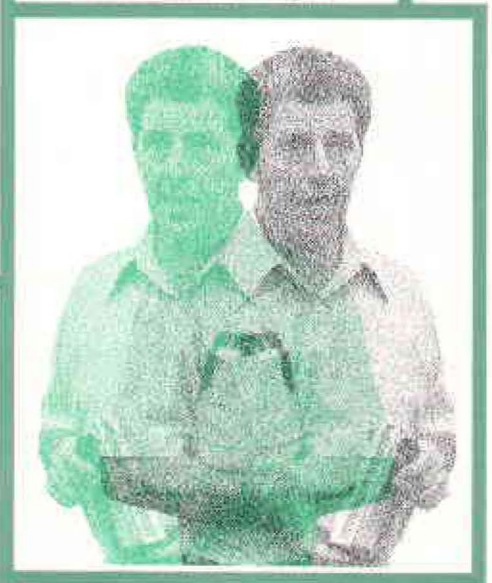
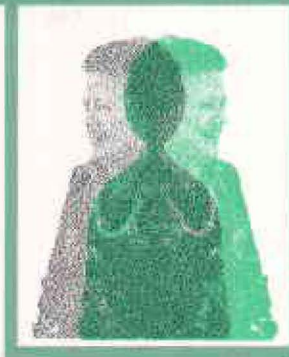
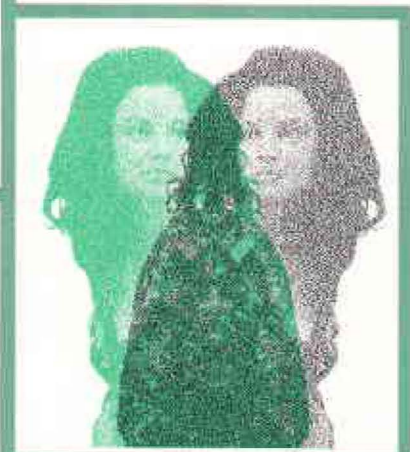
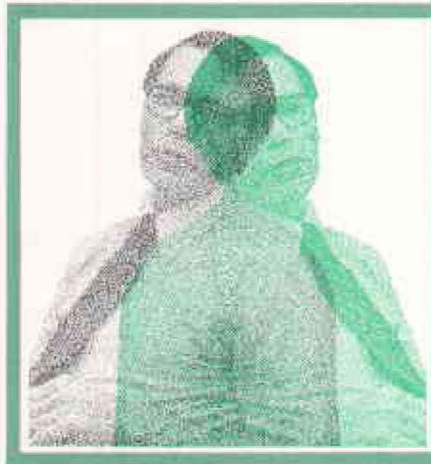


Measure

For the men and women of Hewlett-Packard / OCTOBER 1976

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They came back



Hugh Foster—a decision to make

□ The subject of “rehires” — people who left the company and later returned — might seem a sensitive one best left alone. After all, might it not give an impression of HP as a revolving door generously allowing people to come and go on the payroll as they wish? Also, isn’t there some risk of implying that, in coming back, the rehires were admitting they had made a mistake in first venturing outside the company? How would you tell that part of the story?

It turns out that you don’t have to. First, for all its considerable reputation as a fair and thoughtful employer, Hewlett-Packard is far from being a marshmallow when people try to take advantage of its ways. Former employees seeking rehire come to HP in much the same way as other job applicants — except that, being better known, they have some advantage or disadvantage depending on their prior record with the company. Therefore, you can bet that people who do succeed in becoming rehired have met the company’s standards by a comfortable margin, and brought back an extra dimension of ex-

perience and even loyalty to boot.

Then there’s the question of the circumstances behind their return. Any thought that they had to come back contritely with hat in hand while admitting the error of their prodigal ways is totally wrong. On the contrary, they turn out to be generally adventurous and enterprising people. In many cases their departures were precipitated by long-felt needs to explore new professions, to launch a business, expand educational horizons, to discover new ways of living, or to see the world. They came back for equally compelling reasons: seeing a particularly well-suited opportunity in HP, wanderlust satisfied, economic and business conditions turned sour, or discovering that they preferred the HP working environment. And of course there are the others who had left for family reasons — such as becoming full-time mothers or taking over an inherited business — and who returned at an opportune time.

Who are these rehires? Research shows them to number in the scores and possibly the hundreds, and to be widely scattered

about the company, both geographically and throughout the various levels of responsibility. First on the list, of course, would be Chairman Dave Packard himself who resigned in 1969 to serve some three years as deputy secretary of defense in the U.S. government. The company’s newest vice president and personnel director, John Doyle, spent a year managing part of a company he helped found, returning in 1972 to head the corporate development function.

Seeking independence . . .

The goal of independence is important in many decisions to venture forth. But the price can become too high. Dee Johnson, non-exempt personnel administrator in Data Systems Division, left after 14 years with HP to go into real estate sales with the goal of independent, part-time work and self-expression through selling. What she found herself doing instead, she recalls, was working seven days a week, twelve hours a day, to meet the demands of her clients. She gained great self confidence, she feels, but in the end on behalf



Dee Johnson—self-expression thru selling



Dave Crampton—gone sailing

of her family, Dee sought more reasonable hours in the organization she had never ceased to enjoy and respect.

In Dayton, Ohio, Jerry Berede has just resumed his HP career as a Data Systems field engineer after a four-year flier at selling computer systems for a small company. "After I acquired my MBA I decided that a small outfit would be the best place to grow. I was impatient, I guess, but it did look like an opportunity. Unfortunately, that company didn't have HP's sense of direction. The money was OK, but to them I was just a peddler selling their wares. They kept changing their ideas of what business they were in. It got pretty confusing trying to sell on a long-term basis. I guess I'm more of a team player than I thought. In any case, I'm back with a new perspective on Hewlett-Packard — I believe a more mature employee looking beyond money for job satisfaction."

