

**IME DIV.**

**HEWLETT-PACKARD**



**WATT'S CURRENT  
MARCH ISSUE, 1963**



# WATT'S CURRENT

*Published Monthly by*

**HEWLETT-PACKARD COMPANY**

*Laboratory Instruments for Speed and Accuracy*

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## *This Month's Front Cover . . .*

The interest shown by Neely sales engineers during the IEEE "sneak preview" accurately forecast the unusual amount of attention HP's new Frequency Synthesizer is receiving at the IEEE show now going on in New York. A highlight of the Palo Alto preview involved a not-too-likely application in which the Synthesizer played "The Sidewalks of New York" and a new tune specially composed for the Synthesizer by John Dukes of the F&T Lab and entitled "The Synthesizer Blues." Although the musical presentation is not in line with IEEE rules, the equipment is being demonstrated in more conventional automatic programming applications by means of the tape reader and Dymec-built automatic programmer. For a more detailed story on HP's new revolutionary instrument, please see pages six and seven of this issue.

## *March Features*

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# From Our President's Desk

A GREAT DEAL of our effort in planning for the long-range future of our company involves new product planning, research and development, market development, improved manufacturing processes, as well as plans for buildings and facilities. But, the most important factor in assuring success for our company in the future is *people*. Each of you, in your day-to-day job, has a part in determining our success today. Each of you, in the jobs you will be doing in the future, will determine our success in the years ahead.

We all bring our personal attitudes, motives, knowledges, and skills to our jobs. While attitudes are difficult to define and improve, and while motives vary widely among individuals, each of us can increase the general knowledge we bring to our jobs and can improve our skills or develop new ones. It is toward these ends that we carry on a broad range of educational activities within the company and continually emphasize the many outside programs of self-development available to us.

Our business has been changing rapidly over the past few years and there is every reason to expect it to continue to change. Ten years ago transistors and printed circuits were a novelty. Today they are involved in everything we do. Ten years ago we had one facility centralized at the plant at Page Mill and Park in Palo Alto. Today we have over ten plants located all over the world. We have all had to add to our knowledge and we have all had to develop new skills to meet these changing conditions, and we must continue to do so if we expect to maintain our position of industry leadership. Toward this end we plan to continue to provide various educational programs throughout the company. By taking advantage of these courses as they occur and by keeping pace in your field of interest with your personally oriented self-development program, you can help to assure yourself that when new opportunities arise you will be prepared for them.

While a major part of our company-sponsored educational activities are directed toward specific subjects, such as details of new instruments, new processes, or specific management problems relating to supervision, it is increasingly important for each of us to expose ourselves to more general fields as well.

The individual who, through a personal program of development, becomes broadly versed in the technical, business, and social sciences possesses potential for a much wider range of opportunities than the person who limits his exposure to a narrow and restrictive area of study.

To some, education means unnecessary sacrifice; to others, it means the prospect of opportunity for increased contribution and greater personal satisfaction. To some, it is dull and unrewarding; to others, it is an exciting adventure filled with challenge and promise for the future. What you make of it is largely up to you.

We expect to emphasize and enlarge upon the opportunities for all of our people to continue their education. I encourage each of you to avail yourselves of courses and training programs as they are offered internally, as well as those presented by the fine educational institutions in our communities.

*David Packard*

Busy moments at HP's cafeteria the morning of March 13 as preparations were finalized for Neely's "sneak preview" of "Triple-E" show now in progress.



## '63 IEEE Show — "Sneak Preview"

Neely Arrangement . . .

**M**ORE THAN 250 of Hewlett-Packard's northern California customers gathered in the HP cafeteria on March 13 to witness a "sneak preview" of the 1963 IEEE show. Not the whole show was presented, of course—just the HP and Dymec portion.

The preview, arranged by Neely Enterprises, enabled customers to see and discuss several new HP instruments which they otherwise might not have been able to see for some time, since many of them will not be attending the IEEE show.

### JOHN DUKES PRESENTS

The highlight of the preview was a dynamic demonstration of the 5100A/5110A Frequency Synthesizer. Operating from a punched-tape programmer provided by Dymec, and con-

nected to a speaker, the synthesizer played several musical selections for booth visitors, including a special blues composition by John Dukes, an engineer in the Frequency and Time Division. The synthesizer output also was monitored by a 175A oscilloscope and counted by a 5244L counter.

### "EASY STREET" THEME

During the week of March 25, nearly 80,000 other customers and prospects will be given a similar opportunity to see the HP family of products in the New York Coliseum. Hewlett-Packard, its divisions and affiliates, will occupy all but one 10-foot booth of the 3,400-foot aisle in the spacious Coliseum. The seven booths of the HP family will occupy a combined total of 170 lineal feet.

The booths will be connected by a comfortable carpet, highlighting the company's successful "Easy Street" theme.

Two lovely receptionists imported from Neely, San Carlos, shown greeting customers at registration desk during "sneak" show. Their names?—Jan Houplin and Carol Allari.



# SALES REGROUPS ALONG DIVISIONAL LINES

HP's Corporate Organization Takes Another  
Big Step in Setting Up Integrated  
Product Divisions. Here, WATT'S CURRENT  
Reports the Latest Developments in This  
Long Range Plan . . .

