel Glenn's space flight was one of the great milestones of a time in the course of man's struggle to know and master nature. No one can predict what is to come but new break-throughs have never been fully appreciated at the time they occur, and have tended generally to be more far reaching than any contemporary evaluation would predict.

All of you had a part in making this flight possible. Hewlett-Packard instruments were used in hundreds of places in the developments which went into this project. While none was in the capsule, many were involved in the ground equipment all over the world. Sanborn recorders were used in the heart beat recording and could be seen in several of the television shots during the day. (See letter, below.)

For us, this event signals a continuing expansion in the need for precision measurements. This is an opportunity which will continue to expand in the future and, in my opinion, the future will be limited only by our ability to develop the instruments which will be needed.

This event also demonstrates a tremendous responsibility, for the failure of a key piece of equipment or an error in a measurement would spell disaster in such a flight. Reliability is primarily perfection of detail, whether it be engineering detail, manufacturing detail, or detail in technique of application or use. One poorly selected or improperly applied component, one poor solder joint, one piece of foreign material could cause failure. We have made great progress during the past few years in improving our technical capability, our manufacturing capability, and the quality of our application, engineering, and service. We are only in the beginning of this job. Colonel Glenn's space flight is a challenge to all of us in the Hewlett-Packard organization to do each of our jobs as well as can be done, whether it be advanced engineering, writing detailed instructions, operating a machine tool, or keeping the shop neat and clean. We can continue to make a great contribution to the progress of science if we all join in making sure that every instrument we deliver to our customers is the best instrument that can be built.

The following letter from Ethel M. Ritchie, an -hp- stockholder, is of interest.

Mr. David Packard
President, Hewlett-Packard Company
1501 Page Mill Road
Palo Alto, California
Dear Mr. Packard:

February 20, 1962

Thank you very much for your letter of welcome to Sanborn stockholders on September 5, 1961. This morning I turned on the radio at 2:30, took a nap and then turned on television at 4:15 and kept it on until Colonel Glenn was returned safely. When Elmer Peterson mentioned "Sanborn recorders"—two different times—in the plant of General Dynamics, San Diego, I became even more excited.

You are correct in your statement: "We know that you as a Sanborn stockholder have had a great deal of pride in your company." Thus, I am not a Hewlett-Packard stockholder entirely from choice and not as deeply committed as I might have been, as I sold half of my Sanborn stock in April of 1961.

When my doctor in Santa Paula mentioned that he wished to buy a portable electrocardiograph machine, I wrote to Sanborn. Imagine my horror, when I called at the doctor's office to see the Sanborn "Visette," to find also a monster from another company. Their representative was willing to reduce the price and "throw in" the portable table. It was a surprise to know that this concern was a competitor, especially that kind of competitor. Not being too aggressive, all I said was: "If Sanborn is good enough for President Eisenhower and Dr. White, it's good enough for Santa Paula." My doctor decided on the "Visette" and has since bought another.

These paragraphs lead up to the last sentence of your welcoming letter: "We hope . . . that you will become proud to be on our team as well." My thought is that QUALITY of product is the most important factor in this field. Just think what might have happened today if all the companies contributing their services and instruments had not stressed quality and a rigid inspection system. Two companies that have built on quality alone are Maytag and Zenith. A very outstanding company in the instrumentation field that has a reputation for quality and its system of inspection is the Foxboro Company, Foxboro, Massachusetts, whose stock was offered to the public the same year as that of Sanborn.

In closing this letter from a fairly proud and contented member of your "team," I repeat that all companies, especially in your (our) increasingly important field, should work in every department, from the top down and from the bottom up, to guard quality.

Sincerely yours,
ETHEL M. RITCHIE, Ojai, Calif.

Operations News

BY NOEL E. PORTER
(-hp- vice president in charge of Operations)

THE FIRST quarter has continued strong on the incoming order picture. In January, on a consolidated basis, we were already operating at a level equivalent to our \$100 million goal. First quarter orders for the total company were significantly up, 37 per cent higher than the same period last year.

We're looking forward to the best IRE display ever. Bill, Dave, Barney, Noel and I have recently completed visits to all our domestic operations and are really impressed with the new products we'll be showing as an almost fully integrated corporate display. *Boonton*, *Sanborn* and *Moseley* will be right across the aisle from -hp-, *Dymec* in their usual place nearby, and *Harrison* on the main floor. "Easy Street," on the third deck, will display the finest of new instruments . . . easy to use, easy to operate and easy to maintain. (Please refer to page 11 for additional show information.)

Our new cabinet program is progressing very well, with the subsidiaries making considerable use of the new cabinet approach and other -hp- hardware in their new instrument developments. There are still some problems of paper work, scheduling, and costs to be resolved but we're working hard to get on top of these in an effort to maximize the use and optimize the corporate image advantages of the new cabinet program.

We've made some major strides in order processing here at Palo Alto in both the domestic and government contract areas, with the result that in January we had the highest month for shipments in our history . . . and it all happened very smoothly with a minimum of "crash-bang" expediting. This effort and refinement of order procedures will be most helpful in developing methods as we move toward decentralizing this function to our representative field offices.

A quick trip around the beat may be in order with some emphasis on new plant and equipment expansion programs. *Boonton* is now quite well settled in their beautiful new building including new finishing and plating facilities, and is concentrating on getting production up to scheduled levels. *Harrison Labs* is still turning out record production with a minimum of plant and people but looking forward to new facilities. *Bill Harrison* is presently negotiating for a site where he hopes construction can begin later this year. In addition, he's bringing out a new "power supply" catalog and fast developing a transformer department with some help from *Paeco*.

Sanborn has a most aggressive program which will just about double the size of their plant at *Waltham*. This much-needed expansion is in the planning and layout stage at present with construction planned to start this summer. Considerable expansion in the machine, metal, and finishing shops will give *Sanborn* added abilities for quality and efficiency. *Sanborn* has

made some internal reorganizational shifts which have been well accepted and become highly effective.

The picture in Europe is very bright with *Bill Doolittle* reporting sales up 59 percent over the same period last year. *H-P Ltd.* at *Bedford* is continuing to improve their counter production and getting ready to take on more instruments. The order level for *GmbH* is well up, so they can look to a year of improving efficiency and consolidation in their new *Boeblingen* plant. *Ray Demere*, *GmbH* general manager, will be coming home to a new assignment this summer and *Fred Schroeder* will assume full responsibility for our West German manufacturing facility.

