



Christmas, 1963



# Measure





*from our president's desk*



**A**S WE COME AGAIN to the Christmas Season, it is appropriate that we pause from the rush of our daily activities to give thanks for the blessings we have enjoyed in our company affairs and our personal lives during 1963. It has been a good year for us, not because it has been without difficulties and problems but because we have been reasonably successful in surmounting the difficulties and problems we have encountered.

During the past few years we have grown very rapidly from a small company with a relatively limited range of affairs to what may be described as a large company with a world-wide scope of operations. This growth has generated a number of problems with which we have had no previous experience. While we have not by any means solved all of these problems, we have made, what I would consider, excellent progress on every front.

To me, the most encouraging aspect of 1963 has been the enthusiasm and capability which each of you has applied to the challenges we have faced. You who are involved in the technical areas of our activity have made some highly important contributions to the fast moving, highly competitive field of scientific measurement. You who are in manufacturing have greatly enhanced the quality and craftsmanship of our products while at the same time achieving a marked improvement in our manufacturing efficiency. You who are in marketing have accomplished a monumental job

in successfully effecting the transition from independent sales representatives to a strong corporate marketing arm. And together we have added financial strength to our company in substantial measure during the year.

While there is much yet to be accomplished, we can all take pride in a job well done in 1963. I am particularly proud of the fact that all our people throughout the company responded exceedingly well to these new challenges and by their individual efforts increased our over-all strength and stature.

Some years ago, when we were a much smaller company, those of us charged with top management responsibility could properly feel that our efforts were of significant influence on the course of our company affairs. Today our efforts have relatively little effect in comparison to the day-to-day accomplishments of each of our six thousand people.

We are grateful to have such a wonderful group of men and women, and we thank each of you for your contribution to our progress during the past year.

Bill joins me in the wish that you all have a most enjoyable Christmas Season with your families and friends. We hope, too, that you enjoy the full sense of accomplishment which you so richly deserve and which assures our company additional strength, security, and opportunity for the years ahead.

*David Parkard*



*Another in a Series of Reports  
on Interesting Tools and  
Processes Utilized by Hewlett-Packard*

## **Precision Lapping: Ay, There's the Rub**

**T**HE LAPIDARY cuts, grinds, and rubs precious stones. In somewhat similar fashion, a group of men in HP's Palo Alto machine shop utilize tools akin to those of the lapidary, although their mission is vastly different. The materials used may not be so precious as gems, but they are "worked" with considerably greater care to provide mated, ultra-precision parts for the most sensitive of instruments.

HP's ten lapping machines, including one at Dymec, were designed some years ago by Larry LaBarre, tool engineer, Special Machines, Palo Alto. In spite of the fact that they vary in size and certain features, they all consist essentially of a large, thick, cast-iron wheel called a turn-table, which is motor-driven to revolve like your phonograph. Templates, riding above the wheel as it turns, hold the parts being lapped. The wheel's surface is continuously washed with a solution of kerosene, fine oil, and optical grinding powder. The templates revolve slowly so that the parts to be machined will be ground uniformly. Slowly, but inevitably, the wheel itself also wears down at the rate of about  $\frac{1}{8}$  inch per year from constant contact with the parts being ground.

What makes this turn-table wear either to a concave or convex shape, or maintain the high degree of flatness desired?

To assure that this is controlled, LaBarre designed an attachment called a conditioning ring which rests upon the turn-table. The turning of the turn-table causes this conditioning ring to turn in the opposite direction and they wear upon one another. The control of this wear is the key to obtaining flatness. Adding weight to this conditioning ring toward the center of the turn-table tends to make the table concave, and weight applied toward its outside makes the table convex, and, of course, by adjusting these weights, the conditioning ring will provide the desired degree of flatness of the turn-table surface.

According to Jerry Heigl, waveguide fabrication manager, it is of particular significance that the surfaces of the waveguide flanges be lapped slightly convex, more slight than the eye can see. Then when two mating flanges are joined and their flanges bolted together, extreme metal-to-metal flange pressure is exerted at the waveguide opening toward the center of the flanges.

