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**October 1965**



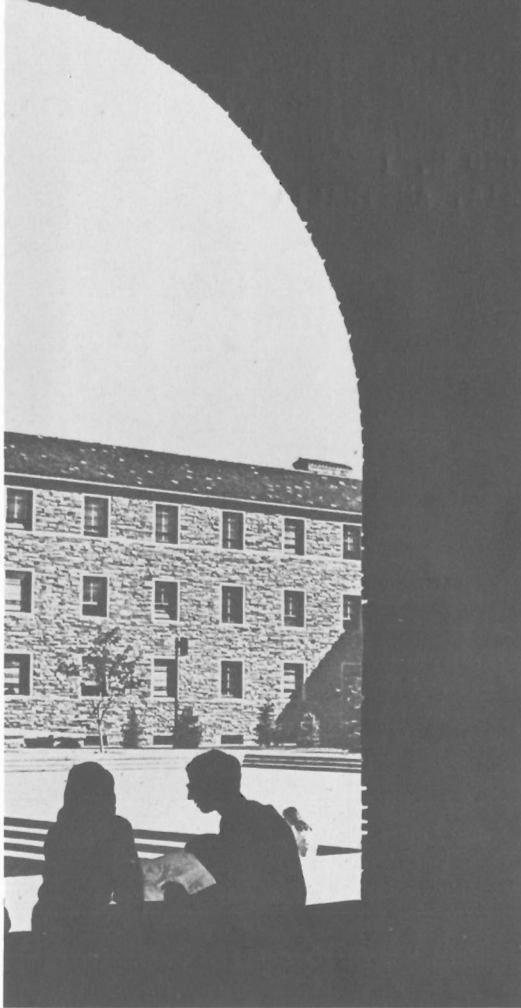
# M e a s u r e

**In this issue**

*Scholarship winners start school*  
*The promise of profits*



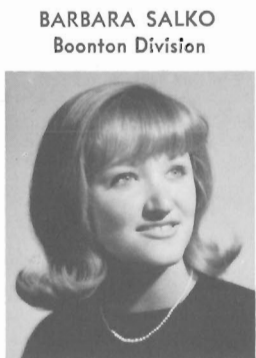
## An HP scholar



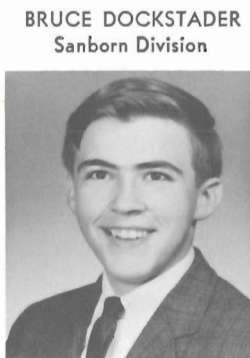
MARK VANDERBERG  
Palo Alto Area



DEVERA ANN STROH  
Loveland Division



BARBARA SALKO  
Boonton Division



BRUCE DOCKSTADER  
Sanborn Division

*The young people pictured above and all those listed on page 4 represent the largest group yet to enter college under the HP Employees' Scholarship Fund.*

**E**ACH SEPTEMBER, ON COLLEGE CAMPUSES across the country, the lines of students stretch longer—and longer and longer. There seem to be more lines, too. They form in front of admissions offices and faculty counselors' doors. There are lines to sign up for clubs, and to register for classes. Later there are queues for book buying, for game tickets, and student body elections.

But for this year's entering freshmen, the lines and the waiting and the strangeness of leaving home and adjusting to a big college community are probably not so unexpected nor unsettling as in the past. Students are used to such pressure, have been steeped in it ever since the curve of population growth and Sputnik both soared aloft. Because of these pressures, the class of '69 knows the meaning of scholastic effort and the drive to excel better than any prior college class.

□ Ronald Smith of Colorado Springs could well serve to represent this new style student. Just a few weeks ago he entered the University of Colorado at Boulder as a freshman in mechanical engineering.

A look at the record shows how hard Ron has worked to reach his goal. It shows he made mostly A's or B's at Palmer High School in Colorado Springs. It shows he had to sacrifice many "free" hours to concentrate on study. And it shows that his efforts have been rewarding: National Honor Society, honors in chemistry and Spanish, advanced placement in mathematics, and winner of a \$500 scholarship from the Hewlett-Packard Employees' Scholarship Fund in 1965.