A SIGNIFICANT REORGANIZATION of HP's Palo Alto Sales Department went into effect early this month, marking another milestone in the company's "master plan" to center day-to-day operating responsibility and decision-making within integrated product divisions.

In simplest terms, the former sales engineering personnel, who had been organized along geographic lines, are now organized into divisional product groups. Each of the product divisions now has its own sales management staff to complement the engineering and manufacturing staffs established earlier.

Marketing Vice President Noel Eldred points out that the management of each product division now has direct, day-to-day contact with the engineering, manufacturing, and marketing activities related to specific products. "It's a big improvement in communications," Eldred comments. "Division managers have at their finger tips all the information necessary to make important operating decisions—guided, of course, by basic policies formulated by top corporate management. The ultimate objective of this type of structure is to promote decision-making at the lowest practical level and to maximize over-all corporate efficiency and profits."

## THE MEN ON THE TEAM

In the Frequency and Time Division, managed by Al Bagley, the new division sales manager is Dean Morton. Sales engineering personnel supporting him include Ed Smith, Jim Sheldon, Ken Tingley, Marvin Willrodt, and Forrest Rutledge.

In the Microwave Division, Manager Bruce Wholey has appointed John Young as division sales manager. Others on the sales team are John Minck, John Cardoza, Lyle Jevons, and Bob Heller.

Cort Van Rensselaer, manager of the Oscilloscope Division, has named Bob Brunner, formerly of Neely Enterprises, as division sales manager. Assisting Bob are Dick Cline, Jim Cochrane, Gene Warrington, Stu Slade, and Don Corson.

A fourth division in Palo Alto—Dymec—has maintained a marketing department for some time with Bill Gross as sales manager. In Loveland, a full-fledged marketing group has also been operating for several months under the direction of Tom Kelley.

Coordination of the activities of the field sales offices and the divisional and affiliate sales departments is now the responsibility of Bill Terry, recently appointed corporate sales manager. He replaces Dick Reynolds, who has transferred to International Operations and will take over the management reins of HPSA in Geneva sometime next year.

## THE WORK THEY DO

The new divisional sales departments have myriad responsibilities, including technical liaison with the field sales groups, major new business negotiations, special-handling requirements, and sales promotion activities involving the division's products. The central marketing staff continues to administer those functions common to corporate marketing, as well as some activities which are best handled on a central, nondivi-

ional basis. These include sales planning, customer service, sales training, contracts and quotations, advertising, and central Palo Alto order processing.

Eldred noted that the changes are a logical outgrowth of an ever expanding company where "lines of communication are greatly extended." He pointed out that the corporate management group, freed of many operating details, is now able to place more emphasis on such things as long-range planning, the formulation of policies and objectives, and the evaluation of performance. "These responsibilities are certainly greater than ever in a company which in the past five years has multiplied its sales volume more than five times, has increased its employment from less than 2,000 to over 6,000, and has spread out from a single plant into a dozen plants."

#### PLANNING THE PACE FOR PROFIT

"We've been divisionalizing our operations at a planned pace," he continued. "This is a gradual change which, like the acquisition of our field sales organizations, is part of a long-range program designed to increase our sales and profits."

Eldred points out that, in effect, the sales reorganization makes maximum use of manpower assets. It places responsibilities associated with product lines with appropriate product divisions, and responsibilities pertinent to geographical sales with the field sales units. "We feel," he says, "that the move gives better technical support to the field organizations, provides the most direct communication between customer and division, and, most important, assigns to each field sales engineer the responsibility for maintaining a strong customer orientation."

## Five Key Promotions in Sales Reorganization . . .



Bill Terry



Bob Brunner



John Young



Tom Kelley



Dean Morton

**BILL TERRY**, new corporate sales manager, was born in San Jose, Calif. He was graduated from the University of Santa Clara in 1955 with a B.S. degree in electrical engineering. After two years of Army duty, he joined HP and served as a regional sales manager until being promoted to his new corporate post.

**BOB BRUNNER**, a native of Seattle, holds Bachelor's and Master's degrees in electrical engineering from the University of Illinois. In 1952, after two years with HP, he joined Neely Enterprises in Los Angeles. Four years later he was named Neely's sales manager, a position he held until his recent return to HP as sales manager of the Oscilloscope Division.

**JOHN YOUNG**, new sales manager of the Microwave Division, was born in Nampa, Idaho. He received a Bachelor's degree in electrical engineering from Oregon State College and a Master of Business Administration degree from Stanford

University. He joined HP's sales planning staff in 1958 and served in various marketing and financial capacities until his recent sales managerial appointment.

**TOM KELLEY** is a native of Chicago and a metallurgy graduate of Yale University. Prior to joining HP in 1959, he was sales manager of Tracerlab, Inc., and had previously been associated with Revere Copper and Brass, Northrop-Hendy, and Pacific Metals. He was an HP regional sales manager until his appointment as sales manager of the Loveland Division.