Mike Naggiar, regional sales manager in Canada for Computer Systems Group, recalls that it took only about one year to learn that he didn't like the consumer elec-

tronics business he had joined in 1971. "I wanted to get back into the computer selling business. After interviewing a number of companies I was offered my old job back with HP. It again struck me as the best managed, most people-oriented company I had talked to. HP compensates for effort and results, and provides the challenges required for personal growth."

As one can guess, there may be many factors involved in people parting and then rejoining the company. Avondale's Oma Suth has been rehired twice. Her first rehire was in California, but this self-described "country person" just didn't take to the West Coast way of life, returning to Chester County and Avondale Division in 1972. In Boise Division, a number of people including Ruth Baptiste, Tiffany Thuleen and Don Jackson rediscovered HP after seeking the wide-open spaces of the northwest for various reasons. Others have returned after inventing things, running farms, caring for sick people, and living in the wilderness.

Hugh Foster, a supervisor in the casting shop of Manufacturing Division in

Palo Alto, left HP in 1972 after 20 years on the job. The cabinet-making business he took over in Savannah, Georgia, was quite prosperous and satisfying. Unfortunately, one of his daughters developed an allergy that promised to become worse in the humidity of that region. "I knew we had a decision to make, so why delay?" said Hugh. A year after leaving, the Fosters were back in California where fortunately the HP business climate and the atmospheric climate proved agreeable.

Starting a business . . .

The hazards of plunging into a new business can be quite high, and former HP people have experienced their share of unexpected difficulties.

Stanford Park's Dick Lakin, for example, dreamed of becoming a truck driver with his own wheels. Two years ago he invested \$25,000 in a new 2-axle Mack truck cab, said farewell to his HP buddies of eight years, and headed for the open road. That just happened to coincide with some big jumps in the cost of fuel, maintenance and insurance. Dick

(continued)

Second time around



Helen Daigle—a brave step



Margaret Marsden—learning by teaching

also had to overcome the hurdle of newness to the business and a downturn in the economy. He hung in there as long as he could but had to think of his family and future. HP was able to use his production services again, and meanwhile Dick has hired a driver to operate the truck on a profit-sharing basis.

Dave Crampton took a leave of absence as a Data Systems engineer in 1972 to go boat building and sailing. That's a romantic but not necessarily lucrative combination, so eventually he sought re-employment. At the time, however, he and the company did not match each other's needs, so Dave joined a new business, one of the many small firms struggling for its life in the high technology industry of the San Francisco Peninsula. But even strong leadership at the top and devoted people were not enough against the tide of a badly faltering market. At that point Dave once again checked with HP and learned of a very compatible spot on the Scientific Instruments product support team — a small-company environment backed by big-company resources.

Helen Daigle, secretary in Microwave Semiconductor manufacturing, took a brave step seven years ago when she purchased a small printing firm even though she had never run a press, let alone a business. Actually, those things worked out OK, but after a year's trial the work hours seemed too long and she missed her friends at Hewlett-Packard.

Becoming a teacher . . .

Teaching is another powerful magnet that has attracted people temporarily out of the HP orbit.

The Loveland, Colorado divisions offer a number of instances of people who have returned after a period of teaching. These include: Rex James, engineering manager of the Fort Collins Division, who taught for two years at Brigham Young University (Rex said the main problem was he found academic life somewhat too quiet, preferring to be closer to the end product of engineering); product designer Bob Harris of Calculator Products Division who had to satisfy an "in the blood" urge to be a college professor for some three years; and production engineer Gilbert Sandberg of Calculator Products who left for two years of teaching in Mexico.

Often teaching becomes a path to self discovery as was the case with Margaret Marsden, now a member of the marketing team at Santa Clara Division. With undergraduate degrees in physics and electrical engineering, Margaret joined HP Labs in 1970 to participate in a medical information project. While obtaining her MSEE in information theory at Stanford, she realized she favored interactive, team-type projects, such as the HP 35 development effort, over the more introspective kind of lab work. An offer to teach engineering and calculus at West Valley Community College seemed to present the right oppor-

