MEASURE

For the people of Hewlett-Packard

May-June 1984

The echo eaters of Cupertino—
see page 16

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MEASURE

"Man is the measure of all things."—*Protagoras (circa 481-411 B.C.)*

Measure is published six times a year for employees and associates of Hewlett-Packard Company. Produced by Corporate Public Relations, Internal Communication Department, Gordon Brown, manager. Address correspondence to *Measure*, Hewlett-Packard Company 20BR, PO Box 10301, Palo Alto, California, 94303-0890 USA. Report change of address to your local personnel department.

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Hewlett-Packard Company designs and manufactures computers, electronic test equipment, handheld calculators, electronic components, medical electronic equipment and instrumentation for chemical analysis. Manufacturing facilities are located in 23 U.S. cities in eight states and in 10 cities in nine countries in the rest of the world. HP sales and service offices can be found in more than 80 U.S. cities and (including distributorships) in approximately 200 cities in 70 countries around the world. HP employs more than 74,000 people.

ON THE COVER

This abstract pattern of foam pyramids is part of HP's new anechoic chamber in Cupertino, California. The pyramids absorb stray electromagnetic signals inside a steel chamber that will be used to test new computer products. See story on page 16. Cover photo by Sharon Hall.

UPFRONT

One HP employee finds helping others helps him.

"When I read about Carson Kan in that old issue of *Measure*, I thought to myself, 'That sounds a lot like me.' "

Phil Clark, who works in the Bellevue, Washington, sales office purchasing department, recalls a story that was in *Measure* three years ago. It described how Carson, an R&D project manager at Computer Systems Division in Cupertino, California, learned to cope with testicular cancer—how he was cured and then how he turned to counseling others with cancer.

Unlike Carson, Phil knows his cancer (histiocytic lymphoma) is incurable but he is handling his struggle with the disease in much the same way.

"I know one day it's going to kill me, but not today," he says. Instead of brooding about his misfortune, Phil spends much of his life helping others—especially young people.

"I was into drugs and alcohol myself for 10 years so I can relate to kids who have those problems now."

"If Phil isn't out coaching his son's soccer team, he's taking some teenager to a drug-abuse meeting or working on the Special Olympics," says co-worker and friend Dave Tucker. Dave has known Phil for five years since they both worked at HP as night janitors.

"He's truly inspirational," says Dave. "Kids adore him. Here at work he's admired, too. He had never played softball until last year when he joined HP's softball team. Darned if he didn't walk off with the 'most inspirational' trophy."

Outside of HP, Phil organizes holiday food drives for needy families, talks at schools about alcoholism, opens his home to a foreign exchange student, cooks Christmas dinner at the local mission and volunteers at a community cancer counseling service.

"I'm not special, I'm really not," Phil protests. "I get my reward from being able to help others. At one time in my life someone was there for me. Now I want to be there for someone."

Since he discovered a lump under his arm three years ago while doing push-ups, Phil has undergone chemotherapy, a lot of pain and much medication. He's had two other flare-ups (each time the lump was removed) and says right now he's "lumpless."

Why does he overextend himself all the time? "When I go, I want to leave my family some good memories," he says.

Meanwhile, he's crowding as much into every day as he can. He just accompanied his 12-year-old son's championship soccer team to Hawaii and he will help train seven kids in field events for this summer's Special Olympics.

Carson Kan says he recently called Phil "just to jaw" and found the two have "a lot in common." Carson hasn't seen an oncologist (a tumor specialist) in three years and is still "as crazy as ever. You know, right after that story ran in *Measure*, people called me up to find out if I had died yet!"

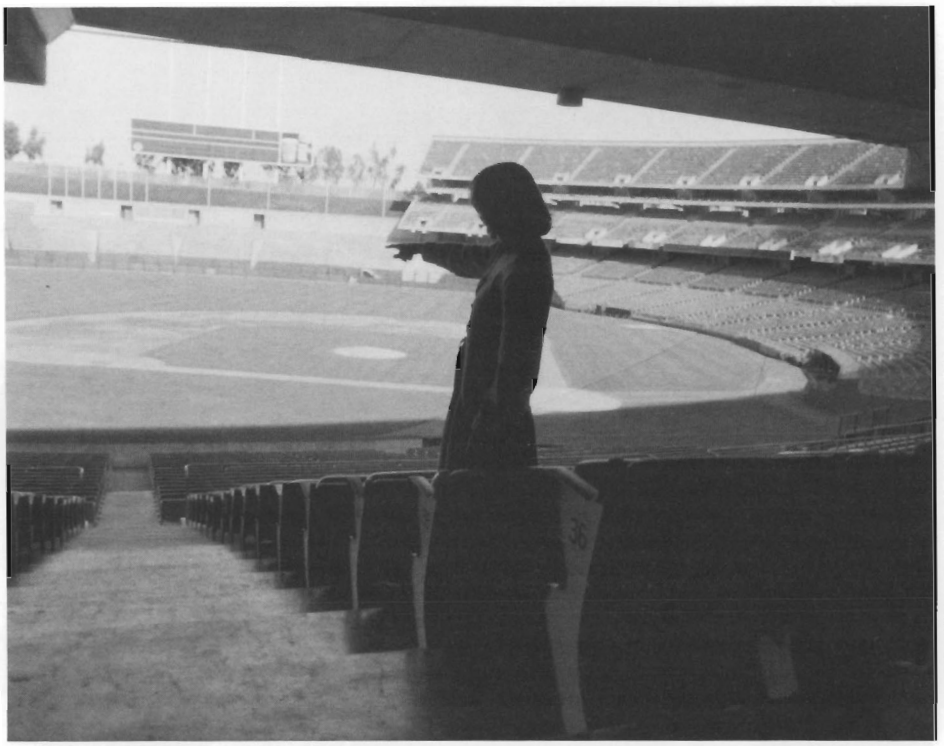
Far from it. More likely you'll find Carson dead center in the thick of HP activities like Junior Achievement and United Way. His main thrust, though, is counseling cancer patients: "I've taken some training so now the quality of my counseling has improved."

Carson and Phil have much in common, especially the recognition that life is special. As Phil puts it, "Myself, I'm boring. I'm really only happy when I'm out of myself and into others." **M**

LINDA MINOR

Bellevue's Phil Clark with two of his best reasons for living: daughters Sabrina (left) and Becky.

THE OAKLAND A'S TICKET TO SUCCESS



JOANNE ENGELHARDT

Linda Alderson, data processing manager for the Oakland A's, points to the 50,000-plus seats the team tries to fill for its 81 home games.

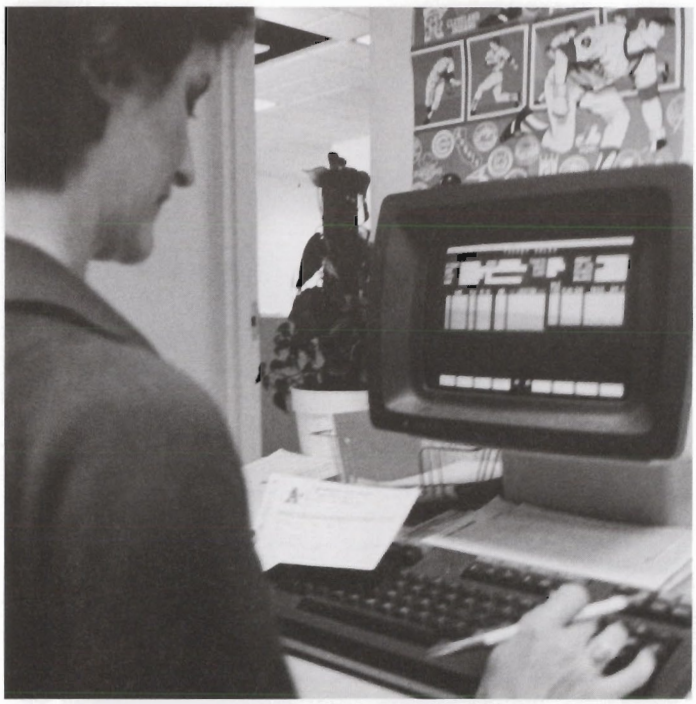
The Oakland A's have been an adventurous and trend-setting professional baseball team for the past 16 years. Their recent use of computers and high technology during games has gained them much applause from fans and the media.

Why, then, this recent statement by A's president Roy Eisenhardt on the scrapping of some of the A's state-of-the-art technology?:

"It was a beautiful game for years without those gadgets. We think we can get along fine without them."