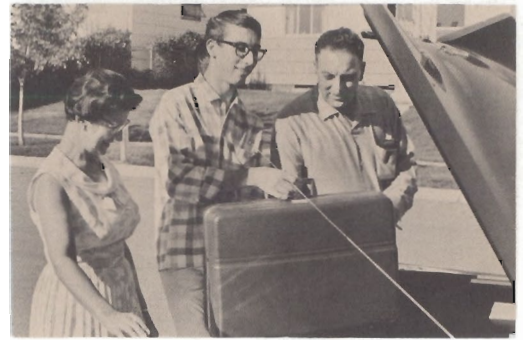
Ron is one of 16 young people—sons and daughters of HP employees—to win a scholarship this year. The fund dates back to 1951 when HP employees sought a way to assist youngsters obtain a higher education at colleges of their choice. They arranged it so that contributions by employees and contributions by the company go into a trust fund that grows with the years. The scholarships, financed out of earnings from the fund, are awarded on the basis of scholastic achievement, participation in activities, and educational objectives. Seventy-six scholarships have been granted since the beginning of the program.

□ Ron's parents, Mr. and Mrs. Paul Smith, are more than a little proud of his scholarship. (Mrs. Smith is an employee at HP's Colorado Springs Division.) They figure it will more than pay off in personal and professional achievement for Ron. They get no argument from him on this point. In fact, it's his idea to take an extra year to study business after he is granted his degree in mechanical engineering. "Industry is looking for engineers with administrative training and ability," he says.

Meanwhile, he's finding the Employees' Scholarship helps relieve the financial pressure. "All you seem to do is put out money," he said. "It goes left and right, for books, for supplies, tuition, board and room, fees and more fees!"

But, it's an investment Ron and HP people can be proud of, for it will return a dividend more important than dollars. ▶

# ship winner goes to college



Off to college—a big moment for Ron, and Mr. and Mrs. Paul Smith.



The Boulder campus is big, full of crowds and seeming confusion on arrival. The dorm rooms are bare. It rained for awhile, snowed later.



Counselors and teachers know how to make a freshman feel welcome, give real attention to his problems and questions.



There is no lack of opportunity to spend money for books, supplies, fees, board, room, tuition—and occasional fun.



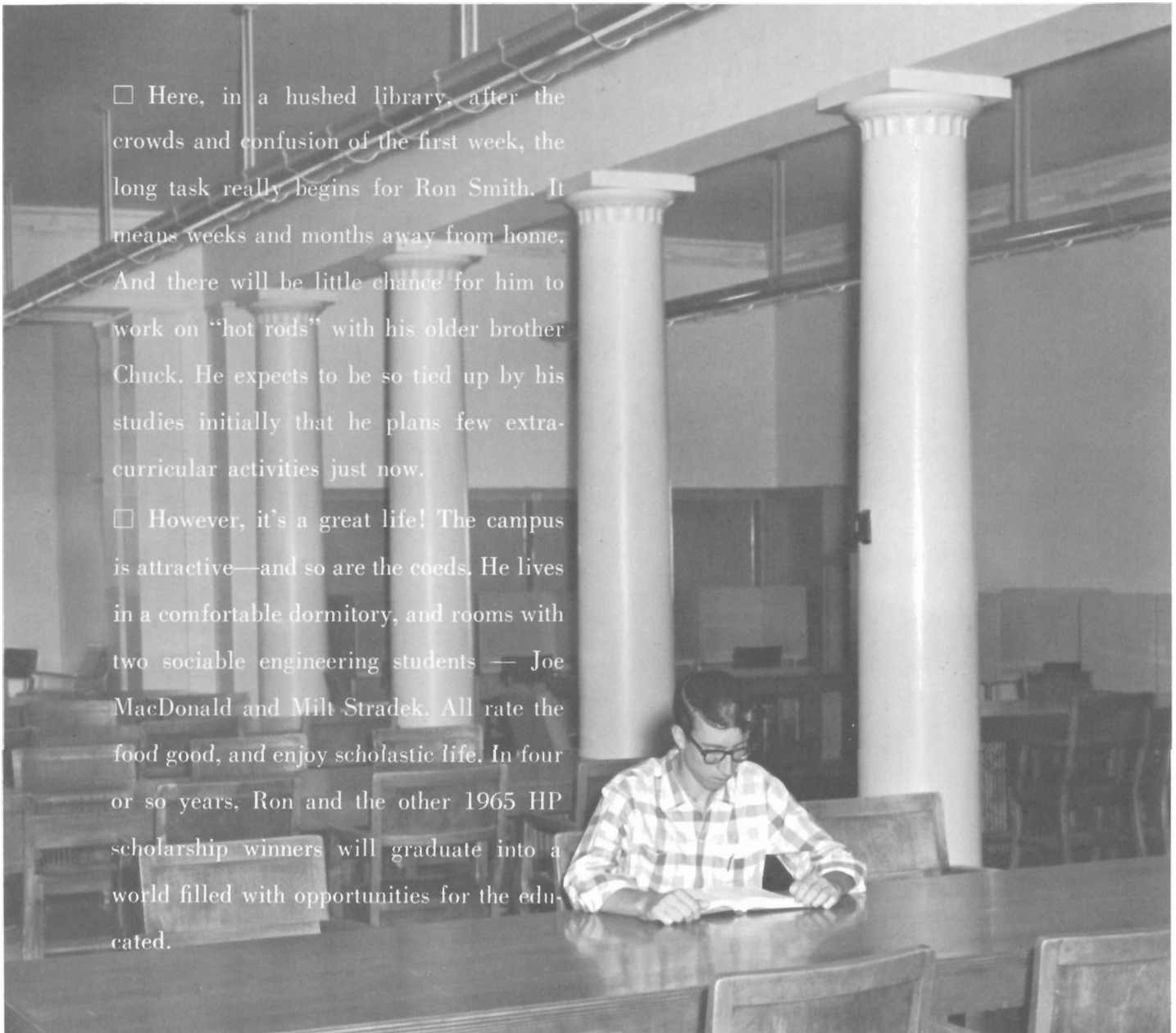
The lines are long, and for freshmen it's tough because they don't know many people. But, as Ron Smith and the 15 other 1965 scholarship winners will find, college spells opportunity and loneliness doesn't last long.