**DEAN MORTON**, new sales manager of the Frequency and Time Division, was born in Wichita, Kansas. He holds a Bachelor's degree in electrical engineering from Kansas State University and a Master of Business Administration degree from Harvard University. Prior to joining the Frequency and Time Division in 1960, he was a design engineer for Motorola, Inc., and Farnsworth Electronics Company.

## NEW SYNTHESIZER REPRESENTS UNIQUE ADDITION TO PRODUCT LINE

ONE OF THE MOST IMPORTANT new instruments to emerge from Hewlett-Packard's product development pipeline is now being featured at the IEEE Show and will soon be making a major contribution to HP's sales growth.

With the imposing name of "Frequency Synthesizer," this ingenious device provides frequencies in steps of one centicycle (1/100 cps) from 0.01 cycle per second to 50 megacycles per second. The instrument, described briefly by President Dave Packard at the annual stockholders meeting last month, was developed by the company's Frequency and Time Division.

In appearance the synthesizer, which is priced at \$15,250, is not unlike a far-out adding machine. Rows of push buttons enable the user to select the output frequency to ten significant figures quickly and easily. A remote-control feature permits automatic programming of frequency with switching in less than 1/1,000 of a second.

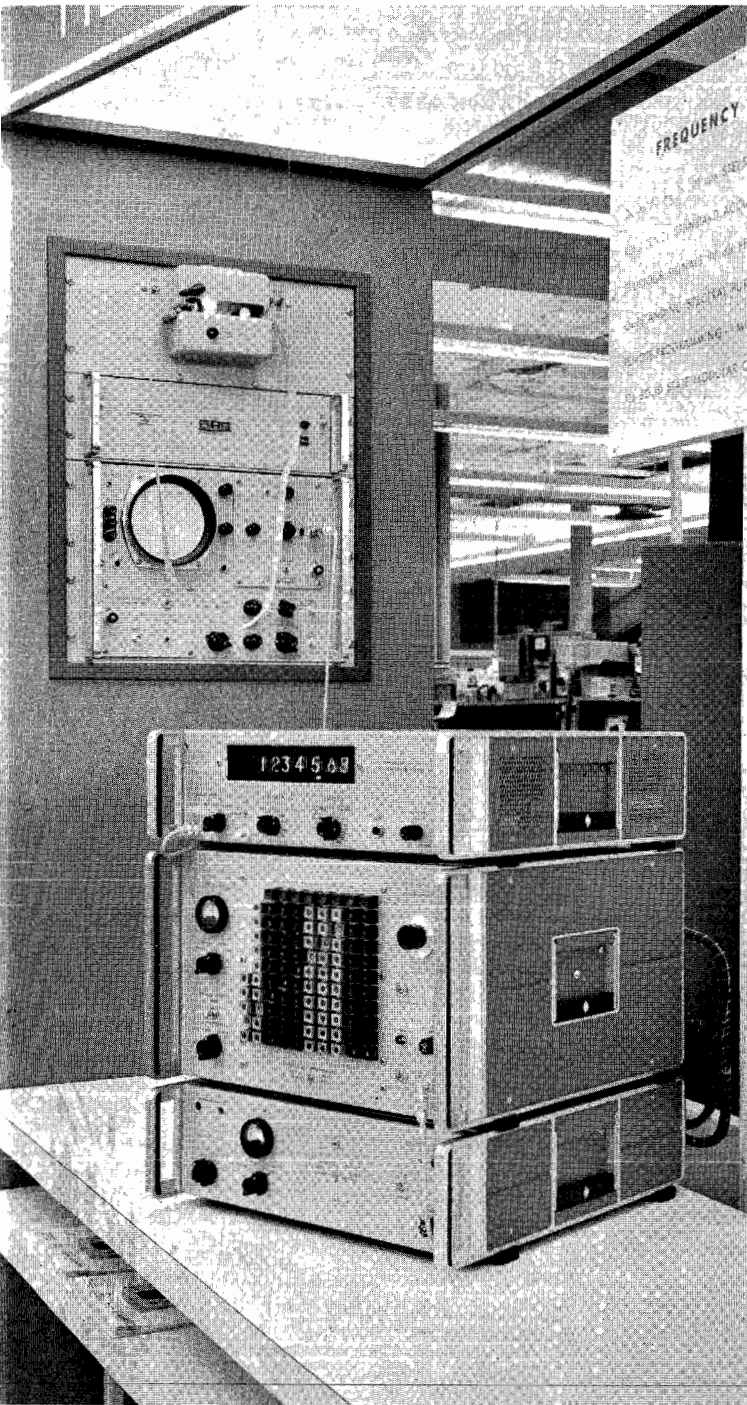
The number of distinct frequencies available from the Model 5100A/5110A Synthesizer is so vast that a specific, individual frequency could be assigned to every human being on the face of the earth, and *nearly one-half of the possible frequencies would still be unused!* Furthermore, the attainable accuracy is so great that no two of the frequencies could be confused.

### 60 DAYS TO COVER FREQUENCIES

Looking at it another way, virtually sixty days of round-the-clock operation would be required to cover all frequencies if the standard instrument were programmed to supply a new frequency every 1/1,000 of a second.