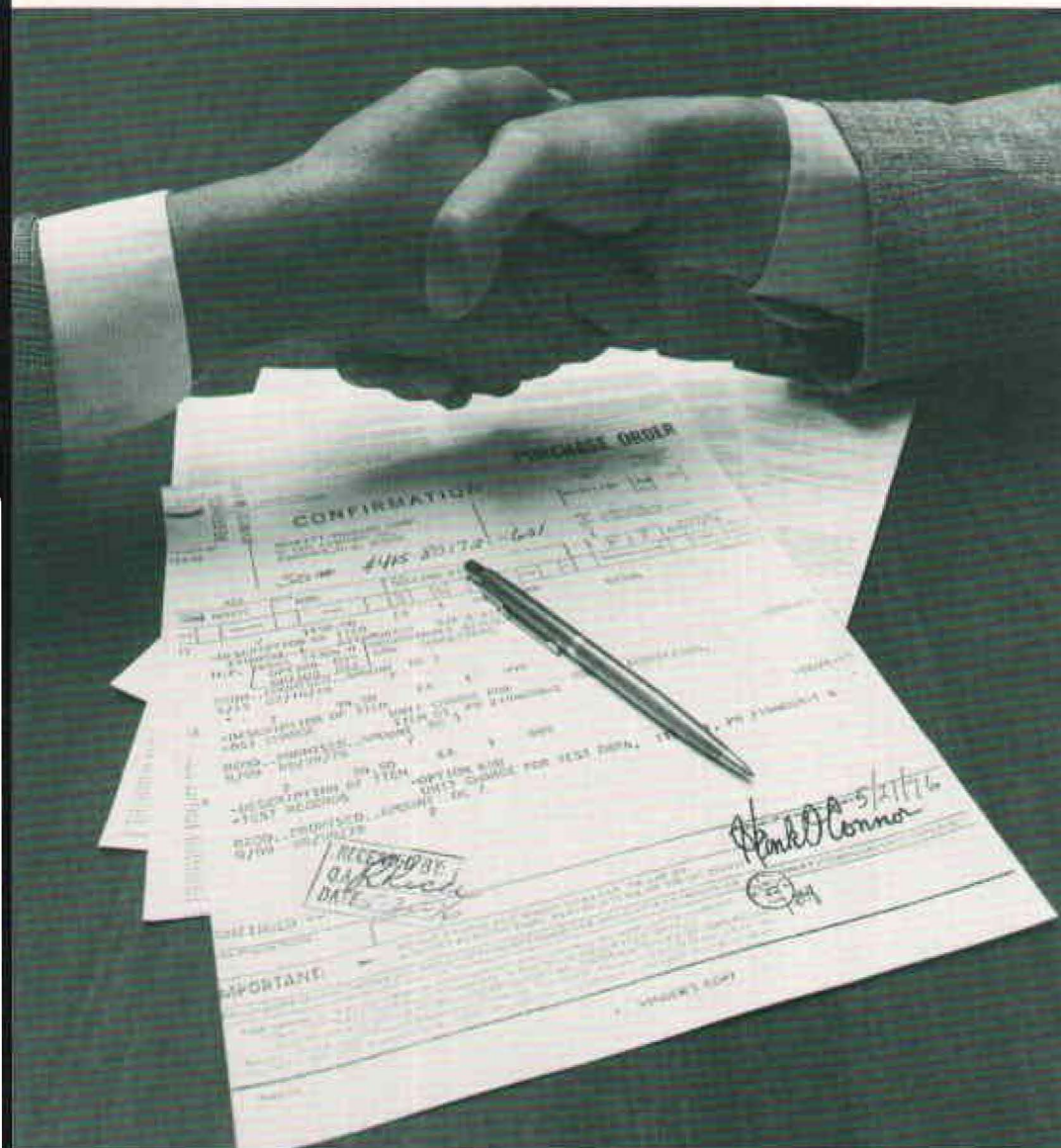
tunity to use her professional background in the lively and communicative environment of the classroom. And it was exciting — counseling young people, working for conservation causes, and using free time to broaden her perspective. This lasted until a teaching fund cut deleted her newly developed courses at which time she felt she would look for something new rather than teach again what she had already taught. The "new" turned out to be the marketing department at Santa Clara which Margaret feels exercises her technical abilities while also offering challenges in communicating and selling ideas. "I've always wanted to be on the forefront professionally — and HP takes you there in the field of instrumentation." Meanwhile, Margaret has undertaken evening MBA studies at Santa Clara University with the view of broadening her background in business management.

What do they all have in common, these returned entrepreneurs, teachers, wanderers and the like? For the most part it's probably a sense of life as an adventure, of setting goals and reaching for them, of opening themselves to greater self-expression, responsibilities and opportunity. But of course a great many more people achieve the very same goals within the HP organization. Maybe the rehirees are the exceptions that prove the rule.

Sometimes — as three HP people can attest, including at right Stu Yellen of Computer Systems Group marketing — promising markets just don't seem to grow beyond a certain point, no matter how sound the product, how dedicated and clever the people supporting it, or how steep the early growth curve. Stu, with Walt Benedetto, now a Data Systems district manager at Paramus, and Jim Fitzpatrick, now a product-marketing engineer at Santa Rosa, took the business plunge together in 1969. All three had been employed by the Eastern Sales Region at Paramus, New Jersey. Their plan was to set up a computerized microwave measuring service, based on HP equipment and their own software. After a good start, the business began to level off, and they were putting in far more effort than they were being compensated for. "We were beyond the break-even point," says Stu, "but always we faced the threat that clients would want to install their own system as their needs grew." The partners decided to bow out gracefully. Fortunately, HP was very interested in their software and their services.



Derek Smorthit, Computer Systems sales manager in the United Kingdom, has no regrets for the three years he spent outside HP. "Just the opposite," he says. "I gained a lot of valuable experience and met a totally different group of people in the computer business." Derek joined HP as an instrument field engineer in 1964, moving over to head the fledgling computer operation a few years later and being responsible for the first sales of HP computers in the U.K. Then, exactly five years after he joined, Derek left to manage a branch of one of the largest computer time-sharing companies in the U.K. It brought him experience in general and financial management as well as marketing — a number of things that weren't possible at that stage in HP's computer business. HP remembered him, however, and in 1972 asked him to accept responsibility for the computer systems then being made in South Queensferry — a factory experience also of value to him in his present position back in the sales organization at Winnersh. □



□ What would you guess a “big deal” is for Hewlett-Packard? Even in these times of universal monetary inflation, you’d certainly grant that a multi-million dollar order represents a big deal. There have been a number of such multi-million dollar orders recently — the New Zealand government’s order for \$3 million in computer systems; the \$6 million order by Amsterdam’s Makro Company for 42 HP 3000 Series II systems; the Brazilian order for \$3 million in medical equipment at the University of Sao Paulo’s Heart Institute; Saudi Arabia’s medical order of more than \$1 million for installation in Riyadh’s King Faisal Specialist Hospital; the U.S. Navy’s order of \$2.8 million for 130 cesium beam oscillators for use in shipboard communications and frequency measurement systems; and the order for more than \$3 million in HP 3000 computer systems for general purpose use by the Ministry of Industry and Minerals of Iraq.