*(continued)*



□ Here, in a hushed library, after the crowds and confusion of the first week, the long task really begins for Ron Smith. It means weeks and months away from home. And there will be little chance for him to work on “hot rods” with his older brother Chuck. He expects to be so tied up by his studies initially that he plans few extra-curricular activities just now.

□ However, it’s a great life! The campus is attractive—and so are the coeds. He lives in a comfortable dormitory, and rooms with two sociable engineering students — Joe MacDonald and Milt Stradek. All rate the food good, and enjoy scholastic life. In four or so years, Ron and the other 1965 HP scholarship winners will graduate into a world filled with opportunities for the educated.



1965 HP SCHOLARSHIP WINNERS

STUDENT	HOMETOWN	MAJOR	SCHOOL	STUDENT	HOMETOWN	MAJOR	SCHOOL
<b>PALO ALTO AREA</b>				<b>COLORADO SPRINGS DIVISION</b>			
Terry Bather	Santa Clara	Pre-law	U of Santa Clara	Ronald Smith	Colorado Springs	Mechanical Engineering	U of Colorado
Jamie Dugan	Palo Alto	Education	Cornell				
Darlene Mangat	Palo Alto	Biology	U of Calif. (Berkeley)				
Richard Millet	Los Altos	Mathematics	UCLA				
Rita Northum	Sunnyvale	Education	San Jose State	<b>BOONTON DIVISION</b>			
Monica Paech	Sunnyvale	Education	U of Calif. (Santa Barbara)	Barbara Salko	Wharton	Education	Paterson State College
Gregg Patrick	San Jose	Pre-dental	California Lutheran				
Victoria Thomas	Woodside	English	U of Calif. (Berkeley)				
Mark Vanderberg	Los Altos	Electrical Engineering	U of Colorado				
<b>LOVELAND DIVISION</b>				<b>SANBORN DIVISION</b>			
Devera Ann Stroh	Loveland	Education	Colorado State College	Bruce Dockstader	Hopkinton	Mathematics	Tuffs.
Ellen Gail Weickum	Loveland	Data Processing	Colorado State Univ.	David Downing	Sudbury	Biology	Beloit
				Jeanne Owens	Brockton	Chemistry	Rensselaer Polytechnic

A FEW MONTHS AGO, I MENTIONED in this column some of the evolutionary changes occurring in our marketing organization due to the continuing growth of our product line and markets. One of the most important changes involves a restructuring of our U.S. sales organization along regional lines.