The accuracy of this lap is but a few millionths of an inch in the width of a 3-inch waveguide flange, and in comparison with the Stanford linear accelerator where they tolerate only  $\frac{1}{8}$ -inch error in its entire two-mile length, our error would be comparable.

There must be no microwave power leakage where the lapped surfaces of these waveguide flanges are fastened together. The precision machining provided by HP's lapping machines—with their astonishing accuracy of eleven millionths of an inch over a 3-inch span—give positive assurance against such leakage.



Lapping Specialist Nino Bandino of the Stanford plant's waveguide machine shop is seen at the monochromatic light projector where wheel surface readings are taken with an optical flat. A lapping machine, loaded with waveguide assemblies, is partially shown at right. Flanges can be ground to accuracies of eleven millionths of an inch.

Turntable grinding surface of each lapping machine is checked frequently for accuracy. Metal specimen is machined on wheel in same way as a production part. Then a quartz measuring device, known as an optical flat, is placed on surface of specimen. When a monochromatic light beam is directed at the quartz, lines appear which tell the tester the condition of the wheel's surface. The number of lines and degree of curvature reveal how concave or convex the wheel is.







New Testmobile, a general purpose test cart, can accommodate any HP instrument. Gerry Priestley, Dymec industrial design engineer, shows how instruments can be wheeled to within arm's reach of technician at typical bench position.

## New cart puts units where you need them

**B**EING ABLE TO MOVE test instruments around shop, lab, or factory can be a problem. Sometimes there's not enough bench space, or the operation being tested requires frequent shifting of the instruments, or, assuming you can find a place to set the instrument down, it's not always in a position for easy viewing.

All such difficulties are solved with HP's new Testmobile, a general purpose test cart which can accept any Hewlett-Packard instrument. Instruments placed on the top shelf of the cart may be tilted for better viewing—five positions upward and two downward.

Two drawers are available for additional storage space. They can be removed or repositioned as needed. Another convenience is provided by one of the trays which pulls out to serve as a writing or work surface.

The Testmobile rolls easily on 5-inch rubber wheels which also serve to absorb shock in high vibration areas or while instruments are being transported. Regular cabinet equipment can be set on top of the cart or standard 19-inch EIA rack panels in front. Additionally, HP combining cases or rack adapter frames may be mounted to handle any sub-module instrument.

Four NEMA plugs on the back panel provide central power distribution to all instruments. Although it only weighs 48 pounds, the Testmobile has survived a rugged program of physical tests.

And even its price is right: \$125.

## Cost reduction is theme of Loveland manufacturing seminar

"EVERYONE LEFT with the idea that no one group has a patent for doing everything perfectly and almost anything can be improved."

That's how one observer summed up the manufacturing seminar held at Loveland, Colorado, November 7-9. The meeting was undoubtedly one of the most important of its kind ever held by the company. Representatives from nearly all Hewlett-Packard manufacturing divisions and subsidiaries around the world gathered to discuss cost reduction, the theme set by Manufacturing Vice President Ralph Lee in his opening talk. From then on, Gordon Eding, corporate manager of manufacturing engineering, coordinated and directed the seminar.

Everett McKeen, process engineering manager, speaking on "Assembly Techniques," said: "Important time savings have resulted from the jigs, fixtures, and gadgets that have been created by an aware and thinking work force." Gene Doucette, production control manager of the Microwave Division, called production control "the heart of the body.

When it's not effective, then the rest of the manufacturing process does not function properly."

Other equally significant talks were given by men representing a wide range of manufacturing responsibilities. Jack Benson, corporate sheet metal specialist, discussed efficient sheet metal techniques. Don Cullen, Loveland plant manager, concluded the first day with a talk on production at Loveland. Ed Morgan, Palo Alto process engineering manager, started the next day off with a presentation on test techniques. In the afternoon, Corporate Accounting Manager Wayne Briggson and Russ Becker of Loveland accounting covered many aspects in their field of interest. The dinner speaker that evening was Gunter Warmbold, plant manager at Boeblingen, Germany.