To an outside observer, perhaps, those may be the only kind of transaction worth identifying as “big.” Certainly for a company such as HP that now has an average of \$4 million of business each working day, a deal has to be in the megabuck range to impress the financial community or the press.

BIG DEALS!

They come in all sizes and shapes, and from some unexpected sources...

*"Sometimes a small deal
is a big deal
in disguise" . . .*

Such deals also are noteworthy — especially when they involve new products such as the HP 3000 Series II general purpose computers — because they demonstrate HP's ability to meet extraordinary demands.

But insiders have a totally different view of "big deals." It doesn't really focus on the total dollars involved so much as it does on the order's impact on production activity. In fact, a "smorgasbord" order that arrives in one big lump sum at the group level may, when sorted out among the various divisions, have no special impact on a division's production lines. Whereas an order in the tens-of-thousands range for a single product can have a definite influence on the way a manufacturing organization schedules its production, thus qualifying as a "big deal."

From the sales point of view, too, there's no hard and fast dollar definition of big deals. Al Oliverio, vice president-Marketing, put it this way: "Sometimes it's a small deal in disguise. The biggest part of our business comes in ones and twos. But we have a lot of different items to sell, including more and more low-cost consumer-type products as well as more expensive items such as general-purpose computer systems. When we sell we have to keep in mind that we want the customer to call us again — and again. This means that our field sales people *can* afford to sell \$500 items in order to establish a 'buy-HP' habit which leads to subsequent business both large and small. It's worth noting, for example, that quite a few HP 3000 sales at several hundred thousand dollars each began with talk about calculators."

One of HP's very big deals, in fact, can be traced back to an ad in an Amsterdam newspaper in 1971. The ad was for a number of systems analysts and computer

programmers to join a firm named Makro, a cash-and-carry wholesale grocery chain operating in Europe, Africa and South America. HP's Hans Rahn contacted the Makro organization to learn that it was planning an order for ten point-of-purchase computer systems. Many events followed, resulting in a first contract with HP in 1972, followed by the present contract calling for \$6 million in computer systems plus a substantial service contract.

Big deals not only bring joy into the hearts of the sales people involved, they also tend to stimulate other big deals resulting in further joy. The Brazilian medical order seems to be a case in point. This was a very complex order involving a 300-page quote that took some four years to consummate. According to Rod Juncker and his systems team at Waltham, it also involved 30 outside suppliers, a method of simultaneous Portuguese translation of data, meeting many import requirements, and special training of customer personnel.

Rod and others now believe that the Saudi Arabian order was awarded to HP partly because the company could clearly substantiate its experience in the Brazilian order in filling the total electronic needs of a large hospital.

Keeping track of big deals as they materialize is an important task for division marketing departments, a task usually assigned to the sales manager. At Stanford Park Division, for example, every potential order exceeding \$50,000 or one that's over a certain critical quantity of a product will be logged in the big deal report that's updated and published twice a month. The report will record not only the expected size of the order but will also give an estimate of HP's chances of winning it. Once such an estimate rises to 80 percent or more it is cranked into the master production schedule. In this way the whole product manufacturing activity is alerted to the pending order and can make plans accordingly.

At Automatic Measurement Division, on the other hand, big deals are a normal way of doing business. This makes for a planning and production environment

quite different from other HP divisions. AMD is constantly preparing and submitting bids, mainly for aerospace support and service systems, hoping to land its share. Consequently, the order picture looks like a profile of the Manhattan skyline, and the division lives with a certain amount of suspense until the next big deal comes in. To smooth out the order profile and to "linearize" shipments, AMD now is planning a more standard off-the-shelf line of products for the computer industry.

You would be sadly disillusioned if you thought that big deals are going to land comfortably on your division doorstep with no special effort. As a matter of fact, many big deals stir up all kinds of competition, some of it from recognized sources and some of it from specialty operations that spring into being at the drop of a low bid. Government procurement, especially, is a complex operation whose ground rules must be fully understood by participants who hope to obtain a share of the available business.

How does HP approach such business? Carefully, for sure.

The first rule for HP divisions bidding on big deals is to make sure they have a grasp of the costs involved, arriving at an acceptable price based on the real costs plus profit objective.

It is also necessary to know the competitors and how they can be expected to perform on a particular contract. Such knowledge will give you a picture of how you can base your bid.

Finally, working very closely with the field engineers, you must obtain a clear understanding of what the customer's requirements are.

When you have put it all together, you can reasonably expect to win the business when you offer the customer the best product solution with the lowest cost in relation to performance over the life of the contract. It's an approach which appeals especially to customers who demand excellent quality and performance along with a fair price. In that respect, HP's big-deal customers differ from other customers only in the size of their orders. □

No rocking chair for Captain Norman B. Neely

□ Just about now, going on two months since he retired from Hewlett-Packard, Norm Neely is most likely standing at the wheel of *La Siesta*, bringing her about for a neat docking or safe anchorage somewhere in the fish-rich waters of the Sea of Cortez.

Time for a siesta? Not yet. In all probability he will first apply himself to such tasks as checking the data from the engine room or inspecting the electronic navigation system. In either case he will be working with what has been described as the most sophisticated shipboard electronic gear on the market—which is only appropriate for a man who practically invented the business of selling electronic products.