Coming West we have a great deal of activity in Colorado. The weather has been favorable in *Loveland* while it was cold in the East and rainy in the West, so the building program is about back on schedule. *Loveland* has about 200 employees as of now and expects to be hitting the 500 mark by the end of the year. This needed production capacity will really help the *Palo Alto* complex where we're jammed for space. The crew is actually underway now in *Colorado Springs* in the leased facility and we have taken an option on a 50-acre site in the *Garden of the Gods*, where we plan to start construction within a year.

Down in Southern California, where they have recently traded smog for mud, the *Moseley Company* is quietly going along turning out record production at a good profit. They see a need for more plant space in the not-too-distant future and are taking steps to be ready.

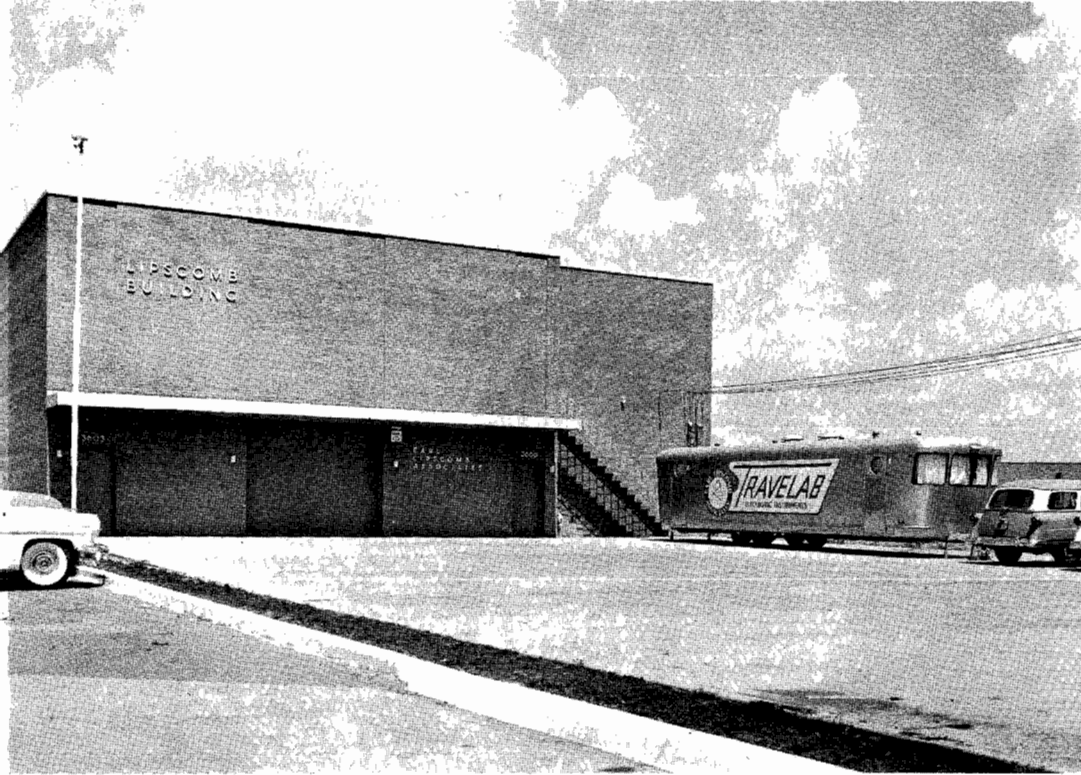
At *Palo Alto* we've finished preliminary plans for the addition of *Unit 5* and another underground warehouse at the *Stanford* site, totaling some 180,000 feet. We expect to go to bid this summer and finish this construction some time next year. We are also planning a 60,000-foot solid-state devices building next to *Paeco*, as previously reported. In the meantime, to cover the fast-growing needs for the solid-state effort we're doing some interim construction at the *Palo Alto* site. We hope this building program will be accomplished in time to meet the fast-growing needs of our -hp- divisions: *Dymec*, *Paeco*, and -hpa-.

There's a lot more than just buildings to this expansion program. We've ordered our second *Milwaukee-matic* for the *Microwave Division* as the present one is running three shifts. This little \$175,000 tool should be in and running by June. The new printed board facility of the *'Scope Division* is now cranking out 285 boards a day and our *Precision Components Division* is presently manufacturing 1000 diodes a day plus a lot more from -hpa-.

Things are jumping everywhere. We've a busy year ahead.

David Packard (left), president of Hewlett-Packard Corporation helped launch sales meeting when he spoke at Neely Enterprises Annual Company Sales Conference, January 11-12, 1962. The program was attended by all of the Neely Company's field and staff engineers as well as by their Management and Administrative group. During the course of the meeting, reports were given on accomplishments during the previous year and sales and objectives set for 1962. *Norm Neely*, who was -hp-'s first Sales Rep., has seen his company grow to a force of 160 people as of the first of this year.





Earl Lipscomb

Modern two-story brick building of 10,000 sq. ft. houses Lipscomb Associates' principal office and service facilities in Dallas.

Earl Lipscomb Associates

First -hp- Marketing Subsidiary—

FIFTEEN years ago Dave Packard, Noel Eldred, and Earl Lipscomb shook hands on an agreement that established Earl Lipscomb Associates as territorial representative for Hewlett-Packard in the Texas area. Among those other manufacturers of electronic instruments who were willing to take a chance with Earl were *Boonton Radio*, *Moseley*, and *Sanborn*.

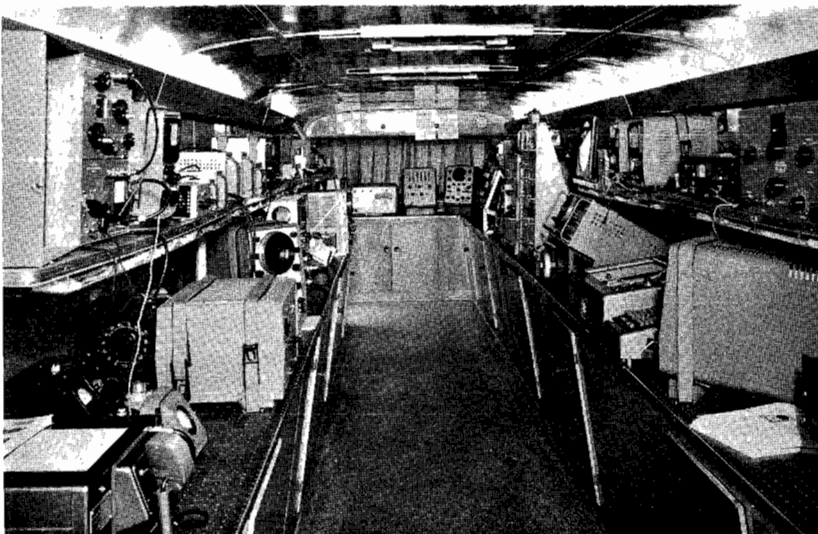
On November 1, 1961, ELA became a wholly owned subsidiary of -hp- and continues to serve as the marketing organization in the Texas area for -hp-, its subsidiaries, and other instrument manufacturers.