Specifically, our long-range plan envisions four sales regions—Western, Central, Southern and Eastern. Two of these regions, the Western and Central, are essentially in their final form. They include the 13-state Western area served by the Neely sales division, and, effective next January, a 12-state area in the Midwest served by the Crossley division.

□ The latest development in this reorganization, and one I'd like to talk about in this issue, is the formation of our new Eastern region. Headquartered in Englewood, N.J., just across the Hudson from New York City, this region is now in business under the managership of Carl Cottrell, an HP marketing veteran who most recently served as managing director of HPSA in Geneva, Switzerland.

The Eastern region, somewhat larger than originally planned, now includes territories served by the RMC, Syracuse, Robinson, and Horman sales divisions. Ultimately it will include the Eastern seaboard as far south as Virginia. It's a concentrated, highly industrialized market and one of increasing importance to HP.

Serving as Eastern regional sales manager under Carl Cottrell is Bob MacVeety, formerly manager of our Syracuse sales division. In addition, Carl has four area managers located in key marketing centers throughout the region.

□ In New York City the area manager is Milt Lichtenstein, long associated with HP and a co-founder of the RMC division with Bob Asen, who recently resigned from RMC to accept a position with the Sales Analysis Institute in New York. In Philadelphia the area manager is Rick Weaver, formerly manager of the Robinson sales division.

Rod Foley, previously RMC branch manager in Englewood, has moved to Syracuse to serve as area manager of that important market. Rounding out the picture, the new area manager in Washington, D.C., is Walt Thiele, formerly with the Horman sales division. Fred Horman is serving as a special sales consultant to our corporate marketing staff in Palo Alto.

## New Eastern sales region takes shape

We're enthusiastic about this new Eastern region and about the whole concept of a regional U.S. sales structure. It will enable the sales groups in each region to work closer together under strong regional management, a management attuned to the special customer needs and characteristics of a specific geographical area. This in turn will result in a more effective use of manpower, better coordination of sales promotional activities, improved communications, and a greater awareness and recognition of individual achievements.

By concentrating certain administrative functions in regional offices, we also expect to reduce paperwork and achieve greater economies in order processing, accounting, and other field support activities.

□ Our next step in the regionalizing process will be the formation of the Southern region, an area corresponding roughly to the old Confederate states. It will take considerable time to organize this region into its final form, but we will keep you posted as our plans begin to take shape.

Another big change in our marketing organization is the consolidation of our medical and chemical sales groups with our electronic sales divisions. We've already made considerable progress in this direction and will be reporting the details on this important development in subsequent issues of *Measure*. ◀



Noel Eldred, Vice President, Marketing



□ *Tom Smith is a Hewlett-Packard stockholder and an employee. You see him pictured above, standing with the sun beaming down, just a few steps from the main entrance to corporate headquarters in Palo Alto. He is holding an interim financial report which gives him a lot of dollar figures about his company. One figure in particular interests him most—net income.*

In spite of his fictional sounding name, Tom Smith is very much a member of Hewlett-Packard, serving currently as a senior test engineer in the Frequency and Time Division. He is married, has four small children, owns a home in a suburban community, and is 36 years old.

His company's net income—its profit—is created by HP people from Palo Alto to Boeblingen. At the same time, these same people benefit directly from the things that profits make possible.

Tom Smith does not shudder at the word "profit." Unfortunately, some people in this world do—possibly because they misunderstand what it means.

□ What does it mean? There are some pretty fancy definitions floating around, but when you come down to it, profits are no more nor less than the dollars left over after the bills are paid. Of course, if you look at detailed financial statements which tell exactly where the dollars come from and where they go, the whole matter gets pretty complicated.

For instance, you start out with the company's net sales (that's gross sales dollars minus certain allowances, like refunds for returned products.) Net sales don't really mean too much in themselves unless you start matching them up with the money you spend, such as for wages and employee benefits, raw materials, research and development, and occupancy costs. Then deduct marketing, administrative, and general expenses. Now subtract the big tax bite . . . and don't forget the dollars going to employees under the profit sharing plan.

After all this, if you end up in the hole you are an unprofitable operation and will need help quickly. You may

## The promise of profits

have to lay off people, sell assets, borrow if anyone will lend you money, or perform some other corporate lifesaving feat.