Norm Neely's imprint on the industry began to be visible as far back as 1933 when he founded Neely Enterprises for the purpose of representing various manufacturers. In those times the firm tended to specialize in audio equipment for the movie and radio industries centered in Hollywood. And so it was there in Walt Disney Studios late in 1939 that Neely first met Dave Packard and Bill Hewlett. Their visit was to close the sale of eight 200A audio oscillators, HP's first product line, for use in the production of the sound track for the movie *Fantasia*. The trio decided to meet again, this time in Palo Alto a few weeks later, when they shook hands over a verbal agreement that established Neely Enterprises as HP's first sales representative. Twenty-three years later, in August 1962, another agreement was reached in writing

that brought the Neely firm into the HP organization. By then its business on behalf of HP throughout the Western States had reached some \$25 million annually.

Before and since, the Neely team won a reputation for creative marketing and innovative selling—always with the viewpoint of providing customers with total service. Along came Neely road shows and mobile laboratories, and strong participation in trade association activities including the Wescon show and the Western Electronics Manufacturers Association (WEMA). There was the Neely organization itself with its basic combination of field engineers, staff engineers, service engineers, and order coordinators designed to put a complete team on the side of customers.

Then there was the Neely management

team out of which has emerged such HP corporate officers as Bob Boniface (among Neely's first employees and now HP executive vice president-Administration) and Al Olivero (vice president-Marketing), as well as a growing list of group marketing managers, sales managers, division managers, sales region managers, and others holding important posts.

And right in the thick of it was Norm Neely himself—a man who knew how to put ideas into action through people. Some of his sayings reflect this: "As long as we're all sitting around relaxing, we might as well get something done." And—"Since buying is an emotional act, selling must also be."

He could also be subtle, as one story suggests. This came about after the 1959 Wescon show in San Francisco. The



traditional Neely cocktail party had mushroomed to the point where it almost became the focus of the show. Even the hotel's two ballrooms couldn't handle the throngs—nor could the host any longer possibly greet each guest. What to do?

That question was gracefully solved next year when the Wescon board of directors asked all exhibitors to refrain from activities that would compete with the show. Would you believe that some people even have suggested that Norm Neely had some influence on the board's decision?

Actually, Norm's retirement is not really 100 percent. He will maintain a "presence" in the North Hollywood office which no doubt he can easily reach by ship-to-shore phone. More mutual adventures lie ahead for him and HP, you may be sure. □



A number of marketing approaches now considered standard in the electronics industry were pioneered by the Neely organization. This photo, looking something like a scene of revived Hollywood nostalgia, was taken in 1952 as the Neely team prepared to launch a road show of product exhibits. These became the forerunners of the well-known HP mobile labs. Identifiable are Norm Neely at far upper left, Bob Boniface, executive vice president-Administration, standing on the tailgate of wagon in center, and Bob Brunner, Instrument Group marketing manager, struggling alone with large case.

HP's computer business:

Passing the 10-year mark

With the introduction of the 2116A instrumentation computer at the 1966 Fall Joint Computer Conference in San Francisco, HP entered one of the biggest growth industries of the past decade.

□ Ten years ago, MEASURE reported on the introduction of HP's first computer, the 2116A. At that time, we said that if automobile technology could possibly have advanced at the same rate as computers in the previous decade, we could have bought a car capable of 30,000 miles per hour for one dollar, f.o.b. Detroit.

Now, ten years after HP's entry into the computer business, we can't resist applying our admittedly fanciful analogy to the decade from 1966 to 1976. It turns out that if the cost, the increased speed and power of today's computers were equated with automobile advancements, our (then) Mach-39 car would now travel at a mind-blowing 75,000 miles per hour and would cost less than 10 cents.

1976 marks two other significant anniversaries in the computer field in addition to HP's tenth. The first sale of a computer, the Univac I, took place 25 years ago. Sold by the company now called Sperry Rand, the first Univac I filled a huge room in the headquarters of the U.S. Census Bureau.

Five years before that, in 1946, the very first electronic digital computer was unveiled at the University of Pennsylvania. It was called ENIAC, for Electronic Numerical Integrator and Computer. ENIAC was a thirty-ton monstrosity that occupied 15,000 square feet of floor space and contained 19,000 vacuum tubes. Dozens of scurrying technicians had difficulty keeping it in operation for



more than a half hour. Its memory was limited to twenty ten-digit numbers. And although its computing power and speed seemed impressive at the time, the new HP-67 hand-held programmable calculator is far more powerful.

The computer has certainly come a long way in thirty years. But just how far has HP's own computer business come in the last ten? How did it start, and where are we now?

To begin with, it was conceived by the former Dymec Division as an extension of HP's line of measuring instruments. Today HP offers computers that are adaptable to all kinds of specialized applications, as well as general-purpose computers that can do dozens of jobs at once and compete with the likes of IBM. Derek Smorthit, an HP sales manager in the United Kingdom, put it in perspective rather graphically. "The reason for



The most recent addition to HP's computer lineup is the HP 1000 family of small computer systems. Designed for computation, instrumentation and operations management applications, it offers a new processor that executes programs 60 to 100 percent faster than previous models.

introducing a computer at that time was to complement our instruments activity," he said. "Since then, the tail has succeeded in not just wagging the dog but whirling it around!"

When HP first entered the field, most computers on the market still had to be pampered in air-conditioned rooms with spring-loaded floors. HP assumed that an instrumentation computer, as the 2116A was termed, should pass the same environmental tests as the instruments it would be teamed with. So HP quickly took the lead in ruggedness and reliability, and helped transform the computer into a go-anywhere, do-anything tool.