While it cannot be claimed that this business was started in a garage, it is true that it began in a 12x20 room *back* of a one-car garage. After having outgrown this and a couple of

other locations, the principal office and service facilities now occupy 10,000 sq. ft. in a two-story brick building in Dallas, with a branch office and additional service facilities in Houston.

Within the first few years, Bob Shuffler and "Bo" Byers decided to try their hands at selling instruments, forsaking the broadcasting business they undertook upon their graduation from Texas A & M College. Both have been key men in the company since that time. Bo is vice-president and manages the Houston branch office, looking after customers along the Texas and Louisiana Gulf Coast. It was Bob who thought up the idea of the TRAVELAB (see photo), after having gone through a few seasons of "road shows," and Shuffler still plans the exhibits for this and other shows.

A few years ago Bob and Bo were able to convince another of their classmates that a "living of sorts" could be made in this business, and John Smylie joined up. He continues to carry some of the sales engineering load in addition to his management duties as general manager and treasurer.



Interior view of Lipscomb Associates' TRAVELAB—showing clever utilization of space for maximum display of instrumentation on "road show" demonstrations through states of Texas, Oklahoma, Arkansas and Louisiana.

Earl Lipscomb has been accused of being partial to men from Texas A & M, having obtained his undergraduate and some of his graduate work there, but this is refuted by the make-up of the rest of the team. PenDell Pittman came into the group several years ago with a background in Navy electronics and several years in medical electronics, after receiving his engineering degree from Southern Methodist University. Pittman's excellent performance made the path easier for Boyd Orr, another SMU graduate, who came to ELA following a tour of duty with one of the electronics manufacturers in the area. George Tahu went on full time after graduation in engineering from Texas University, but cannot claim being misled, having had an opportunity to get an insight into this business during summer vacations from the time he finished high school. Harrison Chenault put in some twelve years as supervisor of communications maintenance for Braniff Airways before ELA was fortunate in persuading him to change jobs. His sound knowledge of the general field of electronics, and instrumentation in particular, has been of real value to his associates as well as to the customers. Bob Sandefer also had the advantage of a tour of duty under Harrison and responsibility for management of the Service Department before trying his wings in Sales. His enthusiasm is unequalled by any other man on the team, and even the most arbitrary customer fails to dampen his spirits and buoyant disposition.

This team of sales engineers is well supported by a Service Department that is well known for its sales orientation, and by an office staff that turns in an outstanding performance.

Becoming more closely related to the Hewlett-Packard family poses no problem, for these people really have been working for -hp- up to fifteen years. They retain their Pension and Profit Sharing Plans, as well as hospitalization, insurance, and other benefits that have been tailored to conform to other programs in effect in the -hp- family.

Sales have increased at a substantial rate from year to year, just about doubling every three years; and the growth of the electronics industry in the area is such as to support the hope that continued increase in sales may be anticipated.

This organization is confident of its ability to undertake the sale of the many fine products in the works in Palo Alto and in each of the other subsidiary companies.



E. G. "Bo" Byers



John Smylie



Bob Shuffler



PenDell Pittman

Houston
Branch
Office



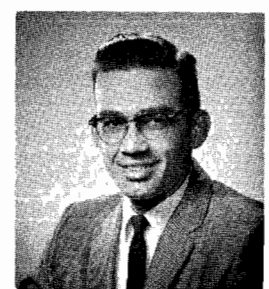
Harrison Chenault



Bob Sandefer



George Tahu



Boyd Orr

RELIABILITY

... Where It Counts

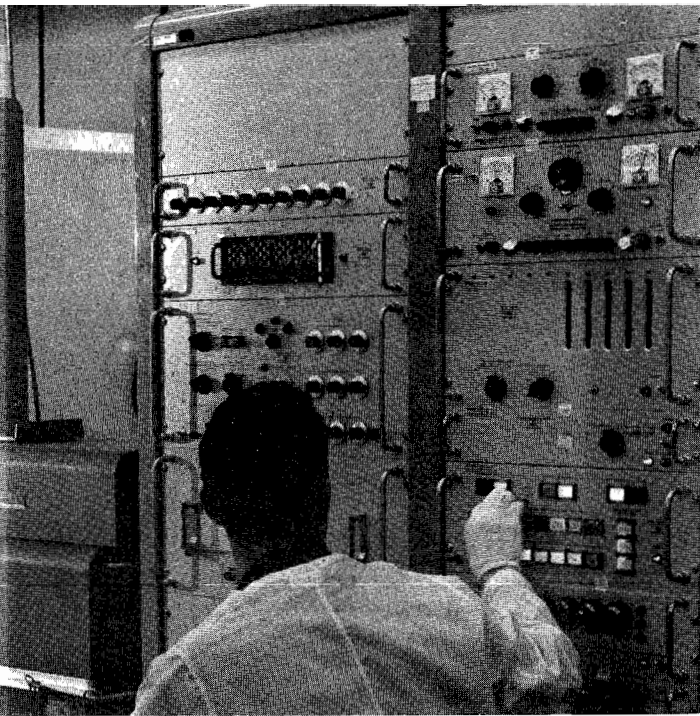
THOSE OF YOU who followed the final minutes of countdown of Lt. Col. John Glenn's orbital flight heard the phrase: "All systems GO." This meant that every single item on the booster, space capsule, launch, telemetry, and tracking equipment was functioning perfectly and that we would soon put a man into space.