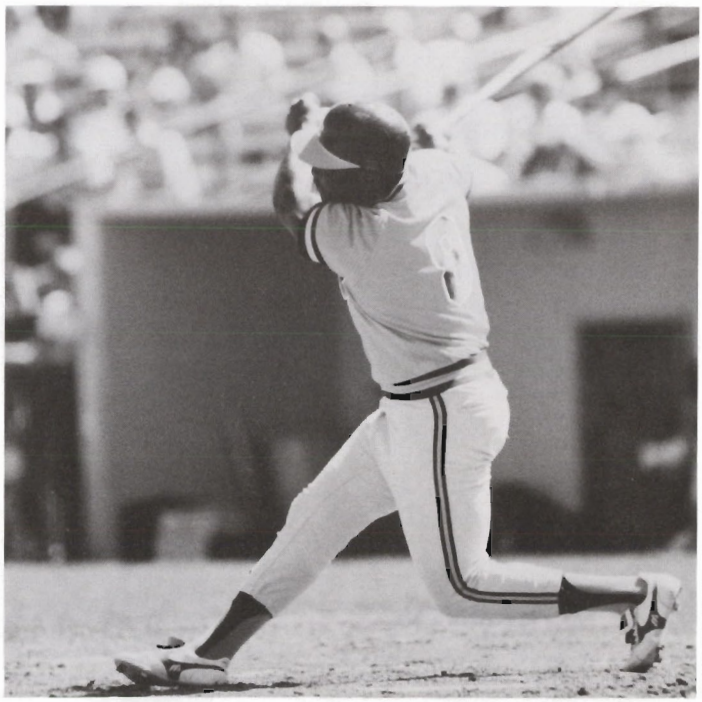
Roy and his A's have a few reasons for abandoning Diamond Vision, their slow-motion replay board, and the Apple IIe computer that was used primarily to chart hitter-pitcher tendencies to aid coaches in decision making.

Among them: excessive cost; player dissatisfaction ("Let me know when a computer can teach me how to



JOANNE ENGELHARDT

Barbara Beggs, ticketing system manager, takes phone-in orders from A's fans and assigns seats using an HP 3000 computer terminal.



HENDERSON PHOTO

All-star second baseman Joe Morgan, a native of Oakland now in his first year with the ball club, should draw more fans to the Coliseum.

throw a slider on the outside corner every time . . . then I'm all for it," says A's pitcher Steve McCatty); and worry that the replay board in left-center field was turning A's games "into a TV show . . . there's enough commercialism in the game already," says Roy.

But Roy and the A's have decided to keep one high-tech item in their lineup: an HP 3000 computer system.

The A's purchased the HP 3000 in June 1981 primarily for ticket operations but also for accounting and marketing applications.

Buying a ticket to a baseball game isn't what it used to be. In the glory days of Babe Ruth and Lou Gehrig, going to a Saturday afternoon game was as easy as elbowing your way up to a stadium ticket window and pulling out 50 cents.

Today, attending a baseball game is still easy, though quite a bit more expensive. But because of the growing complexity of taking telephone and mail reservations, advance sales, season tickets and group functions, ticketing has become a massive operation worthy of more than a lemonade-stand approach to selling.

"Baseball ticketing is much like an airline reservation system," notes the A's consulting programmer Bob Staaterman. "The airlines have a lot of flights, but only about 200 people per flight. Here, we've got up to 50,000 people per 'flight' and, though these flights are spread out over 81 games, they are every bit as complicated and involved."

Enter HP. The A's started out with an HP 3000 system complete with a tape drive, line printer, three disc drives and 21 terminals.

One task the A's have undertaken is to establish a customer base. Each time an A's ticket operator gets a phone-in order or mail-in reservation from a new customer, a file is established with the customer's name, address and phone number. The operator then sets up the order, processes the person's credit card or check and has the computer select the best available unsold seat, and then prints out a slip of paper with the seat location.

The paper is taken to the ticket vault, and a ticket corresponding to the customer's request is pulled, then mailed to the fan.

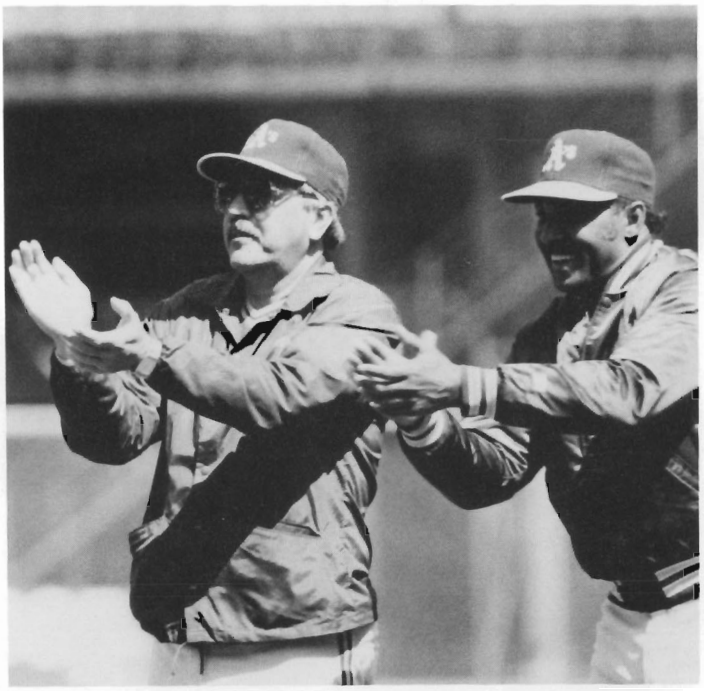
Next year the A's will enhance the system with another disc drive, more terminals and a ticket printer. The printer alone should save the team about $80,000 per year. With the new printer the computer will print tickets as orders are confirmed. That will save the time it takes to pull each ticket from the vault, and the excessive waste of printing tickets that are never sold.

"The tickets will have the buyer's name and address, and will only need to be folded, stuffed into an envelope and mailed," says Bob.

"That will be the final step," data processing manager Linda Alderson says. "We have a good system now—it just

JOANNE ENGELHARDT

K.T. Patt, payment supervisor, pulls tickets from stock. Next year the HP computer will print tickets as phone orders are received.



MICHAEL ZAGARIS

Clete Boyer and Billy Williams hope their coaching and the fans' enthusiasm will lead their team to a pennant and the World Series.

stops short of printing the tickets. All the complicated inventory control is already there, and we have a big customer base (up from 34,000 in 1981 to 67,000 today). We're able to get every report we need."

Some of those reports are used by the marketing department to track customers' ticket-buying tendencies: comparing orders that come in by phone, by mail, with coupons and from promotions. All that information is stored on the HP 3000 system data base.

The marketing department also has at its fingertips each customer's buying tendencies. "If a customer has been on our system for awhile, we know how many tickets that person bought last year and the year before, how many dollars they spent, where they sat, and the teams they saw," says Linda.

Apart from marketing and ticketing, the accounting department uses the HP 3000 for general ledger purposes and accounts payable.

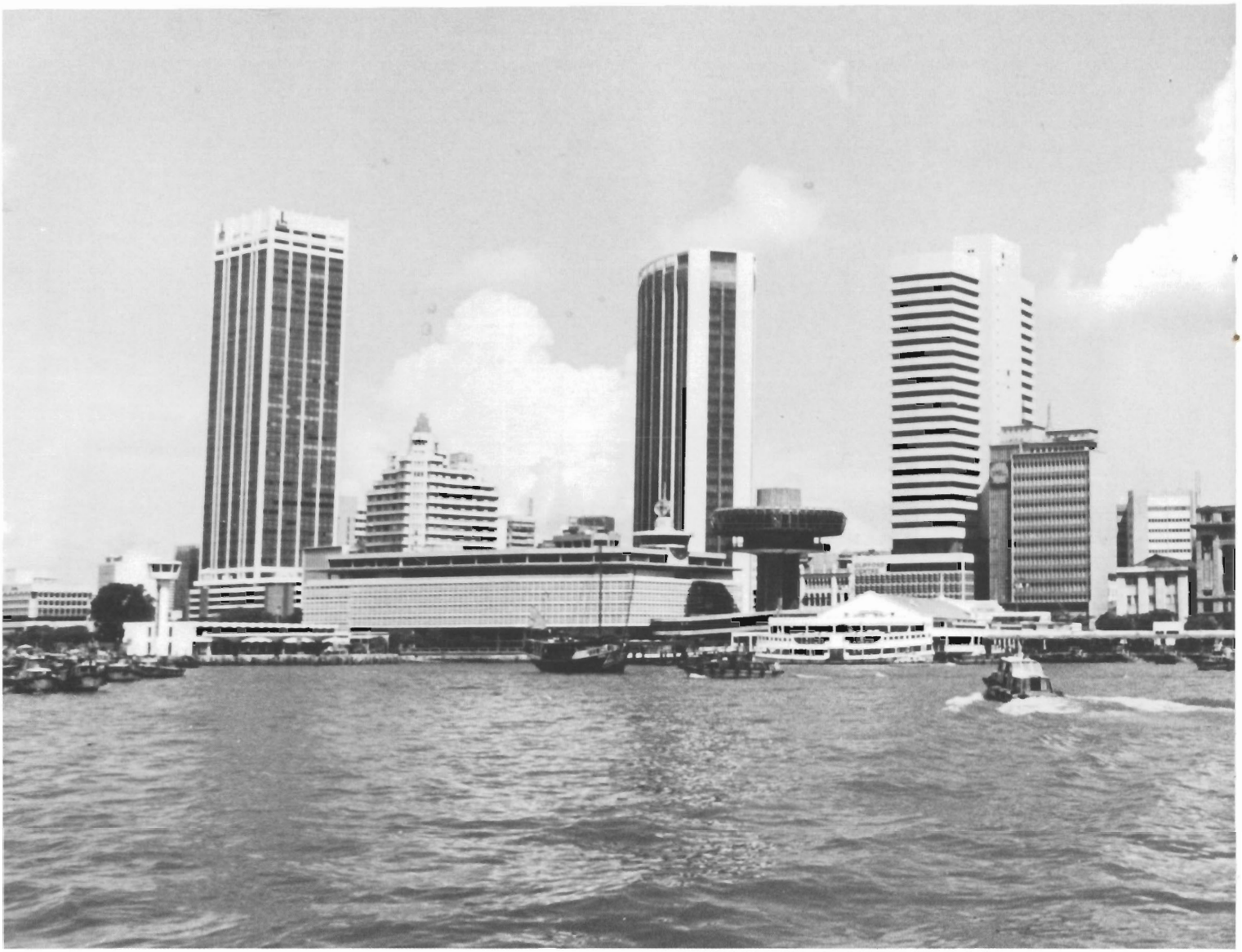
In the future the A's foresee a few more ways to use their HP 3000 system. Coaches and managers may use the computer to chart major and minor league scouting reports. Eventually the computer may allow the A's to link up with independent ticket agencies that sell tickets to A's games.