One of the first 2116As sold is still being used aboard a research vessel operated by Woods Hole Institute of Oceanography in Massachusetts, which has purchased at least a dozen other HP computers since then. The original one still works like a charm ten years later—even though it's been bounced around, loaded and unloaded and exposed to the corrosive salt air.

Learning from customers . . .

Feeling its way in an unfamiliar business, HP was learning much from its customers. "They started showing us all kinds of things our computers could do besides data acquisition," says Bruce Noel, who has been in HP computer marketing for the past seven years. "They showed us

that the same computer that collected the data could also analyze it."

An HP contribution that Bruce feels was unique when it was introduced a few years later was the HP 2000 time-sharing system, a first in the minicomputer field. Before that, the capability of accessing a computer from multiple terminals was only available in large systems.

"HP's time-sharing minicomputers were particularly well qualified for the educational market because they offered economical solutions to schools. We offered the lowest cost per terminal, so educators could use the system to teach computer technology or as sort of a 'super calculator' in the classroom. And they could write programs for computer-assisted instruction, or CAI, using HP-developed application programs."

By that time, HP was also moving toward the development of general-purpose data processing systems, according to Bruce. "But there was a lot of concern in the company as to whether we should get into that market, so a major turning point was the decision to do it within the scope of a minicomputer. The HP 3000 was born out of that."

Jim Schmidt, now North American sales manager, was one of the first field engineers to migrate toward selling computer products. "We didn't know the business very well then" he admits. "At first, most of the people we were selling to were

measurement-oriented like ourselves. Data processing was still being done with large machines, and we didn't relate to those people very well."

In selling instruments and instrumentation systems, HP had traditionally dealt with the end users of its products. Selling general-purpose computers turned out to be a whole new ballgame. "In EDP, there was usually some central group of people setting policy—deciding how that company was going to do business—and they would get involved. If people in another part of the same company wanted to use computers, it might not fit in with the long-range plans."

The same was true within HP, and EDP managers weren't necessarily committed to using HP computers. "They had to be sold, just like anyone else," Jim recalls.

Eventually, HP became one of its own best customers as well as a proving ground for demonstrating the capabilities of small computers. "Mini data centers" began to appear around the company as the philosophy of decentralized processing capability, using minicomputers, caught on.

Ten years ago, the total computer capability within HP did not even begin to match the power of a single HP 3000 Series II system. Now, it's estimated that there are more than 200 HP computers, including over thirty HP 3000s, in daily use throughout the company. They do everything from process control to artwork generation. They're used for management reporting and accounting, and even help design new computers and other products.

One money-saving application within HP is COMSYS, the communication system that speeds messages and order information all over the world at a fraction of the cost of conventional telecommunication. HP 2100 systems in most HP locations "talk" to each other under the control of a unique software system developed at HP. The central batching and processing facility in Palo Alto is still

(continued)

Decade of computers

sometimes called the "2116 room" after the computer that was originally used in the system.

When the 2116A was introduced, HP offered only the basic computer and memory. The need for computer "peripherals" spawned another major segment of HP's present-day business in data products. Equipment for tape storage came first, then disc storage when it became practical. Today HP also makes CRT terminals and line printers, and offers the most complete line of peripherals of any maker of small computers. Eight HP divisions now manufacture and service computer products.

Perhaps the most revealing measure of how far HP has come in the last ten years is contained in the growth statistics. In both sales and earnings, HP computer products operations are now larger than the entire company was a decade ago.

All things to all people . . .

In the 1930's, the British mathematician and scientist A. M. Turing envisioned a universal computing machine of the future. The "Turing machine" supposedly would store an unlimited amount of information and be able to simulate anything.

The modern computer, by nature, is almost a fulfillment of Turing's prophecy. It can be programmed to simulate a product, an organization, or anything the user wants to study.

In Southern California, an HP 3000 helps engineers in Riverside County design flood-control systems. By simulating a variety of alternatives, it aids in the design of channels, storm drains and levees to control water run-off. It would be too costly to evaluate all the alternatives any other way.

In Macon, Georgia, an HP computer collects and analyzes data from miniature forest fires. The idea is to learn to control the amount of smoke produced under different forest and weather conditions so that forests can be systematically burned. Such "prescription burning" prevents devastating wildfires, controls tree diseases and helps prepare planting sites. The complex relationships studied with the aid of the computer involve forestry, physics, chemistry, meteorology, mathematics and engineering.

At Lockheed-Georgia Company, testing wings for the giant C-5 Galaxy involves computer simulation of flight conditions by an HP computer. The HP 2100 system virtually "flies" the wings and its parts through more than a lifetime of operation—the equivalent of thousands of hours of flying, taking off and landing—to test for fatigue resistance.

A Palo Alto, California, firm is using

an HP 3000-based system for interpreting satellite photos. Objectives include studying forest patterns and wildlife habitats, monitoring reforested areas, and detecting tree diseases.

In Portland, Oregon, an HP computer eliminates human error in grinding precision lenses. A Bay Area ticket agency uses a small central computer and multiple terminals to control seating sales being made in several locations. Elsewhere in Northern California, minicomputers in a large winery guide and monitor the flow of thousands of cases of wine through an intricate maze of conveyors—making sure the right order gets on the right delivery truck. An HP computer has even gone to Antarctica for tests involving global air pollution and temperature trends.

But for every HP computer in an exotic setting or application, there are many others handling more routine chores. In such a fast-growing, boom-or-bust business, it's always tempting to try to take too many directions at once. "The minicomputer is a very ubiquitous product," Jim Schmidt told us. "We've had to decide what we're going to do and bring some discipline to our selling program."