This same exactness is required for the launch of missile flights which you don't hear about—test and training launches of missiles used as war deterrents. Within this category is the U.S.'s newest Intercontinental Ballistic Missile, the solid propellant Minuteman, built by the Boeing Co. This "bird" is built for storage within a tube or "silo" in the ground—ready upon command for fastest possible deployment to a known target. Electronic circuitry aboard the Minuteman guides it on a known flight path to a given destination for destruction. Hopefully, the devastating power of these weapons will never have to be used; however, if the need arises, they cannot fail.

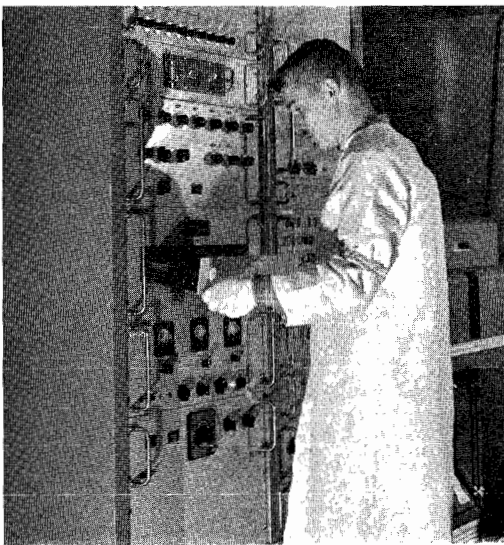
To insure the proper operation of all systems just before launch, checkout systems scan all critical missile parameters and report their condition as "GO" or "NO GO." For instance, if a malfunction is detected in the guidance system, firing instructions are overridden and the countdown is halted. It may be clearly seen that the guidance checkout system must be as nearly perfect as possible, or better than 99 per cent reliable.

Reliability of this magnitude requires equally exacting performance from each of the component parts in the system. It is toward this end that Dymec Division of Hewlett-Packard worked with Boeing to produce the DY-5572 and DY-5573 Automatic Component Measuring Systems. Liaison between Boeing engineers (who knew what was required of the component test systems) and Dymec engineers (who knew how to build it) was provided by the field engineers of ARVA, Dymec's representative in the Washington area. Dymec designed and built the systems to perform the checkout of critical functions of resistors, capacitors and diodes to be used in Boeing's guidance checkout system which, like all Dymec systems, made maximum use of proprietary instruments manufactured by -hp- divisions and subsidiaries.

The DY-5572/3 systems are designed for use in an environment of precisely controlled temperature, humidity and cleanliness. The components to be tested are mounted on printed circuit boards and are aged at a controlled high temperature. After aging, they are placed in the component test system, and parameters indicative of component failure are scanned (at a rate of 100 parameters per minute), measured and recorded on IBM cards. One card is produced per component. These cards are then processed by a computer to determine if the component is to be accepted or rejected. Those accepted are guaranteed to be better than 99 per cent reliable—acceptable for installation in a circuit. At this point, the circuit is tested for reliability by other test equipment. This progressive testing takes place throughout construction of the guidance checkout system. The result is a "fail-safe" system, qualified for use in America's first line of defense; reliability insured in part by -hp- divisions and subsidiaries.

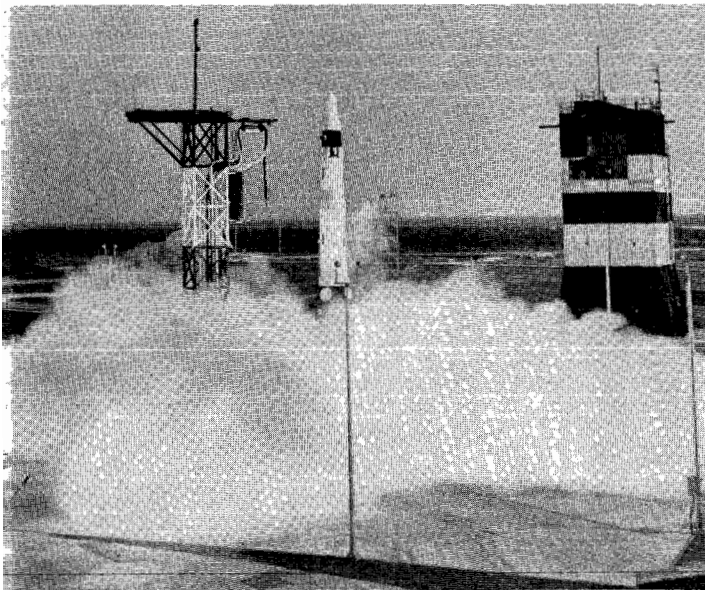


Electronics technician shown manually testing components with Dymec DY-5572 and DY-5573 measuring systems at The Boeing Company's Aero-Space Division electronics laboratory, Seattle. Built by Dymec, a division of Hewlett-Packard Company, to Boeing specifications, the systems are used in the Minuteman Intercontinental Ballistic Missile reliability program.



Technician loading tray of resistors into component drawer. Drawer will then be closed and components automatically scanned.

A United States Air Force Minuteman Intercontinental Ballistic Missile is shown here being launched for the first time from the Air Force missile test center at Cape Canaveral.



Hewlett-Packard PA System Goes 100% Solid State

Probably a First of Its Type in the U.S.A.—

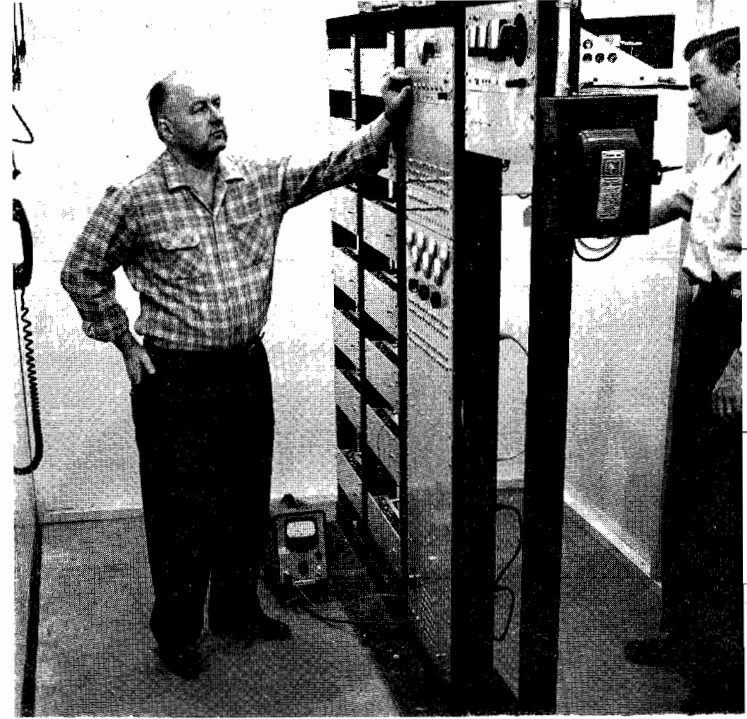
THE -hp- Public Address (PA) system has long been a topic for comment by -hp-ites as well as visitors to the Stanford Industrial Park plant. The hi-fidelity system is probably the first "Solid-State" system of this quality and size in the United States. The flawless reproduction of our telephone operators' voices and the "Hi-Fi" music is no accident.