Ray Krise, the team's director of ticket operations, now decides how many and which tickets should be sold by the independent outlets. The A's then send those batches of tickets to the agencies to log ticket numbers into their own computer systems and begin selling from their allocation. "There is a human interface in this process. Maybe someday we will be hooked up directly to the agencies," says Bob Staaterman. The idea here is not to eliminate human interaction but to make the ticket operation quicker and more efficient to satisfy the ticket buyer.

The A's have even given thought to using the HP 3000 to track players' medical records, injuries and treatments. When athletes are injured, reports would be logged on the computer for permanent and transferrable storage rather than on sheets of paper in manila file folders. These records would be transferred from the team doctor in Oakland to the trainer who travels with the A's.

If the doctor had prescribed treatments for many members of the team and at various intervals, it would be easier for the trainer to log-in and look up the day's treatments rather than mull over written records in many folders.

"The idea and application is novel," says Bob, "but our trainer hasn't yet agreed to join the computer age. We'll bring him around gradually." Although the A's have recently tossed some of their razzle-dazzle machines out of the game, they have conceded that computers can be an asset to the team . . . when properly coached. **M**



hp singapore:

The right stuff—
in the right place

SINGAPORE TOURIST PROMOTION BOARD

The Changi Airport tells you right away that your preconceptions about Singapore—based on myths and movies of bygone eras—are way off. It is magnificent—the most beautiful in the world, according to some travel writers.

The taxi ride into the city does nothing to dispel a feeling that maybe you're in the wrong place. Could this be the swampy equatorial island city founded by Sir Stamford Raffles in 1819? The town of sailors and sinners written about by Conrad, Maugham, Kipling and Coward? The site of the Raffles hotel with its Long Bar and rows of overhead electric fans whirring endlessly in the heat? The city of rug and basket merchants, spicy odors and sounds of the abacus calculating the last sale?

The taxi takes you along clean, landscaped boulevards, past scores of high-rise apartments and construction projects, over sculptured bridges and through tree-lined avenues of modern shops, offices and hotels. The huge harbor—third largest and second busiest port in the world—is a parking lot for hundreds of tankers and container vessels.

Still, some traces of the old colonial Singapore can be seen—between apartment buildings, in small parks filled with dozens of food vendors, the gardens and courtyards of the old Raffles hotel across the street from the giant Raffles City under construction, trishaws hauling tourists about, brightly colored temples and old forts on hillsides.

The taxi driver is also a tour guide and commentator. He approves of the way most things are going in Singapore. He says it's safe. It's clean. The economy is sound. Employment is very high. Population growth is under control. Industry is doing well with considerable support from the government. He has just one complaint: The government takes a lot of the fun and excitement out of television and movies by banning scenes of violence and displays of lively affection.

PEOPLE WANTED

Then he drives you to a five-storied building set rather tightly on a 4.5-acre lot. It's Sunday, so the place is closed. A sign tells you there are vacancies for production operators, three shifts open from Monday through Friday, generous benefits (including air conditioning, free tea-coffee-and-snacks, subsidized cafeteria meals, fashionable uniforms, and attractive pay increments twice a year), special bonuses for attendance and third-shift work, excellent recreation and social programs, and—newest of all—cash profit sharing. The logo identifies the owner as Hewlett-Packard Singapore (Pty) Ltd.

Before he lets you off at your hotel the driver tries to make a deal to serve as your guide and chauffeur while in Singapore. "Anywhere, anytime," he suggests. You explain that your hosts have already taken care of those matters. A very typical HP arrangement.

Indeed, your HP hosts have laid out a fairly strenuous schedule. Early enough next morning you start in the personnel department. Manager Wong Kan Seng and public relations/personnel administrator Low Suat Kheam brief you on the itinerary, the organization and its programs. After some confusion you learn that their first names, in strict Chinese tradition, are Kan Seng and Kheam. You hear that the managing director, Walt Sousa, is out of town—which means far away—so you'll hear the HP Singapore story from the other people there.

Among the "big picture" things that you learn: HPSG has slightly more than 2,500 employees in manufacturing; construction will add 300,000 square feet of work space late in 1985 for a total of half a million; the organization started in 1970 with the stringing of core memories for computers, followed soon after by HP 35 calculators; prod-

uct lines (all transfers to date) now include HP 41C calculators, optoelectronic packages, integrated-circuit packages, keyboards for the HP 150, ThinkJet printers, data cartridges and floppy-disc drive boards; total quality control and automation programs are in full swing; a strong relationship with the government of Singapore has developed in such areas as productivity and computerization.

You ask about the charge that the country's relatively low wage rate is the big magnet for attracting overseas manufacturers to set up shop in Singapore. 'Relatively' is a relative term, you learn. The city state is somewhere in the middle on the scale of international wage rates—and rising. Sure, through the '60s and early '70s the goal of government planning was to absorb the island's then-abundant supply of unemployed and untrained people. Labor-intensive employers were welcomed. But by the mid-'70s the situation had changed to one of labor shortages, substantial gains in skill levels and increasing incentives for manufacturing more advanced and value-added products. Low-tech has given way to at least mid-tech, and now is clearly moving into high-tech—with HP in the lead.

SINGAPORE TOURIST PROMOTION BOARD

Chinese stiltwalkers lead a colorful parade through Singapore's streets. High-rise at right is typical of hundreds of subsidized apartments that replace much of the city's older housing.

THE ROAD TO HIGH-TECH

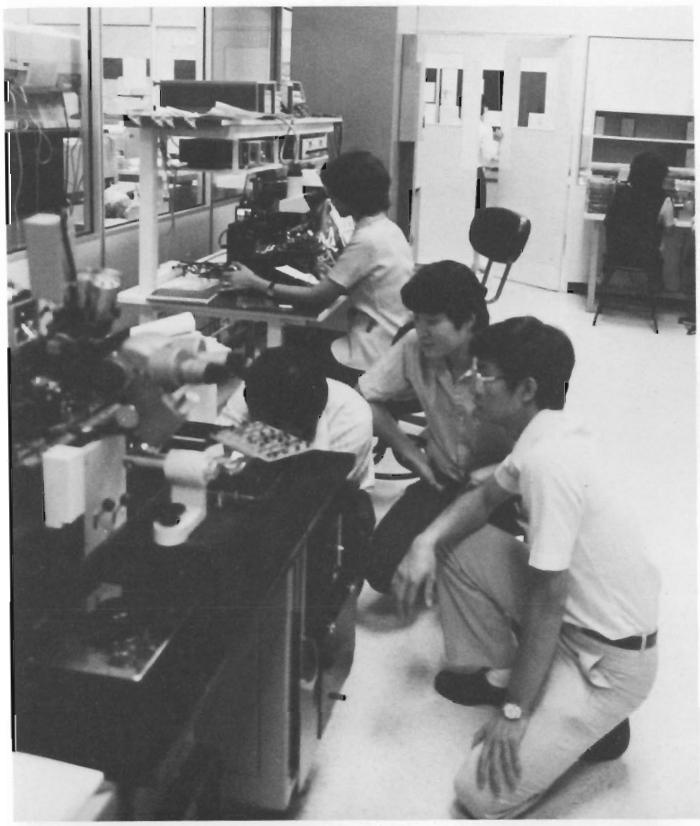
HP Singapore has been in the forefront of those changes, as you soon see for yourself. Manufacturing activities in particular reflect this trend.