The word "synthesis" is from the Greek and means, literally, "action of putting together." Output signals from the HP device are actually "synthesized" from a series of fixed "bus" frequencies derived from a crystal reference oscillator. These bus frequencies are combined by mixing, dividing, and filtering to provide output frequencies having the same accuracy as the reference. Accuracy to a few parts in one billion can be attained by use of the crystal oscillator contained in the instrument; for higher accuracy, an external reference, such as HP's 104AR quartz oscillator, may be used.

Close-up of Frequency Synthesizer and automatic programming equipment. Bottom unit in foreground is the Synthesizer Driver which provides fixed "bus" frequencies. The Variable Frequency Unit, above driver, uses bus frequencies in synthesizing output frequencies from 0.01 cps to 50 mcs. Frequency selection is by push buttons or by automatic programming equipment such as paper-tape reader and Dymec-built programmer shown (rack mounted in background). New Model 5244 electronic counter and 175 oscilloscope serve as monitors.



State-of-the-art conference involves, left to right, Wally Jasmussen, Hans Junker, Ted Pichel, Section Leader Vic Van Duzer, and Al Tykulsky. Al, Hans, and Wally are group leaders responsible for various phases of the Synthesizer project; Ted Pichel is chief mechanical engineer in the section.



Previous synthesizers have employed a series of variable frequency oscillators with some provision for locking each oscillator to a harmonic or subharmonic of the reference. For interpolation, a free-running oscillator has often been used. In addition to providing higher accuracy, the HP method of synthesis offers at least two other advantages of major importance. It provides resolution to 0.01 cps (or better if required), and it lends itself to electronic switching. This in turn provides remote programming and high-speed switching, both difficult to obtain in earlier types of equipment.

#### BROAD APPLICATIONS FORESEEN

While many applications for frequency synthesizers are yet to be uncovered, several exciting possibilities for extensive use are immediately apparent. Automatic test setups, such as those manufactured by Dymec, often require that a variety of test frequencies be programmed rapidly and precisely. One example is the automatic testing of crystal filters. Not only is frequency accuracy important, but because of the steep slopes in the filter characteristics, extreme frequency resolution is required.

Many communications systems are already using synthesizers, and more sophisticated systems of the future will need them even more. The increased density of communication channels possible in single-sideband systems places exacting requirements on frequency accuracy and stability. Microwave single-sideband systems in the planning stage will require accuracy and stability to within a few cps at X-band—a few parts in 10 billion or better. Other advanced communications systems recently described in the technical press require rapid frequency switching on a prearranged basis.

Systems for space communications and telemetering presently depend on frequency synthesizers, and requirements are becoming more and more stringent. In order to maintain com-

munications with the low-powered transmitters used in deep-space vehicles, extremely narrow bandwidths are required. This in turn creates a need for very high accuracy and stability of frequency; Doppler effects (due to the speed of the vehicle) require frequency settability in extremely small increments. Often the frequencies required cannot be obtained conveniently without using a synthesizer.