On the other hand, if you still have some sales dollars left over, you are a profit-making operation and all sorts of good things can happen. People will buy your stock because they have faith in your future. If, like Hewlett-Packard, you pay dividends to stockholders, you will have funds for this purpose. You will also be able to buy more buildings, finance further research and development to eventually expand your product line, employ more people, and give them better tools to work with.

□ As one financial executive stated it recently, "Our profit dollars aren't tucked away in a vault somewhere. . . . Instead, a portion goes to pay dividends to our more than 20,000 owners (stockholders in the company). And, a larger portion returns to the system to help finance an adequate growth."

What kind of profits are reasonable for HP? What is an adequate rate of growth?

The laws of supply and demand, and survival in a highly competitive industry, tend to dictate the answers. Some years ago Dave Packard stated in a booklet that HP should attempt to make a net income of 8 percent of net sales. He based this on "customer willingness year in and year out to give us this kind of return."

□ The growth that a profit of this size can be expected to finance is estimated at 20 to 25 percent annually. This is arrived at by use of a widely accepted accounting formula, which multiplies profit percentage by capital turnover. (Capital turnover is defined as total annual sales dollars divided by invested capital.)

At the end of this month, Hewlett-Packard will end another fiscal year. All figures are not yet in, but it seems certain that the company will once again show a profit to continue the "adequate rate of growth." This dedication to moving forward through reinvestment is important to every member of the HP family. It bears directly on job security and increasing opportunity for employees. ◀

*. . . they are made possible by the  
care and skill you apply to your job*





New buildings and improvements are made possible by profits.



Dollars reinvested in equipment help assure growth.

*... they help buy the things that assure stability and continued growth for the company*



Profits go back into the system to help pay for a multitude of materials.



# The strong right arm of the law

**T**WO ROBBERS stormed out of the bank with a sackful of money, entered a waiting car, and drove from the city at breakneck speed. Coming to a side road marked detour, they disregarded the sign and turned off.

A police patrol, having picked up the chase some miles back, obeyed the detour sign and continued along the main road. The robbers got away, congratulating themselves on having the foresight to place their own homemade detour sign on the well-planned escape route.

In time, however, one of the criminals was picked up for carrying a concealed weapon. He looked suspiciously like one of the bank robbers, but he wasn't cooperative enough to admit it and the police had no proof . . . none, that is, until they put an F&M Scientific Division gas chromatograph to work.

It turned out that the chromatograph proved that tiny particles on the gun butt matched the material and paint of the detour sign. The gun, the robber finally confessed, had been used to drive the nails in building the sign.

□ This is only one of countless instances where gas chromatography has aided in criminal investigations. Ray Pinker, former head of the Los Angeles Police Department's crime detection lab and now an associate professor at Los Angeles State College, believes that "the surface has only been scratched" in the application of this technique to police work.

Pinker calls the gas chromatograph one of the more valuable tools available to forensic chemists—chemists who specialize in criminal and legal investigations. At present, he says that the principal applications are in arson and hit-and-run cases, and in blood alcohol analysis.

In gas chromatography a material to be analyzed is changed to a gaseous state in the chromatograph. The vaporized sample is then carried through a column. The column packing, as it is called (usually diatomaceous earth or fire brick), is coated with a liquid chemical (called the liquid phase). When the vaporized sample is carried through the column it separates into chemical compounds. Some of the compounds are adsorbed by the liquid phase early, some move a little farther along, and some travel still farther before adsorption. The continuous flow of carrier gas forces the separated compound to the end of the column.

□ The chromatograph detector "sees" each compound as it comes from the column. From this the chemist is able to identify the separated compounds as to quantity and quality. The detection of the various compounds as they leave the column reveals that sample's fingerprint—a particularly apt expression for the forensic chemist.

A relatively new analytical instrument, the gas chromatograph is nonetheless standard in virtually every chemical laboratory today. It is capable of detecting the slightest trace of a substance in a sample. One F&M Scientific chemist uses the example that if you mixed a pinch of DDT in a container holding all the milk the world produces in a year, you would need less than an ounce of the milk to detect these few grains of DDT.

Not only is this analytical process sensitive, but it is fast. In police work, this can mean the difference between life and death. A woman in a coma was brought to a hospital in an Eastern city. Doctors drew a small blood sample—it takes only a drop—and sent it to the laboratory. In a few minutes





Ray Pinker, widely recognized expert in scientific crime detection, shows how a blood sample is injected into gas chromatograph for accurate analysis.