On the fourth floor of HPSG, assembly of the so-called "Delco line" of optoelectronic products for General Motors' car radios is rapidly being automated. Replacing some of the rows of operators working manually through individual microscopes, new machines with microprocessor controls have begun to take on the many tasks of pattern recognition. What's more, the machines can work around the clock except for some brief "lunch-break" maintenance. Result: a three-fold increase in productivity since 1980. While the machines get some of the credit for that, HPSG manufacturing test and automation engineers came up with a lot of the innovations. Further savings result from the lower failure rates experienced as well as reductions in operator training time from four months to four weeks. And do the operators enjoy the change? Absolutely. There's more responsibility now and less manual effort.

Personal Computation-Singapore has similar stories to tell. Especially the 41C calculator line which uses—right!—a series of 41Cs for real-time process control. The system goes "toot" whenever anything is off test—product or process—and tells what the problem is. In effect, it's a big step toward a "paperless" factory.

Integrated Circuits-Singapore is aiming at saving more than U.S. $3 million this year versus 1983 through a combination of automation, material sourcing and total quality control. Thian Nie Khian, who heads ICS on behalf of both the Corvallis and Cupertino IC operations, tells you about one effort: As a result of a course in machine characterization taught at HPSG by a University of Singapore professor, HPSG engineers have been able to reduce the defect rate in one operation—the de-resin machine—from 6 to 0 percent. The same lesson is now being applied to other areas.

A five-minute drive from the main building, past an Indian temple and an abandoned ammunition storage dump, you come to the Red Hill (*Bukit Merah* in Malay) annex. Here some 150 HPSG people assemble HP data cartridges, and load and test PC boards for floppy-disc drives. Although some vestiges of labor-intensive assembly methods still show, they are quickly being overtaken



HPSG

Members of the Crystal Circle quality team discuss their new project after winning the 1983 title as Singapore's "QCC circle of the year."

HPSG

HPSG engineers check a new automated system that speeds and improves processing of optoelectronic products.

by automation, most of it through the efforts of the local HP people. Next phase, promises production manager Paul Ow, will connect all of the various stages of automation. Thanks to growth and training, there will be plenty of work left for everyone.

Downtown, at the National Productivity Board (NPB), you're given a broader perspective of what those kinds of things mean to Singapore, and where this Manhattan-sized country hopes to go with them down the road.

NPB's Koh Juan Kiat tells you about his organization's changing focus: Originally set up to counter the high unemployment rate, it then began to promote higher value-added work as the key to sustained growth. Quality circles in industry have been an important element in that program. Now NPB has its sights set on spreading the gospel of total quality control as Singapore moves upmarket in the new era of computers and automation.

Several HPSG people have had active roles in this process. Walt Sousa, for example, has chaired a subcommittee on manufacturing productivity. A number of the 180 people in the HP Singapore sales organization are active in various industry organizations (a report on the Far East sales region will appear in *Measure* later this year). Among quality circle competitions sponsored last year by NPB, HPSG teams won top honors in several categories—outstanding QCC company, QC circle of the year (the Crystal Circle) and two employees were adjudged "outstanding facilitators." Hurrah for the Crystal Circle!

Back at the main plant—the first HP facility to have escalators—you take a last look around. People are busy, absorbed, friendly. It's easy to feel right at home. You wonder if you've overlooked something important. Probably. But Changi Airport, besides being great looking, is also efficient. Planes leave on time. Off you go, taking what little is left of your preconceptions. It's just not like the "good old days" anymore—anywhere. Especially in Singapore. **M**

LION AT THE CROSSROADS

Words such as "strategic" and "gateway" come to mind when considering Singapore's location. A more graphic description might be "elbow of the East" because it sits at the base of the great Asian land mass and the juncture of the Pacific and Indian oceans.

That would explain a good deal of Singapore's historic importance to trade and travel in the region. But today it goes well beyond that. The island republic is also one of the key players in a huge new market that stretches from the northern tip of Japan to the southern tip of New Zealand as well as to many other points east and west.

Stretched out along this so-called "Pacific Rim" is a pride of Asian "lions" — South Korea, Taiwan, Hong Kong, Malaysia and Singapore—all eager and intent on gaining bigger and better shares in regional and world markets for the products of technology.

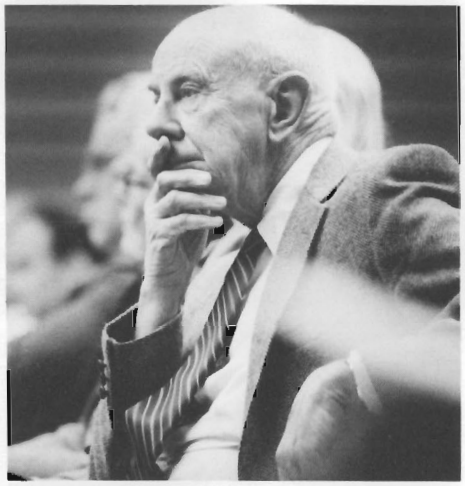
Singapore, which translates as the "Lion City," sees its future as that of a regional "brain" center for such industries as software and computers.

PHOTOS BY SHARON HALL

Dave Packard (left) checks an agenda item with Jack Brigham during this year's annual shareholders meeting, which was held February 28 in Cupertino, California.

John Young reports to shareholders on the board of directors' business trip to the Far East in September 1983.

HP shareholders sign in at the annual meeting. Their names are checked against a listing of shareholders of record.



Ray Wilbur, who retired from HP in 1978 as human resources vice president, regularly attends the company's shareholder meetings.

Annual meeting attracts shareholders, friends

It happens every year on the last Tuesday in February. A few hundred HP people gather at a designated time and place for about an hour to transact a bit of official company business. But as John Young, HP president and chief executive officer, says, "It's more like an extended family function than an official meeting when we get together."

The event is the company's annual meeting of shareholders, held this year at the Computer Systems Division in Cupertino, California. Required by law, the meeting is called by the company to elect a board of directors, appoint an independent accountant and act on any other proposals offered by HP management or by shareholders themselves. It also is an opportunity for shareowners to meet face-to-face with John, HP Chairman Dave Packard, Vice Chairman Bill Hewlett and other top executives.

Stockholders do not have to attend the meeting to vote. Most cast their ballots by proxy after reading the meeting notice sent out in January by Corporate Secretary Jack Brigham. They indicate their vote on the proxy card and return it, authorizing Jack, Dave and Bill to cast the votes in the shareholders' absence.

While some companies brace for hostile questions from disgruntled stockholders who do attend the meeting, HP warmly greets retired employees, their husbands or wives, and a host of old friends.

"It's a good opportunity to see so many people who have worked here at one time or another and friends from around the community who come by to hear our report," says John, whose presentation on the past year's operating results is a portion of the meeting. **M**

Avoiding employment ups and downs

Through the years HP has been fortunate to have had smooth, steady growth in its work force despite the bumps in U.S. employment.

The 1930s marked the era of the Great Depression in the U.S.—with idle factories, 10 straight years of 10-percent-plus unemployment and the nation's economy in shambles. That period made a lasting impression on HP co-founders Bill Hewlett and Dave Packard—an impression which later found its way into the management style of their company.

"It is important to remember that both Dave and I were products of the Great Depression," explains Bill. "We had observed its effects on all sides, and it could not help but influence our decision on how a company should be run. We did not want to run a hire-and-fire operation, but rather a company built on a loyal, dedicated work force."

That concept, called job security in the corporate objectives (see box), has stayed with the company since the outset. HP's efforts to keep regular employees working has been maintained despite serious problems caused by economic downswings, new technologies (which often means retraining for new careers), product shifts and even major restructuring of the company.

It's an admirable track record, particularly when today's newspaper headlines talk of plant closings, salary cuts, layoffs and high unemployment.

What's HP's secret?

In part, it's commitment. "We have a stated corporate objective of providing employment security," says Pete Peterson, personnel manager of HP's Instruments Groups. "When we hire people, we hire with the idea that they will have a career with the Hewlett-Packard Company, depending, of course, on performance.

"If suddenly we don't have the need for a certain job classification that we did in the past, we don't lay those people off, leaving the problem behind us. That's just not the way we manage."

Instead, HP tries to meet such employment problems with innovative solutions. For example, a business slowdown in 1971 caught the whole company (as well as the rest of the industry) with too many people and not enough work. While many companies chose massive layoffs to bring things into balance, HP initiated the nine-day fortnight. HP employees worked nine days out of every 10, and everyone got 90 percent of his or her regular salary. Six months later, everyone was back to full-time work.