For a number of years the heart of the system has been 60-watt class B amplifiers which have a flat response from 20 cycles to 20 kc, with 0.1 percent distortion at full output. The basic amplifier design was worked out by Dr. Barney Oliver, Hewlett-Packard vice-president in charge of R & D. Hence, they have been affectionately known as "Barney Oliver Specials."

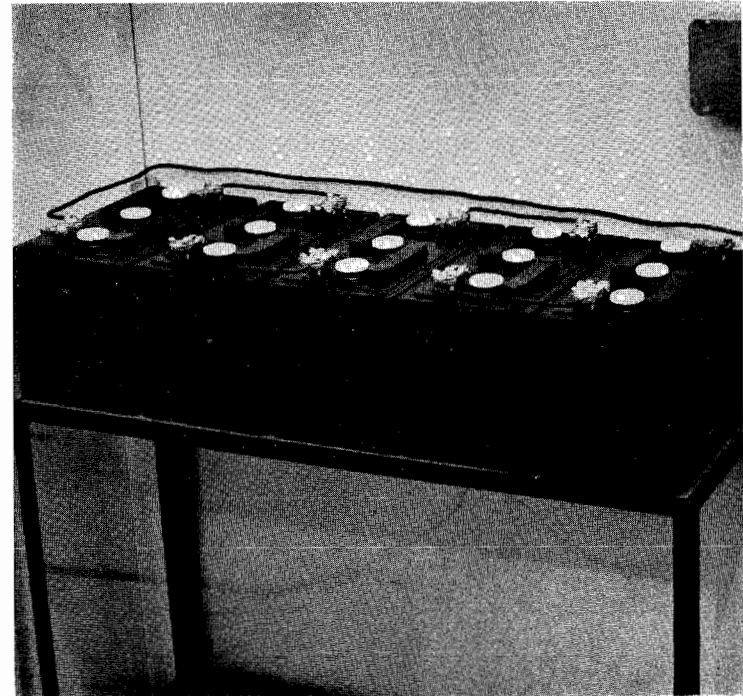
Paul Hubbs, head of -hp- DC Standards Lab, assisted by Steve Jackman, has had responsibility for the PA system from its earliest days. (Jim Marshall has also been on the team for the past two years.) Paul states that the high electrical performance, together with the excellent reliability exhibited by the "Oliver" amplifiers, has made it difficult for him to place them in "retirement." While the amplifiers are very reliable, they are dependent upon commercial AC power for their operation. Since fourteen amplifiers are required to serve the Stanford Park complex, the AC power requirement is considerable. This is a basic weakness of vacuum tube devices. When a power failure does occur there is no way to "pass the word." Under emergency conditions, the PA system would be an important plant safety device. A suitable standby power source for the old system is not too practical from a cost point of view. In addition, no improvement in reliability would be obtained.

With these facts in mind, the decision was made to go "solid state." As a result all the vacuum tube amplifiers in the Stanford plant have been replaced with an electrical equivalent solid-state system which is battery operated. The new power amplifiers have the same power output and distortion specs as the vacuum tube units they replaced. The power output circuit consists of four power transistors in a bridge configuration similar to the CBS circuit. The output impedance is 8 ohms with no output transformer. Since the audio distribution lines operate at a 64-ohm impedance level, an external transformer is used to raise the impedance level from 8 ohms to 64 ohms. The 64-ohm feeder lines fan out to all the buildings to feed the various areas. There are more transformers which step the impedance level down from 64 ohms to 8 ohms (or lower) which feed banks of 8-ohm loudspeakers. The impedance ratio is selected so that the acoustic level in a particular area is correct for the normal noise level. For example, speakers in office areas and corridors operate at a lower level than speakers in machine shop areas.

The microphone preamplifiers for the system are located at the telephone switchboard. These are also transistorized and are fed from the same battery power supply as the main power amplifiers. In addition, the operators' control buttons, indicator lamps, and the complex relay-operated selective paging equipment operate off the 34-volt dc power supply.



Paul Hubbs (left) and Steve Jackman at heart of unique P.A. system—now 100 percent transistorized. H-P Model 428A (on floor) is a virtual requirement for adjusting to proper operating conditions.



Special 34-volt standby power supply operates on floating charge ready to supply system automatically, should any outside power failure occur.

SYSTEM UNEXCELLED FOR RELIABILITY AND PUBLIC SAFETY—

The special power supply consists of five 6-volt lead-acid industrial batteries having 150 ampere-hour capacity. These supply a nominal 34 volts to the PA system, and are on a float-charge from a constant-voltage charging system which maintains a full charge on the batteries and also supplies the normal load current. If the normal power supply fails, the PA system never knows the difference, since the batteries are connected to the amplifiers at all times. The added measure of security gained by being independent of commercial power for sufficiently long periods of time can pay big dividends should an emergency occur.

Subminiaturization

A Space Age "Must"

BIGGER and bigger plans for smaller and smaller components . . . that's the outlook ahead for the electronics industry, as a result of subminiaturization. Just such action has been taking place at Paeco (-hp- affiliate in Palo Alto). Here's how it's been happening.

It seems that Sandia Corporation was contemplating building a digital computer utilizing an entirely new concept. Instead of using one large power supply to run the entire computer, they were considering interspersing many diminutive power supplies *throughout* the system.

After contacting five companies on the east coast and five companies on the west coast, Sandia finally got in touch with Paeco, for not a single one of the prior ten companies even wanted to bid on the contract since they figured that it just *couldn't* be done.