In education, where we have a firm foothold, advancing technology and lower prices have brought computers within the reach of more and more schools and universities. HP has developed educational software packages and sponsored a "users



Students at Ainslie Park Comprehensive School in Edinburgh, Scotland, load a mark reader with cards they've programmed at their desks using an ordinary lead pencil. Low-cost HP equipment and software are used in schools all over the world, and HP was the first minicomputer manufacturer to publish textbooks for use with classroom computers.

At DeAnza College in Cupertino, California, an HP computer system in a psychology lab analyzes brain wave activity for experiments in animal and human behavior. At the same time, the computer directs other terminals collecting data such as heart rate, body temperature and galvanic skin response.



group" made up of educators.

"We're still very committed to instrumentation, too," says Marco Negrete, Group engineering manager. "We want to reach users like ourselves, which means we'll concentrate mainly on design, process control, data collection, what we call operations management, and accounting and financial."

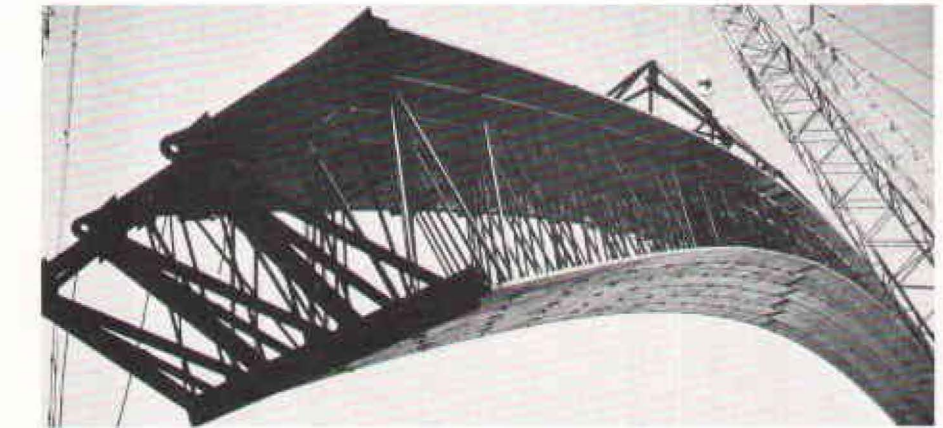
Some say that with the advent of tiny memory and logic chips we're on the threshold of a new generation of computers—although the "generations" have become nearly indistinguishable since transistors were replaced by integrated circuits in the sixties.

The trend, of course, is toward smaller and smaller machines that do more and more. With the HP 3000 Series II, HP is moving toward the concept of the "distributed system," made up of decentralized data processors that could each command their combined power when necessary. With the HP 1000 systems introduced early this month, HP has a whole new family of compact, low-cost, high performance computers.

Although nobody we talked to is making any firm predictions, it's safe to say they expect the next ten years in the computer business to be even more exciting than the last. In 1966 Jim Schmidt thought — rather conservatively in retrospect—that the field offered "great growth potential." Of the prospects for the future he says, simply, "It boggles the mind." □



The 2116A that bears serial number 1, pictured in 1967 dangling over the deck of the research vessel *Chain*, is still in use today. Tom Aldrich, who was then a programmer for Woods Hole Institute of Oceanography, today says it was "the most reliable piece of equipment I've ever worked with." In all the years he used it, he recalls only three times that the 2116A gave him any problems. "In fact," he said, "I have used that experience to establish a standard for minicomputer operation."



With the help of HP computers and peripherals, Trus Joist Corporation of Boise, Idaho, designs complex wood and steel structures like this section of a stadium dome. The company's distributed system includes an HP 2100 computer and twelve optical mark readers located in offices throughout the U.S. and Canada.

Using an HP 9600 high-speed computer system, smoke samples from a miniature forest fire are collected and analyzed at the Southern Forest Fire Laboratory in Macon, Georgia. The object is to improve techniques of controlled burning, sometimes used in forest management.

HP NEWS

Paul Ely elected VP



PALO ALTO — Paul Ely was elected a vice president of Hewlett-Packard Company at the September 24 meeting of the HP board of directors.

Ely is general manager of the company's Computer Systems Group, which is headquartered in Cupertino, California. The group is made up of eight divisions employing more than 3,500 people, and accounts for about one-fourth of the company's business.

Ely joined Hewlett-Packard's Microwave Division in 1962 and held a number of engineering and management posts before being named division general manager in 1969. He was appointed general manager of Data Systems Division in 1973, and was promoted to his present position in 1974.

Ely obtained a bachelor's degree in engineering physics from Lehigh University in 1953 and a master's degree in electrical engineering from Stanford University in 1964. He attended the Stanford Graduate School of Business' executive program in 1969.

New Disc Memory Division Formed—to Boise

CUPERTINO — Computer Systems Group is consolidating its growing computer disc products activities into a new Disc Memory Division. The new division will be located in Boise, Idaho.

Until now, responsibility for disc products has been assigned to various departments within the Data Systems Division, largest of HP's computer divisions, in Cupertino.

It will be the second HP division in Boise. In 1973, HP established a division there with responsibility for the company's line printers and magnetic tape drives. In the future, the two divisions will share HP's 156-acre site about five miles west of town.

"Disc products are an important and rapidly growing segment of our computer business," group manager Paul Ely said. "We are devoting an increasing portion of our R&D resources to assure continued success in this product line."

Dick Hackborn was named general manager of the new division. He formerly was computer group engineering manager.

HP presently employs about 400 people in Boise and occupies 91,000 square feet of leased building space. A new 154,000 square foot building was due to be completed this month on the company's Boise site.

Hackborn said the new division officially begins operation on November 1. Division activities will be shifted from Cupertino to Boise in a series of moves over the next two years, he said.