HP has also kept its work force in balance over the years by limiting its hiring, either on a companywide basis or selectively as needed.

Changing technologies have had an effect on the skills the company needs in its employees.

"Job security is an important HP objective. Over the years, the company has achieved a steady growth in employment by consistently developing good new products, and by avoiding the type of contract business that requires hiring many people, then terminating them when the contract expires. The company wants HP people to have stable, long-term careers—dependent, of course, upon satisfactory job performance."

—From HP's fifth corporate objective

"A few years back we saw a large number of technicians on production lines, trouble-shooting, repairing and calibrating instruments," explains Pete. "There was tremendous concern by the electronics industry that schools would not be able to produce enough technicians to meet the needs of the future.

"The word spread, and soon everyone and his brother and aunt was going to night school to become an electronic technician. Technological advances since then have automated the testing process and resulted in products capable of self-testing. Today, there aren't nearly as many opportunities at HP for newly trained technicians."

Last year, at the Computer Systems Division in Cupertino, California, production workers whose jobs would slowly be phased out were encouraged to join an engineer traineeship program designed to develop hourly workers for engineering positions.

The process of automating one operation at Cupertino's Data Systems Division will require about 20 fewer production people than before. A six-month retraining program to give them the necessary skills to become administrative support workers got its start in January of this year. Instructors from a nearby junior college held afternoon classes at HP for the 21 program participants.

"Every single employee, every supervisor and every manager must assume the primary responsibility within themselves to prepare for the future," says Pete. "If retraining is needed, then employees should talk to their supervisors, their personnel departments and anyone else who can give advice. Employees should take the initiative to obtain whatever training is necessary for the future."

"Historically we've done a good job of looking at how much direct labor goes into manufacturing our products," says Denise Smith-Hams of the corporate staffing department. "But we haven't looked at the special sets of skills we've needed within that labor component. That's why we've got these retraining programs in place, and why we have to do a better job of planning in the future."

In March 1983 HP faced a different problem. Due to product shifts, particularly in the Computers and Components groups, some divisions had too many workers, while others had an abundance of job openings requiring those same skills. A special Redistribution of the Work Force program helped find new jobs for about 350 employees from 10 affected entities. The cost to the company of moving those employees from site to site was more than $1 million.

"We've learned quite a bit about the subject of people planning in the last year," says Denise. "Having the right skills in the right place has been a problem. This has led to efforts to retrain in some instances and, in others, efforts to relocate. We have been unable to rely solely upon HP's growth to provide new or even continuing opportunities for our existing work force."

To combat that, people planning is receiving more attention in the personnel community today. All HP divisions in the U.S. have submitted a long-term people plan as part of their 1984 intermediate range plans (IRPs). There's also work underway on a computer-based people-planning system that will accurately inventory the company's current work force and will tie directly to the annual targeting process.

With such planning tools in place, HP will be in a better position to continue to meet its corporate objective about stable employment.

Throughout the personnel community, people are quick to point out the subtle differences between such terms as "job security," "lifetime employment" and "employment security."

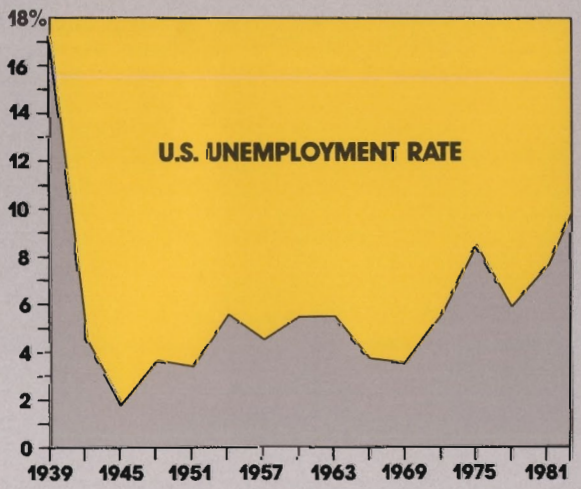
"Sometimes people use the term 'job security' mistakenly," says Pete. "They often infer that if they accept a position with HP, they have a particular job and are secure in that job forever."

Lifetime employment, as touted in articles about Japanese management practices, implies continued employment with little regard for job performance. By contrast, HP's commitment to employees is tied directly to continued, satisfactory job performance.

The best way to describe HP's practice is with "employment security based on performance." "Assuming HP employees continue to do a good job in whatever job they have, the company will continue to make every effort to ensure that they will always have a job at HP," says Pete, "though it may not be the job for which they were hired.

"HP people have known since the start of the company that change is inevitable in our kind of business. In a growth industry, change is often rapid. None of us can have total certainty in what we'll be doing tomorrow.

"I have complete confidence that HP people will continue to be flexible enough to change along with their company and the industry—to help shape their own destinies." **M**



In the 45 years since HP was founded, U.S. unemployment rates have varied widely. In the same time, company employment has grown steadily from two employees in 1939 to more than 74,000 (worldwide) today.

CLOSEUP

Zooms in on the ever-changing world of HP people, products and places.

DIETER SCHRANKLER

KEEP ON TRUCKIN'?

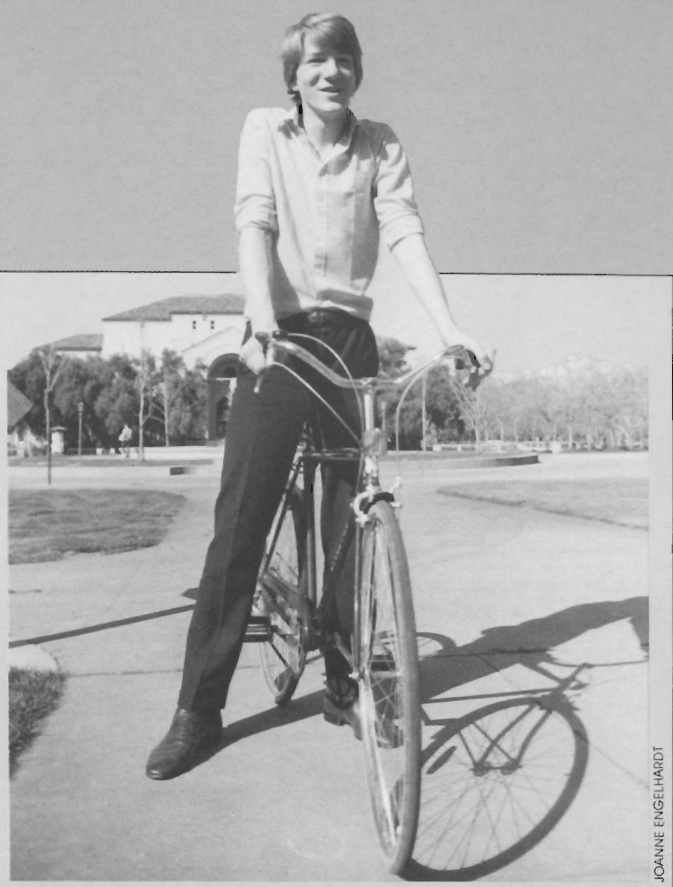
Trucks are an efficient way to move all HP goods around Europe—until truckers go on strike.

On Tuesday, February 21, striking French truckers blocked that country's main routes and HP's computer facility in Grenoble, France, faced a pile-up of shipments just as month-end was coming. At the same time, Italian customs officials had their own go-slow campaign that tied up thousands of trucks at the border.

To the rescue: a contingency plan worked out with European Traffic to airlift freight to Frankfurt, Germany, for redistribution to 14 European HP sales locations by truck or air as necessary. Since the Grenoble plant manufactures HP 150s, HP 1000s, terminals and replacement printed-circuit boards for the European market, delivery was critical. Two Hercules airplanes were chartered and readied at the Grenoble airport.

Beginning Wednesday night, a team at HP Grenoble began loading 10 small rented vans that could shuttle between the plant and the airport on country roads that were still open. Necessary paperwork was rushed through for some 1,300 boxes. The first loaded plane took off for Frankfurt Friday morning, with Victor Diasferia and Pierre Bignardi from the factory along to help with the unloading. The second plane followed that evening, and reshipment of the 25 tons of French-made products took place over the weekend due to the heroic efforts of HP Frankfurt's traffic department and the freight forwarder.