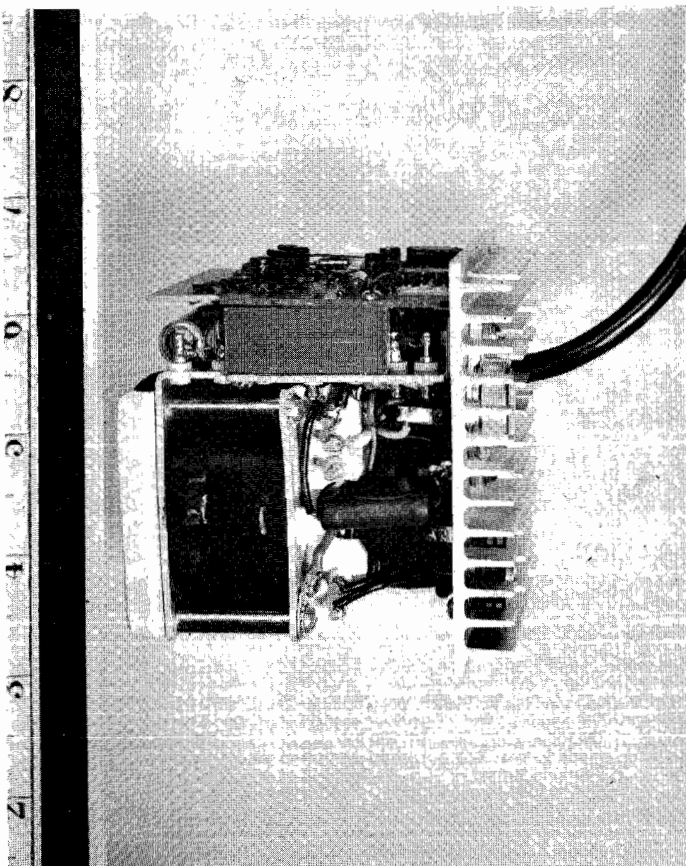
The parameters necessary were carefully calculated, and Paeco found it *could* be done! There would be quite a few problems, however. The almost overwhelming consideration was how to put two regulated power supplies in an area roughly $3\frac{1}{2}$ by $2\frac{1}{4}$ by 3 inches, or approximately a space of 20 cubic

inches. The computer would require precisely 200 of these pint-size units (see cut, below).

(A power supply is the means of converting 110-volt 60-cycle power to a precise and controllable DC voltage which would be required for a specific application. In the system contemplated by Sandia, each small module throughout the system would house two 12-volt power supplies. The idea here was to increase the over-all reliability.)

In designing these, the main problems were density of component parts and heat. The design had to be modified to the extent that the heat generated would not be excessive and yet the unit would still operate under the specified requirements. Size-wise, the standard large size power supply is about $3\frac{1}{2}$ times as large and also about $3\frac{1}{2}$ times as expensive as those devised by Paeco to meet Sandia's contract.

What a job! What a lot of head-scratching and hastily jotted calculations; what a lot of steps to go through in order to get the printed circuitry small enough to fit the package. Not only did the over-all size have to shrink, but also the reliability had



Miniature Transistor Computer Power Supply for Sandia Corporation

Paeco is proud of unit's scaled down size and high performance characteristics—especially unique heat-fin design as shown in accompanying photo.

PAECO

to be extremely high. The circuitry, though miniaturized, still had to be serviceable.

The way these special circuit boards are made is first to print one side of the laminate and then mount the parts. Next the whole board is gold plated, and, finally, it is dip soldered.

Component selection is more difficult, too, because, the components must be very reliable. Obviously it would be very difficult to make changes in the components once the package was assembled.

The cost of miniaturization is quite high. Not only are the development costs expensive, but costs due to the requirements for higher reliability through better components are likewise high.

Built in the Paeco lab, all the Sandia subminiature parts are assembled under a magnifying glass and, since there is so little space, the location of each and every part is critical. In fact the winding wires on some transformers are smaller than a human hair. These transformers are mighty special, too. They are 400-cycle audio coupling transformers for transistor circuitry and are also used in a military airborne inertial navigational system.

Each Sandia power supply, when in final production, will be assembled in stages, so that if any changes are needed during assembly the whole package will not be lost. The sub-assemblies are the filters, the transformers, the circuit boards and the power transistor heat sink.

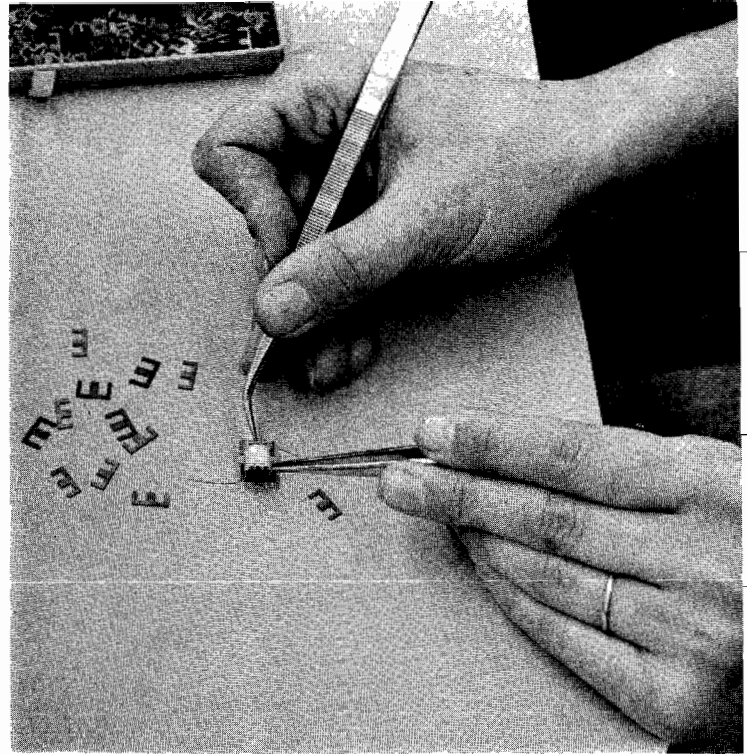
The next step will be to set up shop to build these on a production basis and this will be quite a large task. Many specially developed tools will be necessary such as jiggging, special means of soldering and of holding the circuit boards. The assembly areas will need to be well lighted because of the requirements of working with such small parts. There may also be the problem of fatigue resulting from the strain of such highly detailed assembly work.