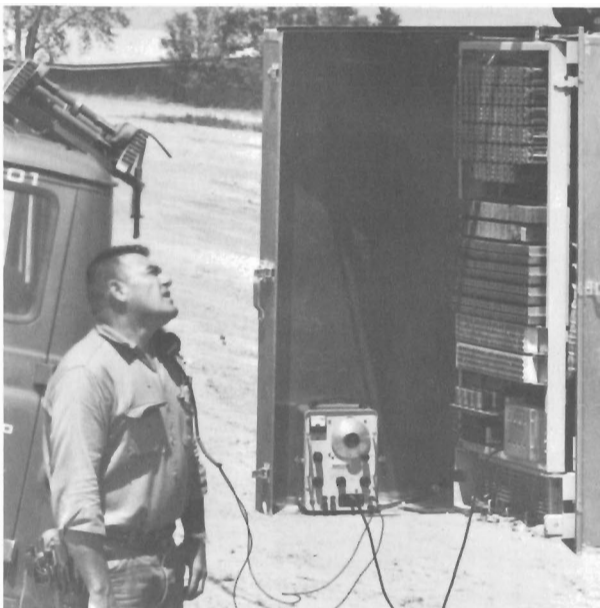
they had their report indicating that the woman had drunk a poisonous kind of alcohol. They were then able to treat her properly and she survived.

Less fortunate were 27 people who died mysteriously in a Philadelphia skid row area. The police determined that there was a pattern to the deaths and ordered blood analyses. They found that all had died from drinking canned heat. The GC analysis even told them that it was a particular type of industrial canned heat which could be traced to a single source in the area.

□ The Internal Revenue Service, much the same as the FBI and metropolitan police forces, uses gas chromatography in investigations. In one instance, Revenue men were able to convict a moonshiner who had been caught in his truck with a goodly supply of white lightnin'. They located a still but could not prove it was his. So they used gas chromatography to prove that gasoline, bits of lint, soil, and the moonshine in the truck were identical with samples of these same things found at the still.

Every day police across the nation are using gas chromatography to help apprehend law breakers. Paint chips on the bodies of hit-and-run victims can reveal the type of car, the model, the year. Narcotics, like heroin and marijuana, can be analyzed to determine the country of origin. Common break-and-enter thieves can be scientifically connected to the scene of the crime through dirt and dust on their shoes.

The F&M Scientific Division of Avondale, Pa., one of the country's largest manufacturers of gas chromatographs, holds no little pride and interest in the use of F&M products for crime detection. For these new members of the HP family, it's a great cause and a great conversation piece. <



A lineman operates a new HP telephone test oscillator. The hand-carried test set, manufactured by the Loveland Division, has dial-through provisions which let the unit duplicate the talking and ringing functions of a home telephone. The total instrument (model 236A) weighs less than 14 pounds and is operated from a dry cell battery or from a 110/230-volt power line.

## HP high point of ISA show

HP "towered" above other exhibitors at the national convention of the Instrument Society of America in the Los Angeles Sports Arena this month. The tower was the center of a unique, walk-through booth designed by Neils Tonnesen of the corporate advertising group in Palo Alto.

Under the tower, which could be seen from all points in the arena, HP displayed more than 35 instruments and systems representing nearly every division. Displays were arranged along the three aisles adjoining the booth, and around the central tower. A canopy designed like a grid covered the 30 x 24-foot booth, and viewers could walk through the booth to inspect the instruments. Many of the instruments were in operation during the show.

The ISA convention is one of the largest technical conferences in the nation from the standpoint of number of papers presented. More than 20,000 ISA members attended, primarily people interested in process measurement and control. This is an audience of increasing importance to HP, and includes professional engineers, scientists, managers and college professors.