A *tour de force!*



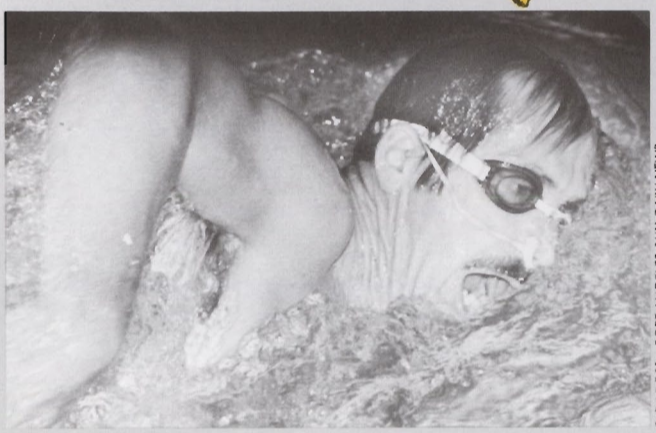
JOANNE ENGELHARDT

PEDALING HIS KNOWLEDGE

Seventeen-year-old Sven Olaf Loschen never imagined that studying computer programming in Germany would lead to a bicycle tour of Stanford University.

Sven Olaf won an HP Hamburg-sponsored computer contest for German students between the ages of 12 and 18. He competed against nine other finalists chosen from a pool of 600 students who correctly answered every quiz question printed in the *Hamburger Abendblatt*, the co-sponsoring newspaper. Michael Schweer, a reporter from the paper, accompanied Sven Olaf.

During their week in California, the pair visited HP's computer divisions in Cupertino, saw Silicon Valley sights, spent two days in San Francisco and toured Stanford University on bicycles. Sven Olaf hopes to study at Stanford soon.



RICK ROSS—PORT ANGELES (WA) DAILY NEWS

MAN OF STEEL . . . ER, IRON

Why would anyone enter Hawaii's famous Iron Man Triathalon—a 2.4-mile ocean swim, a 112-mile bike ride and a 26.2-mile (marathon) run?

Dick Shores, product assurance manager at Lake Stevens Instrument Division, says "The 12 months of training reestablished my confidence. I realized I could do anything I put my mind to."

Dick trained five hours a day during the week and more on weekends. At age 41, he competed in the Iron Man's master's category. He hoped to complete last October's race in under 12 hours.

"I peaked too early," he says. His finish time: 13 hours, 14 minutes to finish 30th in his class.

Dick feels his year of training taught him a lot about himself. "I manage my time much more effectively and can now handle a bigger workload with less stress."

Will he ever enter the Iron Man again? "I've thought about it," he grins. "Once every five years."

RON GEDRIS

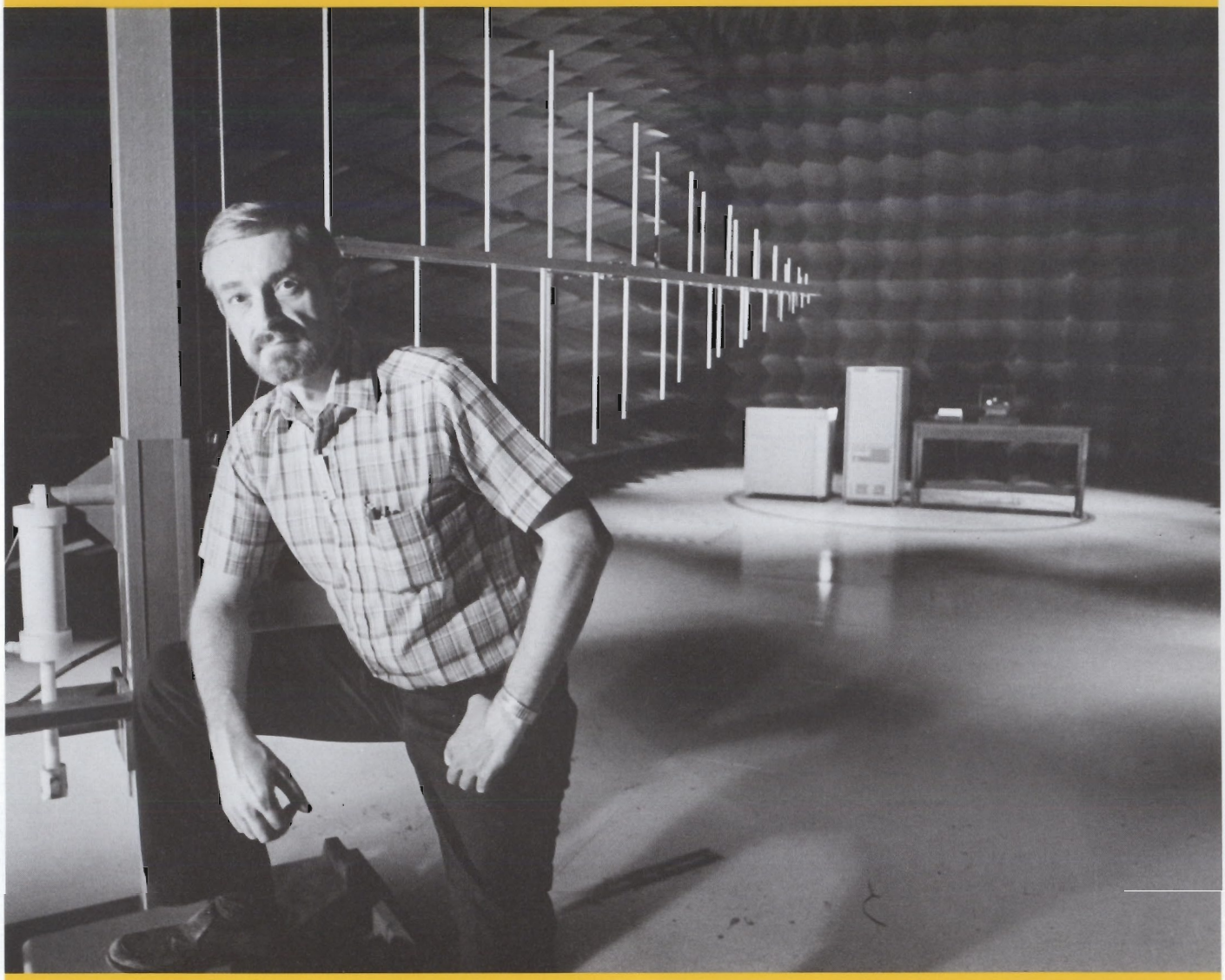
AND THAT'S THE WAY IT IS

Veteran CBS newsman Walter Cronkite came to HP to learn how automation is changing the company. He and his crew are working on a television program that will examine the impact of high technology and international competition on American industry. At the Personal Office Computer Division in Sunnyvale, California, HP's Gary La Rochelle (left) and Lee Rhodes (center) show Walter a printed circuit board for the HP 150. The program will air sometime this summer.

GOING FOR BAROQUE

As a distinguished door-opener to sales contacts throughout Europe, three newly released classical records have the Hewlett-Packard name discreetly printed on their album jackets. They feature works by Mendelssohn, Debussy and Honegger. A fourth and final record will introduce new electronic works by composer and mathematician Iannis Xenakis, who has HP equipment in his CEMAMu studio in Paris. HP has dedicated its Interfaces Collection to the 100th anniversary of the birth of the Swiss conductor Ernest Ansermet.

The records have already been promoted with concerts for 1,500 customers and high-level prospects in Geneva and for 1,200 more in Paris. The collection was developed by HPSA Public Affairs and will be available in stores on the Erato label.



PHOTOS BY SHARON HALL

DSD's Charlie Sallberg uses sensitive antenna arrays to detect stray electromagnetic signals in this echo-free chamber.

If there's something in the air that shouldn't be there, this man can find it.

In HP's new semi-anechoic chamber, Charlie Sallberg and his associates will test new Computer Groups products to make sure they don't emit unwanted signals.

Jim Murray, Charlie Sallberg and Richard Barbin wheel a new HP computer product into the anechoic chamber for EMI testing.

The anechoic chamber's control room is packed with HP test equipment.

If you've ever tried to watch a television disrupted by a nearby citizen's band radio, you've seen the effects of electromagnetic interference, otherwise known as EMI.

Computers and their related peripherals can be the source of some of those invisible signals. And those same computer systems can be just as susceptible to stray EMI signals as your home television set.

Fortunately there are regulations that put limits on EMI. HP meets those rules by insisting that all new HP Computer Groups' products and systems must meet the EMI levels established by VDE and FCC.

VDE stands for Verband Deutscher Electrotekniker, the West German test house that looks for EMI. FCC stands for the Federal Communications Commission, the EMI regulatory authority in the U.S. Their relatively new, tougher regulations (and the accompanying testing methods required to verify performance) are forcing computer companies such as HP to intensify their EMI testing.

HP's desire to simplify and automate the procedure has helped create a new home for EMI testing. A multi-million-dollar, state-of-the-art, semi-anechoic chamber is nearing completion at HP's Cupertino, California, site.

"Two years ago, if you'd used the term 'EMI' in conversation with some of our division management teams you would have received some blank stares," says Steve Baldwin, product regulations manager for the Computer Groups. "But an October 1983 deadline that required every HP computer product, new and old, to meet FCC regulations got everyone's attention."