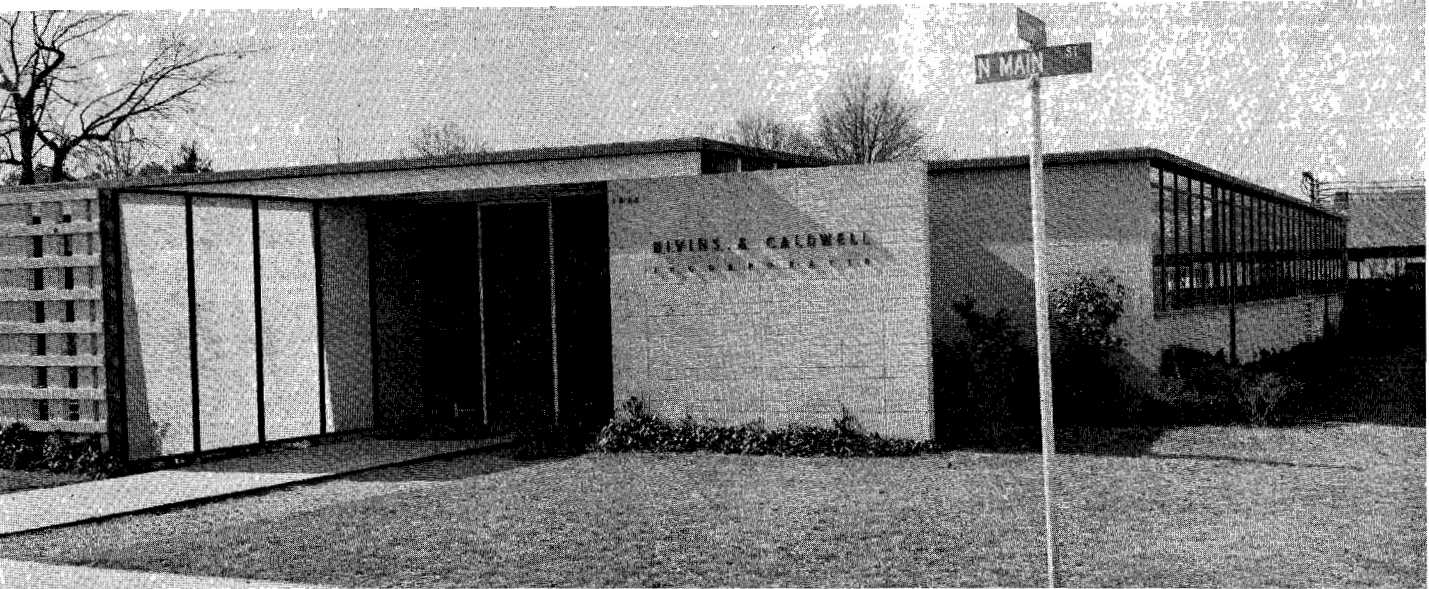
#### AUTOMATIC PROGRAMMING

A local individual concern manufacturers ionospheric sounders for automatically determining the best frequency for communications. These sounders make measurements at several frequencies to determine the frequency for most reliable transmission under current atmospheric conditions. Future systems may automatically program the transmitter frequency to the optimum value.

Since they serve as convenient, wide-range frequency sources of high precision, frequency synthesizers are expected to find increasing use in calibration and standards laboratories. They are able to simplify the calibration of frequency standards, signal generators and similar equipment, and, in some cases, increase calibration accuracy. Synthesizers are also of special interest to crystal manufacturers, since they can serve as reference standards for virtually any frequency required from the final product.

The net result of using the HP synthesizer is the same as if the user had a high-quality crystal cut to the exact frequency selected by the push buttons.

The wide variety of present and foreseeable applications for the frequency synthesizer suggests that the Model 5100A/5110A is only the forerunner of a major new family of HP instruments, one that will make significant contributions to the art of scientific measurement.



Home office for Bivins & Caldwell, Inc., at High Point has 6,000 square feet of floor space and is fully air conditioned. After serving as sales representatives since the end of World War II, B&C officially joined the HP family of sales affiliates last November.

Another in the Series of Features on  
 HP Sales Affiliates Tells How  
 Bivins & Caldwell, Inc., Is . . .

## MAKING TRACKS IN A BIG TERRITORY

**F**ROM THE LOOKS OF THINGS you'd think the job was almost too tough to tackle. Long distances between customers . . . a vast territory covering nine big states . . . and a regional economy where just yesterday electronics ran well behind the women's hosiery business in importance.

But Bivins & Caldwell, Inc., doesn't allow negative thinking in the shop. Sheer determination has paid off handsomely.

John Bivins and Dave Caldwell first undertook the job of selling electronic equipment in the Southeast right after World War II. They picked High Point, N.C., as their center of operations for a very practical reason—it was home for both of them. High Point has turned out to be a good location, too, from the business standpoint. (It's suspected they knew this all along.) North Carolina and the surrounding states are becoming more industrialized with each passing year, and this is

broadening the horizons for sales of electronic measuring instruments.

### BLUE-CHIP CLIENTELE

In fact, most of B&C's larger electronics customers, whose names are familiar nationwide, now have one or more major plants in the territory. These include GE, Western Electric, Lockheed, DuPont, Westinghouse, Union Carbide, Eastman Kodak, Corning Glass, Raytheon, Sperry, and other highly respected corporations, large and small.

B&C took on the Hewlett-Packard product line in 1946. President Bivins and executive VP Caldwell are thoroughly sales-minded individuals, accustomed to talking enthusiastically in terms of "most, best, and biggest" like all good and successful salesmen. Therefore, with some reluctance they admit that



Executive Vice President  
 and Treasurer David J.  
 Caldwell.

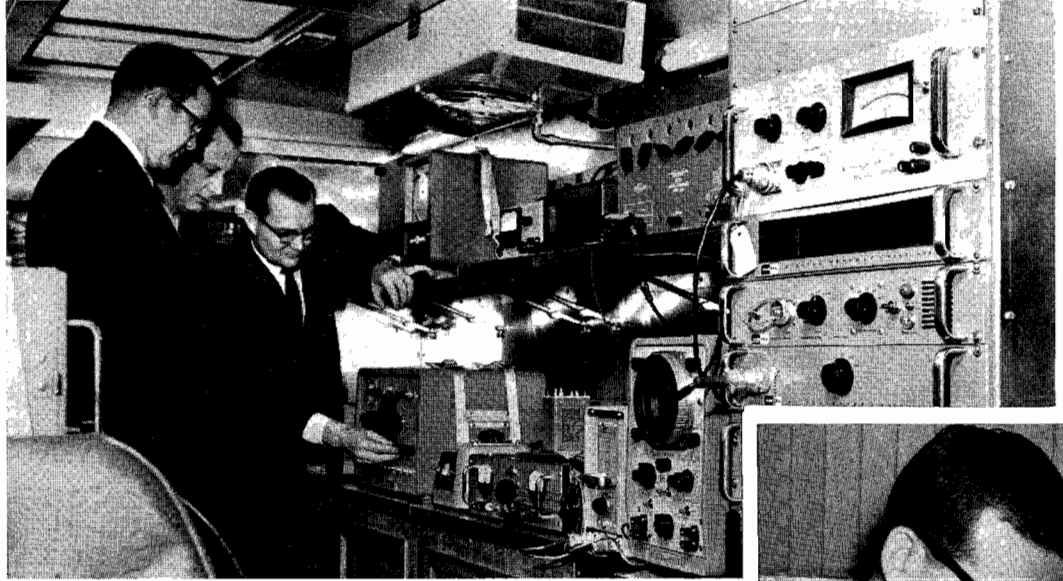
President John F. Bivins



Vice President and Secretary  
 C. M. Smith, Jr.