On the last day, Phil Tuttle, Palo Alto plant engineering, spoke on good plant layout and efficiency. Bill Abbott, corporate manager of quality assurance, followed to describe methods for measuring and achieving quality. Gordon Eding closed the seminar with a presentation titled "Design Considerations for Efficient Production."





Corporate Sales Manager Bill Terry (left) and "Tiny" Yewell look pleased at the response to the Yewell Associates booth at the NEREM show in Boston November 4-6.

## NEREM, NEC success

THE CORPORATE CARPET was rolled out this year for over 18,000 visitors who attended the NEREM show in Boston November 4-6. More than ten percent of this number registered at the Yewell Associates booth and were presented a plastic ruler with the inscription: "The Yewell Rule of the HP Companies—'Measure With Accuracy.'"

The number of sales leads and inquiries filled out at the 160-foot booth constituted a stack of forms 10 inches high—the greatest number Yewell has ever received at a NEREM show.

The most successful NEC show in history took place October 28-30 at Chicago and Crossley Associates maintained a large booth right in the midst of the action.

Exhibitors totaled more than 500, visitors numbered over 23,000, and there were 200 technical papers presented.



Although they are not armed to the teeth, these two financial men are shown "guarding HP's European profits before shipment to Palo Alto." Paul Warnock (right), Geneva, and Gus Lerch, Frankfurt, stand close to a safe reportedly filled with that good old green stuff, or lettuce, as they say. Actually, Paul was visiting Gus at Frankfurt to get some pointers before starting his new job as European corporate accounting manager at Geneva.

## TRAINING THE TRAINERS: Three courses for division use

ONE OF THE MOST important responsibilities of each supervisor and manager in the company is to effectively train employees under his direction. This philosophy is currently being expounded from division to division by two men from the Palo Alto headquarters personnel department.

"Chick" Alexander and Lee Seligson have made up programs which are designed to train the trainers. There are three courses: Supervisory Development I and II, and Methods Improvement.

Both men have traveled extensively during the year presenting these programs to groups of supervisors and managers. Most recently they gave Course II and Methods Improvement to key people at Boonton Radio. Boonton General Manager Bill Myers presented the first course to his supervisory group a year ago. The courses have also been conducted at Loveland, Colorado; Geneva, Switzerland; and Waltham, Massachusetts.

# 1963: A Year of Challenging Problems

*Last January in a message to employees, HP President*

*"While we have many challenging problems, we can make significant progress in every one of our activities. We*

*1963 can certainly be another outstanding year. My confidence in you and your work*

*his confidence was well founded. It HAS BEEN A GREAT YEAR FOR HP.*  
*The capsulized review on these two pages*

## January

THREE NEW corporate vice presidents are announced: Ray Wilbur becomes vice president, personnel; Ed van Bronkhorst advances to vice president and treasurer; and Bill Doolittle steps up to vice president, international operations . . . Boonton Radio's employee group receive coveted "New Good Neighbor Award" from New Jersey Manufacturers Association . . . *Time Magazine* and *Business Week* both turn the editorial spotlight on HP in feature articles of national interest . . . Dave Packard is elected to The Business Council, a prestigious organization of 65 American business leaders . . . Largest single shipment of instruments in HP's history leaves Palo Alto for Madrid.

## February

NEW SYSTEM of processing orders gets trial run between Palo Alto and Loveland . . . New frequency synthesizer is announced and described to stockholders at annual meeting . . . Three booths at the International Exhibition of Electronics Components in Paris feature products from HP's German, English, and American companies.



Frequency synthesizer was one of the most significant new instruments introduced by any company at the New York IEEE show in March.

## March

SYRACUSE SALES DIVISION is established, and Crossley Associates starts operating new sales branches at Detroit, Cleveland, and Pittsburgh . . . Sales Department at Palo Alto is reorganized along divisional lines . . . IEEE show in New York, the year's top event in the industry, provides showcase for HP products, where the frequency synthesizer gets top billing.