### PEOPLE ON THE MOVE

#### HP PALO ALTO

**Frank Culver**, corporate medical marketing coordinator—to corporate sales manager (medical-chemical).

**Joe Palladino**, manufacturing engineering—to Advanced R&D, Physics (thin film department).

**Jack Petrak**, manufacturing manager, F&T Division—to corporate sales manager (electronics).

**Frank Ura**, manufacturing engineering—to Advanced R&D, Physics (thin film department).

#### INTERNATIONAL

**Emile Van Reepingen**, HP-Benelux medical sales staff—to sales manager, HP-Benelux.

#### MICROWAVE

**Jack Benson**, manufacturing engineering—to materials engineering, Microwave Division.

**Guy Franklin**, machine shop staff—to production control, Microwave Division.

#### FREQUENCY & TIME

**Walt Smith**, photo lab, manufacturing engineering—to F&T photo lab.

**Jesse Valentine**, F&T engineering—to photo circuits processes.

#### HP ASSOCIATES

**Robert Cohen**, Transitron, Boston—to product engineering, HP Associates.

**Richard Kern**, Westinghouse, Newbury Park, Calif.—to product engineering, HP Associates.

**Gerald Pighini**, Sperry Semiconductor—to product engineering, HP Associates.

#### HORMAN SALES

**Dick Cline**, marketing staff, Colorado Springs Division—to senior field engineer, Horman Sales Division.

#### BOONTON

**Steve Vitkovits, Jr.**, senior development engineer—to engineering manager.

#### COLORADO SPRINGS

**Ed Winn**, corporate Marketing staff—to marketing staff, Colorado Springs Division.

#### SANBORN

**James Lee**, machine shop foreman—to machine shop manager, Sanborn Division.

**Dean Morton**, corporate sales manager—to engineering manager, Sanborn Division.

**Jim Phelps**, wage and salary supervisor—to personnel manager, Sanborn Division.





*from the chairman's desk*

AS I HAVE OFTEN POINTED OUT, the continuing growth and success of our company depends to a very large degree on our ability to develop new products. Here the inventiveness of our people in generating new ideas and new technology is essential if we are to continue to develop these important new products, and to maintain our leadership in a highly competitive industry.

While we have done some advanced or fundamental research from time to time, most of our technical effort has been directed toward the full development of specific instruments. We have relied upon the advanced research being done in universities, and in other laboratories throughout the country, for much of the basic theory used in our product design.

Over the past year or two we have been gradually accelerating our advanced R&D effort, both in our corporate advanced R&D group and in HP Associates. To put further emphasis on advanced research, we are now in the process of expanding and centralizing these activities under the over-all direction of Barney Oliver. Barney's responsibility already includes the work being done by Paul Stoff's group in developing new circuitry and Don Hammond's group in new measurement techniques.

Within a short time we will be adding a third group to this advanced research program, that of solid-state research. This is essentially the work being carried out by John Atalla and his staff at HP Associates. It is my firm view that we have an unusual opportunity to build a very important research capability for the company with these functions brought together under Barney Oliver.

Since its founding in 1961, HP Associates has developed a number of semiconductor devices and components which have been effectively incorporated into HP instruments. This subsidiary company has also built up a manufacturing and marketing capability, and is now supplying many of its devices to outside companies as well as to HP.

In addition, HP Associates has been doing some rather fundamental research work supported partly by government contracts and partly from corporate funds. It is this portion of the HP Associates program which we plan to bring into our central research group. This work will continue to be directed by John Atalla.

HP Associates will retain a sizeable R&D group to develop specific new products which that company will manufacture. Thus HP Associates, under Jack Melchor, will continue as a fully integrated producer of semiconductor devices and components, both for the outside market and for HP divisions.

Our expanded advanced R&D program has two primary functions. One is to continue studies and investigations into new areas of technology, applying this new knowledge to the benefit of our over-all corporate product development effort. The other is to provide technical support to our various divisions in their development of specific products.

This support will be readily available to each division, but it is the basic responsibility of each division to maintain its own product development program, and to see that this program is as effective as possible in generating new instruments and systems. In the final analysis the strength of the company is centered in the divisions, and it is our hope that each division will continue to be truly a growth and profit centered operation, responsible for maintaining a strong position in the market it serves.

*David Packard*

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# Measure

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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)



## HP helps eliminate ghosts

**G**HOSTS AND SQUIGGLES will have a tougher time getting through to home television sets when a new generation of HP instruments goes to work next spring. A contract for more than a half-million dollars has been awarded to HP by Western Electric, manufacturing and supply unit of the Bell System, to produce new television waveform oscilloscopes. The Bell System requires more precise measurement of transmission quality in connection with their continuing program of providing television circuits. The solid-state oscilloscopes will be used at nationwide transmission and relay facilities. The first such products by HP, the oscilloscopes were designed and will be manufactured at the Colorado Springs plant.