Today all HP computers and systems must pass the VDE and FCC requirements as well as two dozen more safety, data-communication, acoustic and ergonomic regulations before being added to the company's price list. There are more than 70 people in the computer divisions working full time to make sure the company complies with those regulations.

Before the new facility in Cupertino was built, most EMI testing had been performed on open ranges—a vacant field on HP property or, in some cases, the flat roof of an HP building.

"Outdoor testing is much like trying to measure the light from a candle in broad daylight," says Charlie Sallberg, the DSD EMI engineer in charge of the new chamber.

Even after the chamber's inauguration, the dozen outdoor ranges will

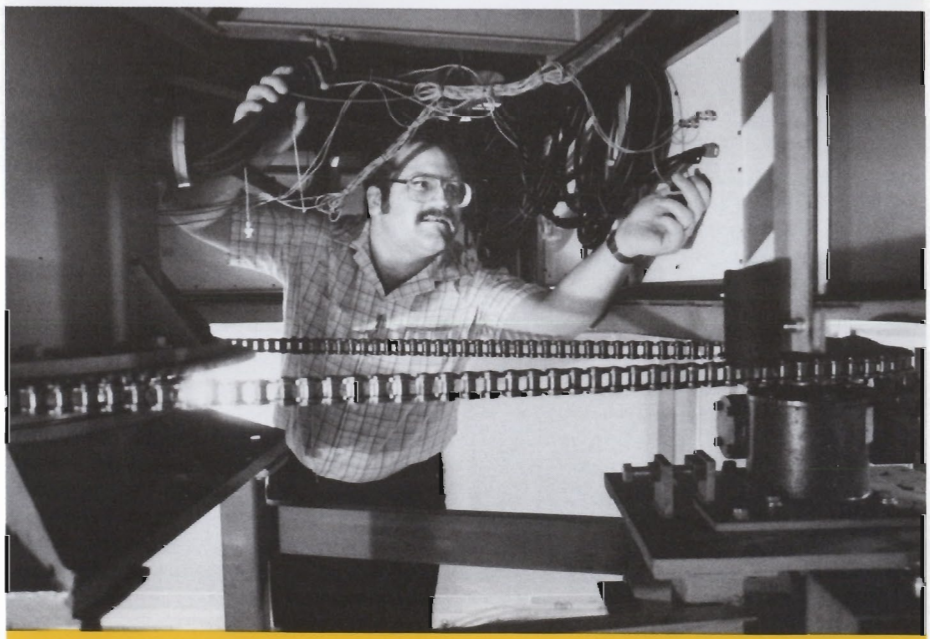
PHOTOS BY SHARON HALL

Richard Barbin can watch products undergoing EMI testing on a closed-circuit television monitor (upper left).

remain open for component and preliminary testing.

The new facility (see box on page 5) will improve the reliability of test results and will speed the testing process through automation. Individual tests will be performed 10 times faster in the chamber using an HP computer system in the adjacent control room. The system will control an array of signal generators, spectrum analyzers, test receivers and programmable antennas, and will position the chamber's 12-foot turntable.

Because much of the test gear is manufactured by HP, the chamber may become a showplace for customers interested in similar test facilities. "We may have as many visitors to this place as we have products being tested," says Charlie. **M**



John Reynolds climbs down into the equipment pit under the 12-foot turntable to make electrical connections for the products which will be tested.

THE BUILDING WITHIN A BUILDING

Inside the shell of the concrete-block building in Cupertino, California, stands a steel chamber that's "as solid as a battleship," according to Data Systems Division's Charlie Sallberg. The EMI engineer in charge of the chamber says the construction techniques for the new testing facility could have come from any shipbuilding yard.

Giant plates of steel, up to ⅜-inch thick, have been welded together to form the walls, floor and ceiling of the room. There's enough steel in the 70 x 34 x 27-foot room to build a small yacht. This steel box shields the interior from the noisy electronic world outside.

On the inside of the box, nearly 2,000 six-foot-long pyramids of carbon-loaded foam line the walls and ceiling like the sharp teeth of some carniverous beast. The foam absorbers are there to soak up electronic echoes so they can't bounce around inside the steel box and distort test results.

"The welded steel room is designed to prevent the normal electronic signals in the outside world—radio, TV, CB radios and the like—from being detected by the sensitive antennas and receivers we use to measure low-level signals emitted by computers under test," says Charlie.

Besides measuring the signals coming from HP products, the steel chamber will allow HP to subject its products to strong electromagnetic fields to determine whether those products will malfunction. The surrounding steel will prevent these signals from leaking out of the chamber and causing interference to other equipment on the HP site.

Jim Murray and Richard Barbin program an HP computer on the anechoic chamber's turntable. The turntable will spin slowly during the computer-controlled test.

YOUR TURN

Invites *Measure* readers to comment on matters of importance to HP employees.

January-February *Measure*

PHOTOS BY TOM UPTON

March-April *Measure*

WHO WAS THAT?

I was disappointed with the cover photo on the January-February *Measure*. I recognized Sterling and Mary Jo on the front cover, but when I went to find out who the third person was, there was no mention of him or them as the new users of the machine.

I hope that this was an oversight and not a change in the editorial policy of the publication. I must see 50 monthly publications every month that promote HP products.

Only a few, such as *Measure*, promote the people of HP, however.

TOM BOYER
Palo Alto

Your sharp eyes did spot Sterling Makashima and Mary Jo Blankenship as models for our HP 150 cover shot. The third person is Rob Eidson. All three work in the corporate offices in Palo Alto.

Even though our cover box identified the new computer, we slipped up by omitting the most important part of the caption: the names of the HP people. We'll be more careful in the future.

WE'VE GOT YOU COVERED

Congratulations on the outstanding cover for the March-April issue of *Measure*. It is dynamic, eye-catching and imaginative. Enjoyed the article, too.

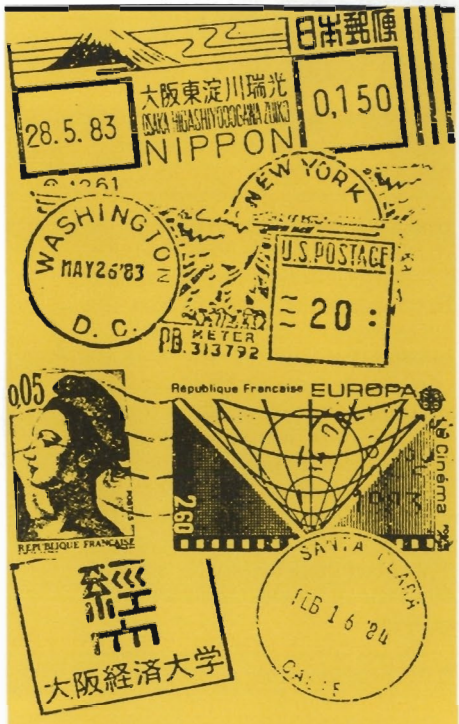
RICK GILBERT
Santa Clara

CRACKING DOWN ON CRACKING SECURITY

"WarGames" was a fitting theme for your computer-security article in the March-April issue. Recent films have focused on an anomaly in the ethical thinking of the computer culture—the distinction between a prank and a crime. In most cases, what is initiated as a prank is really far more serious.

HP's John Doyle made the point in a 1980 speech when he said, "For some reason, 'cracking' a computer's security has for a few become a game. People who would never dream of taking a crowbar to a locked desk take a keyboard to a locked computer with glee." On this subject, HP's position is clear: Unauthorized access of computer files can be grounds for immediate termination.

STAN ROBBINS
Palo Alto



What public issues affect HP people and their jobs? Are there questions you have about company operations? Do you disagree with something you've read in a *Measure* article?

Write! We want you to share your opinions and comments with more than 74,000 other HP employees in Your Turn.

Address letters via company mail to Editor, *Measure*, Public Relations Department, Building 20BR, Palo Alto. Via regular postal service, the address is *Measure*, Hewlett-Packard Company 20BR, PO Box 10301, Palo Alto, CA 94303-0890. Try to limit your letter to 200 words. Please sign your letter and give your location. Names will be withheld on request. Where a response is indicated, the best available company source will be sought.

DAVID POWERS

Arriving at HP's Cupertino site, King Carl XVI Gustaf of Sweden is greeted by Franz Nawratil, Data Systems Division general manager.

KATHLEEN ARCHAMBEAU

The king leans forward intently to watch computer-aided chip design at CICO, explained by Donna Rigali (left) and Peter Cheng.

Swedish king tours company

When King Carl XVI Gustaf of Sweden visited Hewlett-Packard in Palo Alto and Cupertino on March 13 as part of a royal technology mission to the U.S. West Coast, no one was more excited than Carina Barreto of the Neely Santa Clara sales office.

Carina, a Swedish citizen now living in California, was asked to join seven people from the company's computer divisions in giving product demonstrations for the royal party. For her, it was a simple matter to show off an HP 150 with a Swedish keyboard and four software applications in that language.