## April

PLANS TO BUILD new \$2 million oscilloscope plant at Colorado Springs are announced nationally . . . In another major announcement, plans are revealed to form Yokogawa-Hewlett-Packard, Ltd., in Japan, a highly significant joint venture with Yokogawa Electric Works . . . HP's six months' earnings show 2 percent improvement over first half of previous year . . . New U.S. Trade Center in Tokyo opens and HP is there with impressive exhibit visited by leading government and business leaders.

## May

ASTRONAUT GORDON COOPER completes historic space journey as a Sanborn "350" records vital physiological data . . . Bill Hewlett, staying closer to the ground, makes "globe-circling" journey to key HP locations . . . Yewell Associates opens new sales office in Middletown, Conn., and Stiles Sales Division spreads out into a new addition to the Orlando office.

## June

GROUND IS BROKEN for Lahana & Company's new sales headquarters in the Denver Technological Center and construction gets going on a roomy, modern structure for Harrison Laboratories in Berkeley Heights, N.J.



# s . . . A Year of Significant Progress

at Dave Packard wrote:

problems to work on during the coming year, I am confident  
with the help and support of each one of you,  
year for HP." As it turned out,  
year of problems and of moving ahead.  
es retraces some high points of 1963.

## July

WEEK-LONG FIELD SALES seminar in Palo Alto brings together key sales personnel from all affiliates and divisions for the first time . . . Paeco operations remain essentially the same as it becomes a part of the Frequency and Time Division . . . *Fortune Magazine* reiterates what we all know anyway—that HP is forging ahead. In one year the company moved from 460th largest in the U.S. to 408th . . . And *Measure* is born as the corporation's official employee publication.

## August

WESCON, held this year in San Francisco, attracts 35,000, all of whom appeared to crowd into HP's major display areas at one time . . . New program to consolidate air shipments between Palo Alto and the East is launched . . . Forty financial people from manufacturing and sales units converge on Palo Alto for a major meeting . . . HP's "building boom" is in full swing: ground is broken for the Colorado Springs plant; Moseley draws up plans for a new two-story building; the existing Paeco building is being remodeled to provide additional space for HP Associates; HP GmbH announces plans to triple its Boeblingen, Germany, plant capacity; and Neely Enterprises employees at Sacramento settle down in new branch quarters.



A production area at Yokogawa Electric Works, HP's new partner in Japan.

## September

YOKOGAWA-HEWLETT-PACKARD, LTD., of Japan becomes official in Tokyo with impressive ceremonies attended by over 400 Japanese industrialists, government leaders, and top executives from both companies in the joint venture . . . Bill Hewlett and Dave Packard are named honorary lifetime members of the Instrument Society of America . . . Sanborn's sophisticated surgical monitoring systems are inaugurated at the NIH Clinical Center in Bethesda, Md.

## October

FIRST INSTRUMENT to be designed and developed entirely by the R&D staff at Bedford, England, goes into production . . . HPSA's instrument display at Stockholm Technical Fair is a big success, and the Canadian company's exhibit at Toronto's IEEE convention attracts a record 3,000 visitors . . . A Univac 1004 card processor and card punch are installed at Loveland to increase tabulating and computing applications . . . Report at end of fiscal year shows orders and shipments up, production holding steady.

## November

TOP CORPORATE MANAGEMENT, on swing around country, confers with top divisional management for review of new products and zeros-in on targets for 1964 . . . Neely Enterprises and Earl Lipscomb Associates become divisions of the corporation . . . Bruce Wholey, former head of the Microwave Division, is appointed general manager and chief executive officer of the Sanborn Company.

## December

A Merry Christmas to All . . . and a most successful New Year!



Lahana & Company's beautiful new building is first structure completed at Denver Technological Center.

## Lahana, Lipscomb, Neely boast new quarters

THE DALLAS-BASED Southwest Sales Division, formerly Earl Lipscomb Associates, has just moved its Houston, Texas, branch into a new building at 4242 Richmond Avenue (see photo, below). The new location is four blocks from the former branch office site and two blocks from one of Houston's main thoroughfares.