Automatic testing is another innovation connected with the production of subminiature power supplies. All components will be pretested prior to assembly. And then after being assembled, the whole unit will be tested. All the electrical testing will be done with an automatic bridge comparator in a jig.

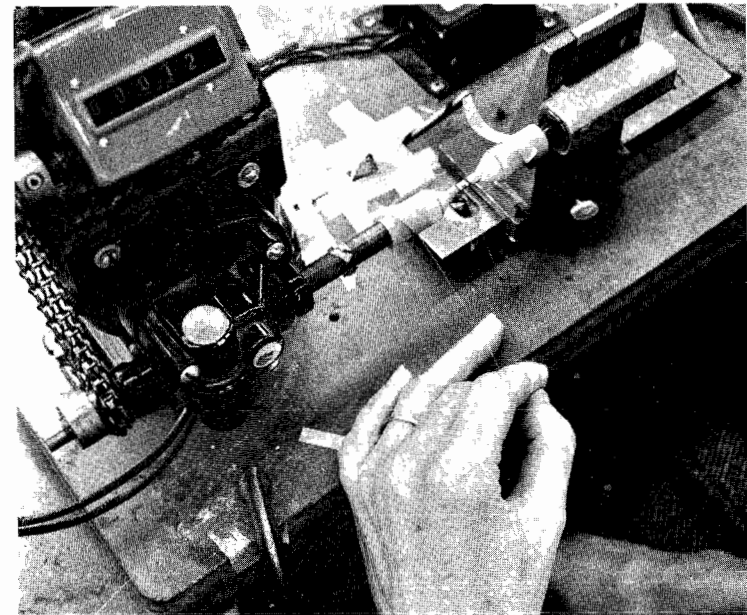
The field of miniaturization is not new around Paeco. For approximately the last year and a half, Paeco has been turning out subminiaturized power supplies on a contract basis. These have been manufactured for firms such as Lockheed and Watkins-Johnson.

It is foreseen that at some future date Paeco may even do away with circuit boards and use a spot weld technique to connect parts with a welded ribbon.

What does the future hold? More and more promise for a greater industry-wide acceptance of the concept of subminiaturization which will permit the development of electronic packages one-hundredth the size of those now possible with semiconductors. In fact, the U.S. Bureau of Standards has reproduced six 8½ by 11-inch pages of normal size print on the cross section of a human hair. And this is resulting directly from the demands created by the space age. Relative weightlessness and extreme compactness is highly essential to space travel. And, ultimate *microminiaturization* of components is the answer to this requirement.

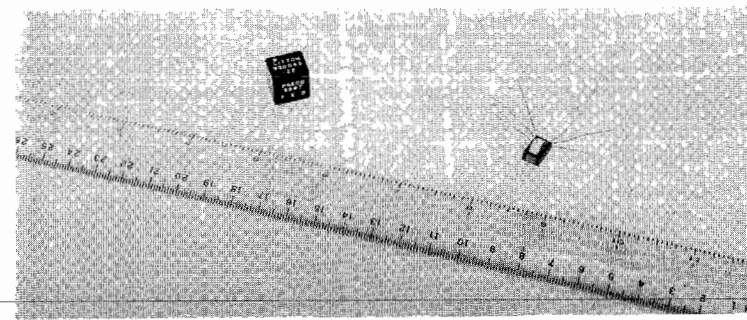


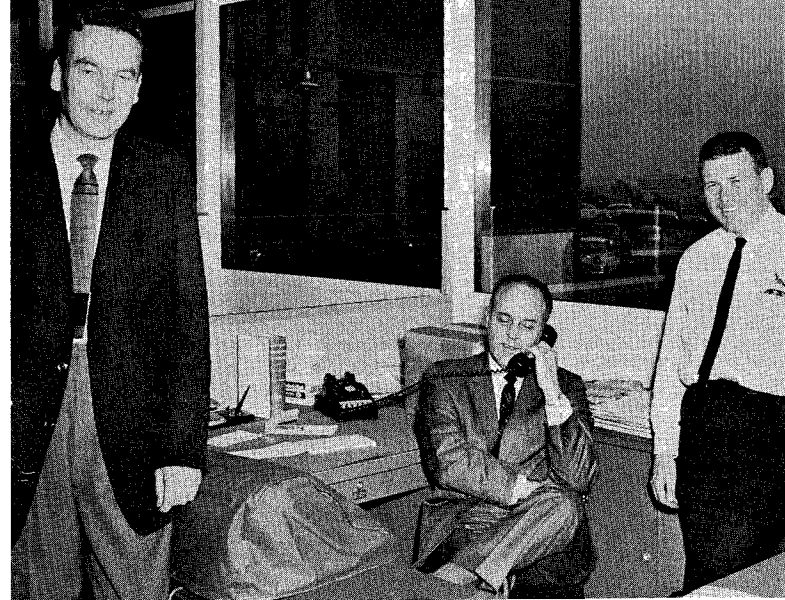
Individual skills are important to production of miniature components at Paeco.



Specialized equipment built at Paeco speeds reliable component production.

Any reduction in component size requires many hours of engineering time.





Tony Vossen (left), Amsterdam Branch Manager of EMC, -hp's-Benelux sales organization, was a recent visitor to -hp- Palo Alto. In photo above, Tony waits his leave as last-minute arrangements are completed by Bill Doolittle (center), manager -hp- international operations, and Bill Hewlett, -hp- executive vice president, shown standing by to wish Vossen "tot ziens."

International News

BY BILL DOOLITTLE
(H-P Manager of International Operations)

SALES BOOMING—

INTERNATIONAL sales during the first quarter of the new fiscal year contributed their full share toward the corporate goal of \$100 million for 1962. HPSA sales in the European area were up a strong 59 percent compared to the same period last year. H-P GmbH sales were more than double the rate of a year ago.

Our new sales subsidiary north of the border, Hewlett-Packard (Canada) Ltd., which formally opened for business January 1, 1962, turned in an all-time Canadian sales record for their first month's operation. Ralph Haywood and his sales team are confident that the future will be even brighter.

H-P GmbH IN NEW HOME—

GmbH has completed the move into new, modern, spacious

facilities in Boeblingen. The optimistic European sales prospects insure that Ray Demere and his people will put their new production capabilities to use immediately. Formal dedication of the new factory is planned for early April. It is expected that most European rep managers and many important German customers will attend, as well as top management from Palo Alto, including Dave Packard and Bill Hewlett.