Hewlett-Packard has shipped more than 7,000 disc drives since introducing its first model in 1971. The product line presently consists of the Model 7900A 5 mbyte disc drive and the faster Model 7905A 15 mbyte disc drive.

The new division is the eighth in HP's Computer Systems Group.



SANTA CLARA — Santa Clara County's United Way fund drive for 1976 got underway here September 1 with a strong appeal by campaign chairman Bill Hewlett for increased industry participation and community support. Specifically,

he asked for a 20 percent increase over last year, and pledged a vigorous campaign to reach that goal which is needed for funding the work of 67 charitable and community service organizations in the county during the coming year.



From the president's desk

I would like to give you a report on my most recent visit to our operations in Scotland and in West Germany.

HP Ltd., located in South Queensferry, Scotland, is almost completely dedicated to products associated with the Instrument Group. Although they produce instruments whose designs have been transferred from the U.S. — such as counters, signal generators, and the like — for the United Kingdom and European markets, they also have been very successful in designing specialized test equipment for the communications industry worldwide. They have been so successful in this development effort that a majority of these products are exported to supply worldwide needs, much of it going to the U.S. In fact, 80 percent of all of the equipment produced at HP Ltd. is exported, thus contributing substantially to the U.K. balance of payments.

In the U.S. we hear a great deal about the problems of the U.K. economy, but it is interesting to note that our plant in Scotland is ahead of target in orders, ahead of target in shipments, well ahead of target in profit, and ahead of last year in all those categories as well. Considerable credit goes to the management team for these achievements, but even greater credit to the many other HP people at Ltd. who are also responsible for those excellent results.

Our operation in West Germany is organized quite differently from HP Ltd. HP GmbH is really three divisions rolled into one. There is a Medical Division headed by Karl Grund, an Analytical Division headed by Peter Hupe, and an Instrument Division headed by David Rose. In addition, there is also a calculator operation headed by Srin Nageshwar, a components operation headed by Jean Baillod, and a special section called Parts Center Europe (PCE). Although each of the three divisions report to their respective Group managers (Medical to Dean Morton, for example), Eberhard Knoblauch is in overall charge of HP GmbH.

Space prevents me from discussing each of these operations in detail, and I will therefore only talk about two of them.

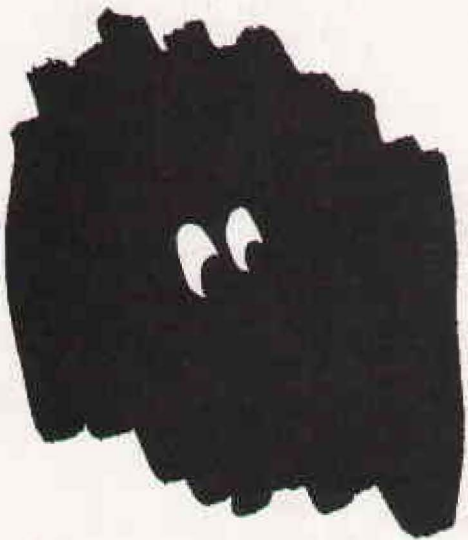
Early in 1973 we acquired a small West German company called Hupe & Busch. The company was one of the leaders in a rapidly developing field of high pressure liquid chromatography, and was located very close to Karlsruhe — a city about an hour away from our main plant in Boeblingen. After an initial period of discussion, and familiarization with each company's capabilities, it was agreed that we should design a second generation of LCs, utilizing Hupe & Busch's technological expertise in the field and HP's experience in electronic and mechanical design.

This second generation product, the 1080 LC, was completed this year and introduced both in Europe and the U.S. It is an outstanding product and has been enthusiastically received. The high pressure pump, a key component, was jointly designed by Larry LaBarre of HP Labs and an engineer from West Germany. The data system was a direct adaptation of the system used on Avondale's highly successful gas chromatograph, the 5830. The separation procedure was based on the original Hupe & Busch design. In all, the 1080 LC is an excellent example of how various parts of HP can work together to provide a superior product.

The Boeblingen Medical Division (BMD) has a much longer history, but also had its origin in a West German-developed technology — fetal electrocardiography. HP's first fetal heart monitor was introduced in 1968, and since that time BMD has continued to improve on this technology as well as develop a line of instruments to monitor infant health during that critical period right after birth — particularly important in the case of premature births.

This whole field of monitoring before, during, and after birth is now called perinatal monitoring and BMD has been assigned worldwide product line responsibility in this area. We were one of the first companies to recognize the importance of this growing field and now occupy an important worldwide position in it. Our efforts in this area are a good example of "making a contribution" rather than just following the lead of someone else. The R&D programs and the manufacturing capabilities in BMD are quite outstanding, and I am sure that this will continue to be an increasingly important area for us in the application of electronics to medicine.

Bill Hewlett



Preferred by cavemen...

As reported from time to time in *Measure*, HP products have made a number of trips to outer space, including pocket calculators to the moon and back via Apollo spacecraft, and diodes to Mars on Viking landers. Now a new extreme dimension has been achieved by an expedition of cave explorers in Kenya.

Using an HP-65 programmable calculator for their important surveying calculations, the 10 spelunkers discovered what they claim is the world's longest and deepest (by vertical range) lava cave. Named Leviathan, the previously uncharted cave under Kenya's Chyulu Hills was found to have a total passageway of 11 kilometers (about 7 miles) and a depth of 470 meters (1542 feet). Under conditions described as "very difficult," the rugged 65 performed perfectly and was termed "invaluable." Beyond that, this African cave trip would seem to give HP a good claim on having the world's most widely traveled line of electronic products—far out yet very down to earth, too.

Measure

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