HP occupies the first floor of the building with 3,000 square feet of space for offices, demonstration and literature rooms, service and shipping facilities. E. G. "Bo" Byers is senior field engineer and manager of the branch. The staff of six has responsibility for sales along the Texas Gulf Coast and in Louisiana. Division Manager Earl Lipscomb points out that sales for the first six months of this year in Louisiana surpassed the total for all of 1962 in that state.

On October 24 at Sacramento, the Neely division dedicated its new office at 2591 Carlsbad Avenue with an open house attended by 100 key customers from the area and a large

group of people representing the sales division, Dymec, Sanborn, and the Frequency and Time division.

The event was hosted by Norm and Jane Neely, Bob Boniface, Al Oliverio, and Rudy Poucher. Never overlooking an opportunity to sell, the Neely people arranged for operating demonstrations of new instruments during the mostly social occasion.

In mid-October, right on schedule, Lahana & Company moved into its new headquarters (above) at Denver Technological Center near the Belleview-Valley Highway interchange. The sales affiliate's 5,000-square-foot building is the first to be completed at the Center. Control Data Corporation and Minneapolis-Honeywell will soon be new neighbors, followed by dozens of other firms.

Lahana's annual open house and symposia was held at the new facility November 13-14 with about 500 customers attending.

Houston branch of Southwest Sales Division (formerly Earl Lipscomb Associates) has just moved into ground floor of this new building.





around



the circuit

By W. NOEL ELDRED, *Vice President, Marketing*

*From time to time, "Around the Circuit" will be devoted to contributions from guest columnists. This month, Noel Eldred brings readers up to date on HP's extensive marketing activities.*

Now that a year has gone by since our field sales organizations were incorporated into the HP family, it seems an appropriate time to take stock. What have we learned by this year's experience? What progress have we made? And, where do we go from here?

Because each sales group was an autonomous unit with its own special capabilities, we took careful steps to preserve and even expand those capabilities. Each has operated very successfully with a minimum of "home office" supervision and direction. At the same time each group is assuming a greater share of the corporate sales function. More and more of our day-to-day sales activities are being shifted to the field offices. Quotations, order processing, credit control, and minor modifications of instruments to suit specific customer requirements are functions that will soon be carried out almost entirely in the field.

There is a very important reason why we are placing more sales responsibility in our field offices, a reason which is tied directly to our basic marketing philosophy.

Marketing, as we see it, is not just selling. It is not merely the technique of getting people to exchange their cash for some product or service. Rather it is the entire, integrated, continuing effort to discover, create, arouse, and satisfy customer needs. It focuses on the long-term needs of the buyer, whereas selling is concerned with the short-term needs of the seller.

To fulfill this philosophy, HP has always tried to anticipate customer needs and to provide really useful products that the customer will want to buy—not just today, but next week,

next month, next year. In short, we have attempted to make our marketing program truly customer-oriented.

By shifting more and more of our sales activities to the field offices, we are reinforcing this customer-oriented concept. Another way in which we are strengthening our customer orientation is by fostering more direct and more effective communication between the field offices and our various product divisions. Each field office must do its utmost to convey specific customer needs to our product divisions, and these divisions in turn must keep the field offices apprised of new product developments which will help the customer fulfill his continuing instrumentation requirements.

This two-way communication is essential to marketing success, and it is to the credit of both our sales and manufacturing groups that they are continually shortening and improving lines of communication and thereby strengthening our entire marketing effort.

In looking back over the past year, we feel that our field sales groups have done a remarkable job of integrating themselves into the corporate organization. The transition has not been accomplished without important readjustments of people and facilities, yet the cooperation and spirit of these groups has been instrumental in building solid, long-term strength into our entire marketing organization. Furthermore, their untiring sales efforts have enabled us to increase our volume in a soft market where other companies have not only found the going very tough, but in some cases have suffered sharply reduced sales.