Keith Morris, senior engineer at Atlanta, demonstrates equipment in the B&C van to customers. Van is driven 10,000 miles each year, reaching 3,000 customers and prospects.



Senior engineer Harold Norman has top responsibility at the Richmond office.

They are "only the third oldest HP sales affiliate, after Neely and Crossley."

For the first three years, heavy electronic equipment like broadcast transmitters and antenna towers continued to be their major source of income. Then the scene changed, and test instruments pushed aside the heavy gear from the sales standpoint.

#### ATLANTA, RICHMOND, AND ON TO HUNTSVILLE

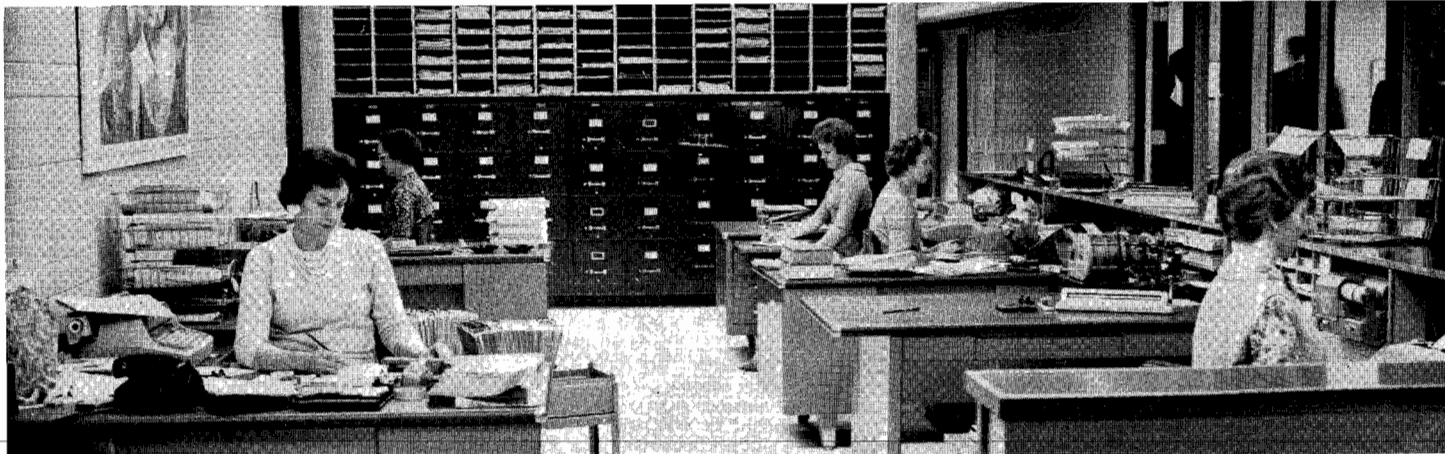
As business increased, B&C branched out. An office was opened in Atlanta in 1955, and in 1959 another was established in Richmond. The territory had broadened accordingly to include North and South Carolina, Mississippi, Georgia, Alabama, Tennessee, Kentucky, and most of Virginia and West Virginia. And just last month, a new office was opened at Huntsville, Alabama, to develop sales at Redstone Arsenal.

In spite of the area's size, B&C maintains a thriving business with a present total of 34 people, including 12 sales engineers. In addition to Messrs. Bivins and Caldwell, corporate management includes C. M. "Smitty" Smith, Jr., who is secretary and responsible for technical matters; Keith Morris, the senior man at Atlanta; Harold Norman, who has senior position at Richmond; and Mal Spann, who will solo out of Huntsville, reporting to Atlanta.

Service departments at High Point and Atlanta are equipped to handle 90 percent of HP instrument repairs and calibrations. Complete stocks of parts and supplies are held at the High Point home office.

B&C's demonstration van gives a fair sign of just how far and how fast this sales affiliate travels. The records show it logs some 10,000 miles each year and reaches more than 3,000 present and potential customers.

B&C's headquarters at High Point has modern, comfortable appearance inside and out. The good looks of the main office area is surpassed only by the attractiveness of the girls who make it an efficient operation. Left to right: Virginia Thornton, Jean Wells, Brenda Brawley, Jenny Marshall, and Patty McLarty. Jenny was first employee hired, joined B&C in 1946.





Year of the Salesman! Neely's North Hollywood hacienda served as picturesque locale for 1963 group portrait of sales conference members. Bob Brunner, fifth from right in front row, is HP's new 'Scope Division sales manager.

## Neely Sales Conference Gears to Era Ahead

Eldred, Keynote Speaker

THE THEME OF THE 1963 Neely Sales Conference was "1963—Year of the Salesman." Everything that followed for the next two days was a variation on this theme. The outstanding features of the Conference were, first, the general consensus expressed throughout that the electronics industry is moving into a new era of competition in which success will be the direct measure of the man; and, second, the atmosphere and feeling was that of a group of hard-hitting professionals getting together to sharpen their selling knowledge and practices. Neely Enterprises has enjoyed very great success as an electronics sales organization, but it is obvious from all the talk and all the speakers that this is not being taken for granted.