Plans for the fourth annual Geneva seminar, which is scheduled for April 8 through 17, are now under way. This year's seminar promises to be bigger and better in all respects than ever before. The Oscilloscope Division will have the limelight for Hewlett-Packard. *Moseley* and *Boonton* will have their usual spot, and for the first time we will have *Sanborn* and *Harrison* participating. The expanding product line and subsidiary participation has required extending the seminar to eight full days. The fame of the -hp- Geneva seminars has spread to other parts of the world, and, for the first time, this year we will have -hp- reps attending from some countries outside the HPSA European area.

January was an especially active month for overseas visitors. Denis Turville, service manager for HPSA's U.K. distributor, Livingston Laboratories Ltd., spent several weeks with Carl Mahurin's Customer Service Department where he was brought up-to-date on the latest -hp- servicing techniques. Tony Vossen (see photo, above), Amsterdam branch manager of HPSA's Benelux sales affiliate, Electronic Marketing Company S.A., visited all Hewlett-Packard facilities throughout the U.S. Tony was extremely impressed with the extent of our facilities and the new products under way. Gerhard Niantschur, from Hewlett-Packard VmbH in Frankfurt, is currently visiting Palo Alto and subsidiaries. Gerhard is one of the "old-timers" in the German sales organization, having been with H-P VmbH two years.

In February of 1960, Carol Harvey, who then worked for Tom Christiansen, left Palo Alto for a temporary three-month assignment with HPSA in Geneva. HPSA and Carol developed a fondness for each other and her temporary stay developed into a two-year assignment. Carol has now returned to -hp- Palo Alto and is serving as secretary to the manager of International Operations.



AUSTRALIAN DEMONSTRATION—Tom Cottle (hand on knob), sales engineer for -hp- Australian representative, Sample Electronics (Vic.) Pty. Ltd., demonstrates -hp- 606A signal generator. Demonstration was for Murray Allardice, Phillips Electrical Industries (N.Z.) Ltd. design engineer, and his laboratory staff at Department of Scientific and Industrial Research, Lower Hutt, Wellington, New Zealand. Shown, L-R, are: Alf Marr (director of Geo. H. Sample & Son New Zealand operations), Dennis Clowe, Murray Allardice (design engineer), Tom Cottle, Jim Miller, Peter Olszewski, George Delahunty and Joe Congmore.

Let H-P Put You on Easy Street

*With Instruments . . . Easy To Use, Easy To Operate
and Easy To Maintain—*

ACROSS from Central Park and over Columbus Circle in the heart of Manhattan are four streets by the name of EASY. You won't find them on any street map of greater New York, because those streets, North, South, Upper, and Lower Easy Streets, are located in the New York Coliseum where the forthcoming IRE Show will be held March 26 to March 29.

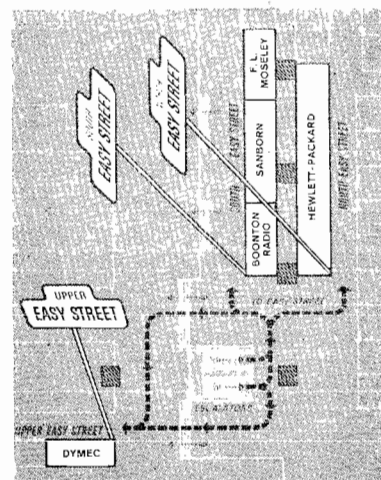
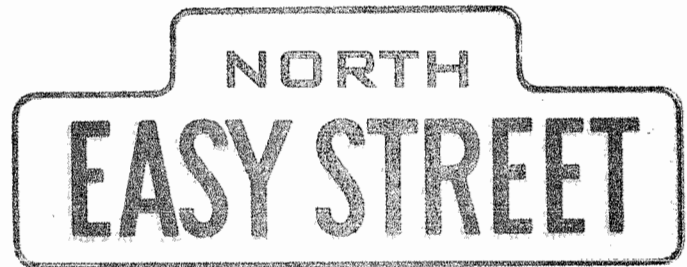
These "Easy Streets" epitomize the Hewlett-Packard theme in the over-all IRE "Golden Age of Electronics" motif. The -hp- theme symbolizes the basic concept surrounding the new instruments: they are easy to operate, easy to understand, easy to carry—just universally designed for easier use. And as the various equipments are united by the theme, so are the different -hp- and subsidiary booth locations. Except for Harrison Labs' booth on the first floor, the -hp-, Dymec, Moseley, Boonton, and Sanborn booths on the third floor will be grouped in close physical proximity, so that the "streets" lend a sense of unity to the individual displays. The total amount of display frontage for all booths is a whopping 170 feet.

More than 75,000 people, it has been estimated, from all phases of the electronics industry will be at the show to view new electronic developments of some seven hundred-plus exhibitors who will be spread out over four floors. From -hp- alone, there will be approximately 65 people attending. A large number of these will man the booth in which Advanced Research and Development, Microwave, Oscilloscope, and Time and Frequency Divisions are showing a total of 25 new instruments.

Concurrent with the distribution and display of new instruments is a vast loan program that is providing instruments for other manufacturers to use in their own displays. Almost three hundred instruments have been reserved for this purpose. Among these instruments, -hp- is featuring for loan the recently completed solid-state 5512 Electronic Counter and 120B Oscilloscope with internal graticule, which we feel have a great future in the electronic measurement industry.

For those who wish to see the -hp- booth with display setups prior to the IRE Show, you may come after 4 p.m. Wednesday or before noon Thursday to see a dress rehearsal, which is scheduled for March 14 in Building 3L, southeast corner. Shortly after the rehearsal the booth and instruments will be loaded into a huge van to be whisked off to New York City.

Although the theme and instruments breathe simplicity, there was an enormous logistics problem in supplying and transporting the instruments, building displays, training show personnel, and initiating and distributing promotion material. Some of the people to whom a token of thanks should be awarded are: John Terry and crew in the Model Shop for ironing out a number of "black box" design problems; Miriam Osgood and her steadfast team of "run-girls" without whom the show would be tied into a hopeless morass of paper work; Joe Phillips and Cliff Edginton in the Service Department, who chaperone the instruments at the show and attend to the numerous problems which usually occur; the multitude of Application Engineers; and by no means least—Don Teer and Harry Lewenstein in Sales Promotion, who are shouldering the responsibility for the whole operation.



LIFE SAVERS
MINTO GREEN