Over 500 individuals throughout the U.S. are now devoting their entire energies and skills to marketing the HP family of products. This is a team in which we have the utmost confidence, and which will assure us an increasing share of the instrumentation market during the coming year.

## Loveland teen-agers learn business by doing business

Junior Achievement has come to Loveland through the efforts of two local sponsoring firms—Hewlett-Packard and the First National Bank. Forty-five high school juniors and seniors have joined the program and meet Thursday evenings at the HP plant.

They formed two companies, issued stock at 50¢ a share, elected officers, designed products, started production, and charted their marketing programs. The HP-sponsored firm—call Hapco—produces and sells a cigarette box and a brass and ceramic trivet.

Senjaco, the company sponsored by the bank, manufactures pine cone products. Members of Senjaco are seen in the picture with advisors from First National of Loveland.

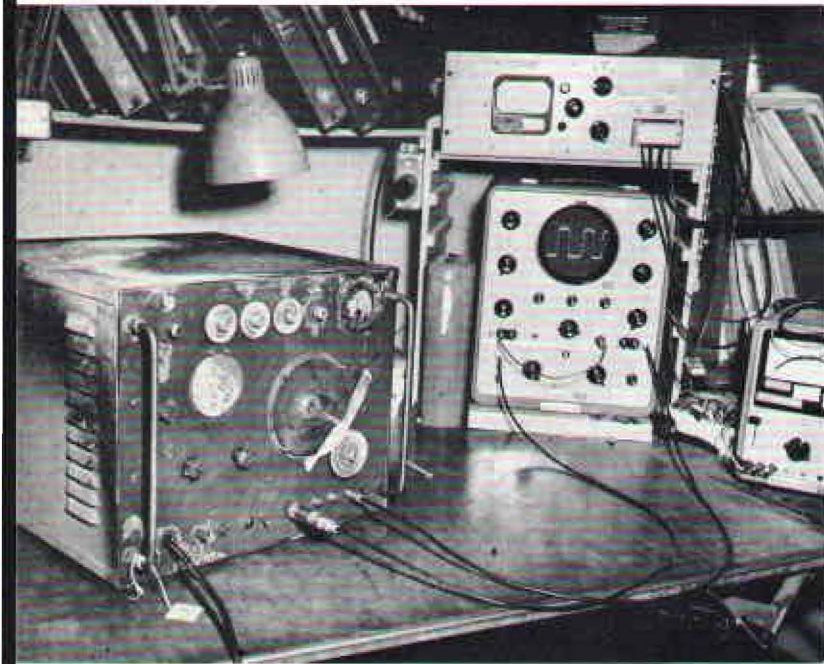




## NEWS IN FOCUS



Each time Dymec goes over the top with another \$1 million month, it calls for a little horn-tooting! Sales Manager Bill Gross (left) proudly waves the sales order that put the division over the seven-figure mark in October, while Order Manager Frank Holbrook sounds off with a reverberating blast on the air horn. The actual dollar figure is displayed with singular appropriateness on Dymec's best-selling DY-2401A digital voltmeter.



Fire swept the maintenance facilities of Lake Central Airlines at Indianapolis airport, and caught in the holocaust were two pieces of HP equipment—a 608 and a 618 signal generator. First inspection of the 618, shown here, left little hope that the \$2,500 instrument would be salvageable. The plastic knobs and aluminum dials melted in the tremendous heat of the fire, but the dust cover provided nearly unbelievable protection to the inner components. The instrument continued to operate and checked out accurately. It's now at the Palo Alto customer service plant for repair, which will cost Lake Central only a fraction of original value.

Harry Wood (below, left), nationally known in the packaging industry for his innovations for industrial packaging, shows Bob Holcomb a recent honor. The trophy and a \$100 E bond were presented to Wood on November 5 in Pittsburgh, Pa., by the Society of Packaging and Handling Engineers. A nationwide competition sponsored by the society judged his "post pack" (seen in foreground) as the best among 124 designs in one of five categories in the contest. Wood is HP's packaging engineer at Palo Alto. Holcomb is supervisor of packaging operations for the Frequency and Time division.