Norm Neely opened the Conference with a brief welcoming message and congratulations for a job well done in the past year. Bob Boniface followed with a review of last year's performance, announcing that Neely Enterprises achieved 99.9 percent of their sales quota. Bob laid emphasis on the total concept of marketing: the conception of new products to new applications of our older instruments—from initial sales penetration to actual closing of the sales—as well as from follow-up to post-sales service.

Bob Ringer, a professional sales consultant, began the afternoon session with a very stirring talk on the universals of selling, such as attitude, confidence, and success.

Following Bob Ringer, each of the area managers—Jack Ingersoll, Rudy Poucher, Bill Saxon, and Al Oliverio—gave a detailed report in a particular product area on ways of creating sales. Each of them also discussed a particular approach to selling.

The second day of the Conference began with the Sales Work Shop sessions, an innovation to the annual Neely Sales Conference. Field and staff engineers were divided into five groups, with each group assigned a sales problem to work on, such as "How can we effectively and efficiently handle competitive bids?" and "How do you enter a known competitive situation?" The Sales Work Shop was considered so successful that each group reporter has been asked to submit a written report so that further management consideration may be given their proposals.

### ELDRED STRESSES AUTONOMY OF ACTION

The keynote speaker at the Conference was Noel Eldred, whose talk covered the subject of factory-representative relationships, HP organization and procedures under the divisionalization program, and our future in the electronics industry. Noel stressed the autonomy and independence of action that will characterize each manufacturing division at HP. The other side of the coin, he emphasized, is the independent character and autonomy of operation that must remain with the field sales organizations. Factory and sales groups must complement each other in order to provide mutual security. For the future, Noel foresees the electronics industry dominated by a few large organizations that will be professional and tough competition.

Bob Brunner wound up the Conference with a review of the 1963 sales program. Noting only briefly last year's performance, which set a new Neely record, Bob set his sights on the future and expressed great optimism for the coming year.

## HP on JMA Tour Agenda

### SPECIAL JAPANESE TEAM STUDYING EDP SYSTEMS . . .

Sixteen members of the Japan Management Association will visit Hewlett-Packard's headquarters plant on April 4 to study the company's use of electronic data-processing systems. The visitors comprise a special team which is taking a 6-week tour of the United States to study the application of EDP systems to American manufacturing operations.

During its U.S. tour the Japanese team will visit such companies as Lockheed, California Packing Corporation, Admiral Corporation, Ford, U.S. Steel, General Electric, Texas Instruments, IBM, and the Bendix Corporation. Although HP is only beginning to apply data processing to its manufacturing operations, the team expressed a desire to discuss the company's EDP systems with plant management and also to observe HP's manufacturing operation. Hosting the visiting Japanese group will be Vice President Bill Doolittle and Vin LaCoste, data-processing manager.

## HP Organizational Changes

Larry Miller returned from his overseas assignment with HPLTD on March 11—now with Manufacturing Engineering.

Ken King transferred to Sanborn Company as of March 15, 1963.

Murray Horton transferred to Harrisburg, Pennsylvania.

Bert Van Alstine, formerly with Dymec, Purchasing Department, transferred to HP Customer Service.

Ed Morgan, formerly with Dymec Division as Sales Manager, is now with HP Manufacturing Engineering.

Richard Bean, HP Measurement Standards, transferred to Dymec Division as Manager, Quality Assurance.

Hank Doust, HP Oscilloscope Division, to Dymec Division.

John Newman, HP Purchasing Department, to Dymec Division, Production Control.

Donald Schulz, formerly with Advanced R&D, to Loveland Division R&D.

Paul Baird, formerly with Advanced R&D, to Loveland Division R&D.

Bill Terry, from Marketing, Domestic Sales, to Marketing, Corporate Sales Manager.

John Minck and John Cardoza, to Microwave Division, Marketing Department.

Dick Cline and Jim Cochrane, to Oscilloscope Division, Marketing Department.

Jim Sheldon and Ed Smith, to Frequency & Time Division, Marketing Department.

Bob Shields, from Marketing, Domestic Sales, to Marketing Quotations.

Jack Nally, from Marketing, Domestic Sales, to Crossley Associates.

Bob Brunner, from Neely Enterprises to Oscilloscope Division, Marketing Department Manager.

Bob Cornell, from International Operations to Manufacturing Engineering.

Ken Tingley, to Frequency & Time Marketing Department.

Ed White assigned on a rotational training basis as Staff Engineer at Neely Enterprises, San Carlos office, for approximately 6 months.

John Young, from Corporate Finance to Microwave Divi-

## Turkish In-Plant Training Team Visits HP

### GROUP STUDYING U.S. METHODS AND TECHNIQUES OF PERSONNEL DEVELOPMENT

Hewlett-Packard's Personnel Department was host last week to a Turkish In-Plant Training Team, composed of Ismail Kazak, Yuksel Un, and Seyfettin Yucl. Their program is sponsored by the Agency for International Development and arranged in the U.S. by the Bureau of Apprenticeship and Training, U.S. Department of Labor.

The over-all purpose is to provide an opportunity for three in-plant training directors of Turkey to study training methods and techniques in the United States, particularly those industrial plants with successful programs.

Turkey is industrializing at a rapid rate but has a serious deficiency of skilled manpower at its disposal. These visiting team members are responsible for operating substantial industrial training systems in Turkey designed to develop this needed skilled manpower.

The industrial in-plant training program in Turkey has been modeled, in a great part, after the industrial training setup in the United States, as a result of the work of training technicians from the U.S.A. who have been working in Turkey. These Turkish team members who have been working personally with the Industrial Training Advisors from the United States and their Turkish counterparts will carry the burden of industrial training after the AID program has phased out.

sion, Marketing Manager.

Charles Sutton, from Marketing, Domestic Sales, to Loveland Division, Marketing Department.

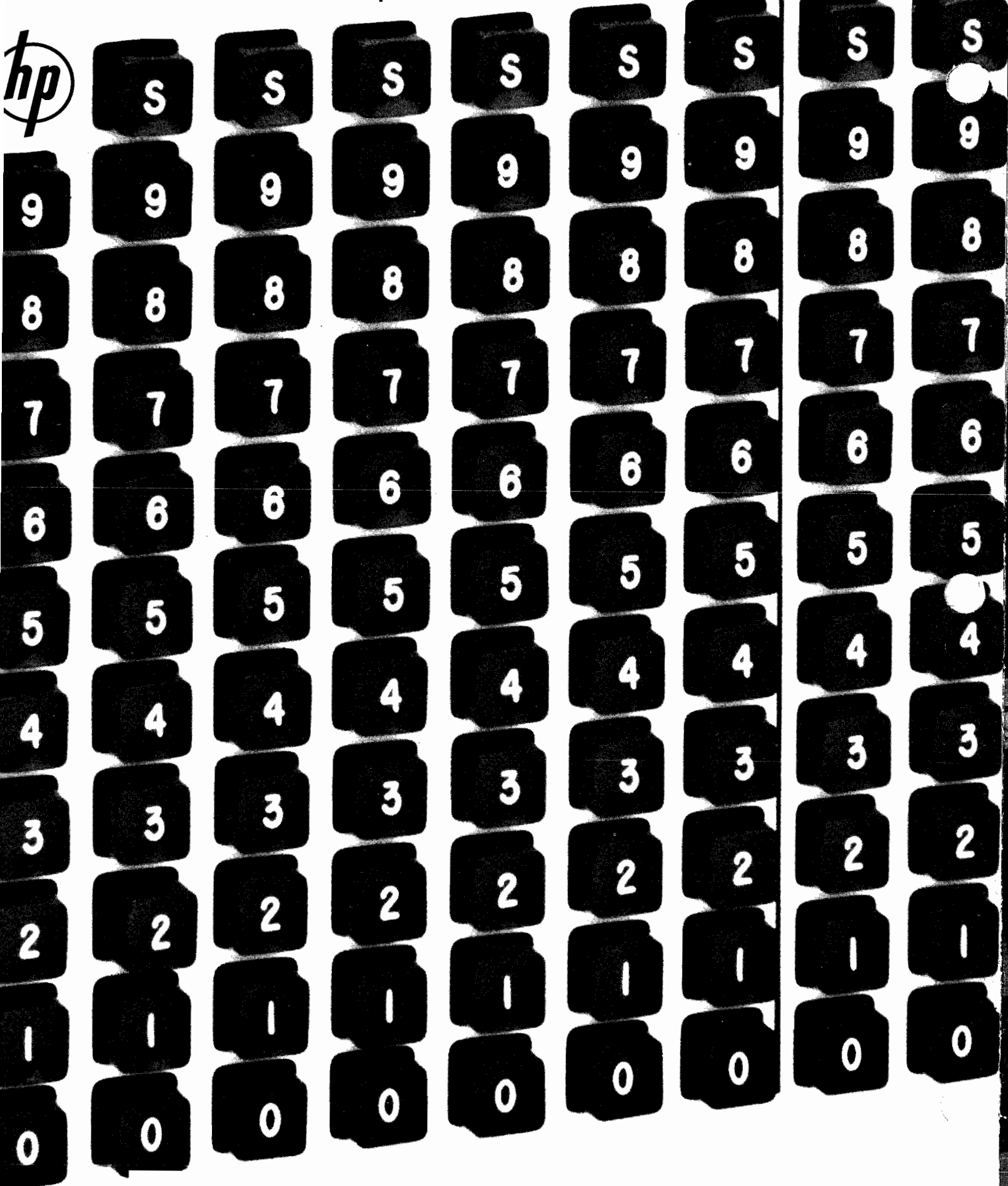
Bob Loughlin, to the F. L. Moseley Company.

Jesse Peters, to Lahana & Company, formerly with the Service Department.

Dick Reynolds, from Sales Manager USA to International Operations.



# 5 billion discrete frequencies



*hp* Frequency Synthesizer--See page six for details . .