## people on the move

### HP PALO ALTO

**Mike Cunningham**, marketing product support, Oscilloscope Division—to pulse generator R&D, Oscilloscope Division.

**Gene Doucette**, microwave production control—to systems and operations analysis group.

**Ron Eliason**, contract administrator—to quotations staff, contract sales, marketing department.

**Byron Low**, in-plant tool engineer, microwave casting shop—to tool engineer, CRT lab.

**John Minck**, sales engineering manager, Microwave Division—to sales manager, Microwave Division.

**Ed Morton**, subcontracts buyer, Lawrence Radiation Lab—to contract administrator, contract sales, marketing department.

**John Young**, sales manager, Microwave Division—to general manager, Microwave Division.

### HP ASSOCIATES

**Harold Hudson**, HP Palo Alto corporate specs and procedures—to engineering aide, manufacturing engineering.

**David Weindorf**, chief engineer, Raytheon Semiconductor, Mountain View—to chief engineer, semiconductor manufacturing.

### HP (CANADA) LTD.

**Ron Lawson**, flying officer, Royal Canadian Air Force—to sales engineer, Toronto office.

### HPSA

**Tony Polsterer**, patent examiner, International Patent Institute, The Hague—to staff engineer.

**Jean Richez**, development engineer, European Organization for Nuclear Research, Geneva—to staff engineer.

### DYMEC

**Phil Davis**, applications engineer—to regional sales engineer.

**Warren Leibfried**, regional sales engineer—to sales promotion manager.

### SANBORN

**Robert Patla, Jr.**, sales engineer, training program—to staff engineer, Medical Division.

**Donald Thomas, Jr.**, sales engineer, training program—to staff engineer, Medical Division.

**Bruce Wholey**, general manager, Microwave Division—to general manager, Sanborn.

### LAHANA

**Dick Hinshaw**, staff engineer, Denver—to field engineer, Salt Lake City office.

**Bob Stringer**, customer service, F&T Division, Palo Alto—to customer service manager and staff engineer, Denver office.

### NEELY

**Horace Mockett**, order processing, marketing department, Palo Alto—to order processing manager, Neely, San Carlos office.

### ROBINSON

**Jerry Chappell**, service technician, Asbury Park office—to staff engineer, West Conshohocken office.

### YEWELL

**John Chiarella**, field engineer, Middletown office—to senior field engineer.

**Norm Paquette**, field engineer, Burlington office—to senior field engineer.

# Measure

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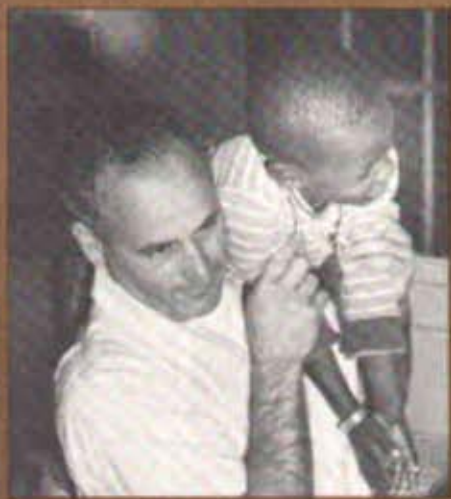
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"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind . . ." LORD KELVIN (1824-1907)





## YEAR 'ROUND SANTA

**B**RINGING A SMILE TO A CHILD'S FACE—a moment of happiness and wonder—is a twelve-month avocation for Mark Christine, junior high school teacher, summer employee at HP's Stanford plant, and man of many talents. For two years now, Mark has been visiting hospitals, children's homes, and special schools in Northern California to present a program of entertainment. He whistles, does magic tricks, and lets the youngsters operate his very fine electric train layout. His programs last as long as two hours and involve some expense, but he does not accept payment from institutions. Mark is seen above with happy youngsters at the Stanford Convalescent Home. They are gathered around the train board built for Mark by Ray Brown of HP's general maintenance department.