"I'd never met the king—I was so honored to be asked," Carina says. Since she edits instrument orders on her job rather than giving computer demos, she spent all morning practicing her part. She handled the assignment like a pro, from all accounts, and even coaxed His Majesty into touching the screen.

Others giving HP 150 demos were Enrique Castillo, Henry Gage, Nancy Robison, Ed Tang and John Humphrey. Norb Gotner and Carol Peterman showed off the ThinkJet printer, joined by Thomas Plesse who was visiting from Böblingen. The king was presented a personal computer as a gift.

During their visit to HP the Swedish visitors had lunch at the corporate offices as guests of Bill Hewlett, then were taken on a tour of the computer and integrated-circuit manufacturing site in Cupertino. The Cupertino Integrated Circuits Operation showed the actual computer-aided design of a chip on the company's own EGS-200 workstation.

Cameras clicked as friendly clusters of HP people lined the royal route. But don't mention photographs to Carina Barreto—that's her one disappointment about the occasion. "I asked someone in the delegation to take a picture of the king and me," she says ruefully, "Everyone behind us is in perfect focus but we're a blur." **M**

JOHN YOUNG

HP's president defines his 10 strategic issues for the fiscal year.

SHARON HALL

John Young listens to Dave Packard's comments during the company's annual meeting.

Since one of HP's greatest strengths is our ability to work toward common objectives, you may be interested in some of the goals the company is pursuing this year. At January's annual management meeting, I outlined what I consider to be HP's top 10 strategic issues. I'd like to share them with you. They're not listed in order of importance, nor does space allow a detailed description of each. Nevertheless, I hope this brief overview will be useful to you.

MANAGE WORLDWIDE ENTERPRISE WITH REGARD FOR ECONOMICS AND POLITICS—Being a truly international organization provides a complex set of challenges in today's world environment. Fluctuating currencies and varying stages of general economic health call for different responses in each country. National policies also require thoughtful adaptations. Many countries have designated electronics as a strategic sector with special support for local industry, and we can't take it for granted that HP will have open markets for its products.

This year, we've seen a lot of renewed attention to the visibility and management of our international product lines. We're taking more rigorous measures of our performance, and particularly, we're tracking our worldwide market share in key product lines.

Central to our efforts to increase our worldwide position is the search for ways HP can create value within each country where we are major vendors. If we are just selling within a country, we contribute to its imports, but not to its exports. But when we locate an HP facility and undertake local production—that is, when we add value—HP makes a positive contribution to that country's economy and to our customers. Instead of being part of the problem—rising imports—we become part of the solution. This is the best way for us to ensure that HP products have access to markets around the world. We've taken a number of steps in pursuit of this strategy in the last year, including joint ventures in Mexico, China and Korea.

EMPHASIS ON COST AND QUALITY AS COMPETITIVE ISSUES—I've talked a lot about this strategic objective recently because we've learned from our own experience that improving quality is the best way of decreasing costs. At the beginning of the decade, I announced what could be termed a "stretch" objective—a 90 percent reduction in our field failure rates by 1990. The purpose of this order-of-magnitude goal was to shake up our thinking a bit—to force us to look at our tasks in fresh, new ways.

I think we've made good progress in the product area, with the Instruments Groups leading the way. Now the challenge is to translate the concept of quality into other activities, especially our software, documentation and training manuals. In fact, as we understand more about Total Quality Contol (TQC), we can view all parts of our business as a process. By applying the same techniques that we do to hardware, we'll find dramatic gains possible at every level.

MAKE PRODUCTIVITY IMPROVEMENT PART OF EVERY ACTIVITY—Our success in pursuing this objective will affect the overall flexibility and financial health of HP. Historically, there has been a 10 or 11 percentage point spread between HP's annual growth rates in sales and in employment. Last year, our spread was only half that wide, which means that our productivity in sales per employee was not as competitive as it should be.

So we need to make productivity improvement a goal in every activity. Here again, TQC can be a powerful methodology. One useful approach is to pick out key processes that exist in every division, work aggressively to get defects down and productivity up, and then migrate those examples throughout the organization. Here the challenge is to find ways to duplicate good ideas without reinventing them at each HP division.

DEVELOP MARKETING ORIENTATION—This broad issue includes further developing our skills in distribution, third-party agreements, marketing research, advertising and customer satisfaction. I think we've been pursuing this goal quite aggressively. The HP 150 has served as the driver for much of this activity, and we'll be able to apply our new knowledge to other areas. The learning curve's been steep, but we've climbed it rapidly.

Again, we need to apply what we've learned throughout the corporation. We're hard at work on a training course that will serve as a structured way to communicate these ideas across the organization. This course is scheduled for the second half of 1984. We're also seeing some good results from the recently completed customer-satisfaction program, though sometimes our factories still think it's an issue that is addressed elsewhere. So we'll be continuing to reaffirm the theme that customer satisfaction is everyone's job.

ORGANIZATIONAL ISSUES—These will always exist in a company as large and dynamic as HP. It's a complex subject, dealing mainly with the delicate balance between small, independent work units and the need for coordination of efforts and integration of products. Maintaining that balance is a challenge, but it's one we work at and continue to find new organizational forms to help. It will, however, require that we preserve the strength inherent in the HP way and develop the ability to look beyond the relatively narrow confines of our own work units.

Our field marketing organization requires the same kind of balance. Our present organization along group product lines has been in effect since 1969 and has served us well. However, we need to make sure that our sales focus is on customers and their needs (solution selling), not on products. We're continuing to explore future directions for field sales force coupling, but the plans are not formed at this time. I suspect any changes will be evolutionary and will build on the programs we already have in place.

MANAGE THE TRANSITION TO A COMMON CPU ARCHITECTURE—This is a strategic issue for two reasons. First, an integrated computer architecture increases the efficiency of our own engineering and facilitates the development of our operating systems, networking and data-communications equipment. Secondly, it will enhance our ability to satisfy customers by providing a range of HP products that work well together.

HP Labs has made a great deal of progress toward this strategic goal in the past years, but any more detailed discussion of the project would be premature. HP does not announce products before they are ready for market, and our consistency and conservatism in this area have earned us our reputation for credibility. I'd appreciate your continued support for this basic tenet of the HP way of doing business.

ACHIEVE SUCCESS IN PCs TO MEET OTHER BUSINESS GOALS—I've phrased this strategic issue this way to highlight the fact that the personal-computing market is neither an end in itself nor anything really new for HP. Personal computing is a logical continuation of our technological history—the ongoing improvement in the price and performance of computing and its resultant integration into the workplace where it's needed.

We helped pioneer workstations for engineers in the late 1960s with the HP 9100. We also led the development of distributed computing with the introduction of the HP 3000 minicomputer in the mid-1970s. This decade will increasingly see the evolution of information tools to personal products. By these means we will help meet our stated business purpose, which is outlined in the third corporate objective as "to enable our customers—business and technical decision makers—to gain ready access to essential information."

DEVELOP AND EXECUTE A NETWORK STRATEGY TO PROVIDE A COMPETITIVE ADVANTAGE—This is a highly complex and technical subject, but its purpose can be stated quite simply. We want to provide our customers with transparent access to the vital information of the firm. The usefulness of information tools is no better than the timeliness and availability of relevant information. Customers shouldn't be concerned about the location of that information in the system or what physical link is bringing it to them. There are many difficult unsolved problems here where we can make a needed contribution.

BUILD CAPABILITY TO DESIGN/SELL/SUPPORT SOLUTIONS—This strategic issue again reflects the fact that our customers aren't just interested in buying hardware. They're looking for solutions to their business problems, and providing those answers requires a whole range of integrated activities. With the wide variety of customers we serve, providing them with solutions is one of the biggest challenges we face.

We need to understand the customer's problem even more thoroughly than in the past. In addition to equipment, we must supply applications that are easy to use, well-documented and easily understood. Also needed is the capability to help implement our solutions, train customers and answer phone-in questions. Our Applications Marketing Divsion is a big step forward in the delivery of our many software solutions. Helping customers achieve better results is our unifying purpose, and we'll be continuing the search for new and better ways to accomplish this fundamental goal.

PEOPLE—In a company with HP's character, people will continue to be a strategic concern, and there are always new aspects of the issue to be addressed. This year I would highlight our growing need to train and retrain our people and develop new skills and emphases throughout a large, complex and decentralized organization.

Retraining isn't an issue that's confined to the older basic industries. New technologies, productivity improvements and changing manufacturing strategies require that we make massive investments in people. So, too, do companywide programs like emphasizing Total Quality Control and a marketing orientation.

There's one last thing we need to do as we invest in developing HP people. The HP way must not be lost is the shuffle. For that reason, I've asked our training people to include this subject in every kind of training course, so that we continually restate and reaffirm the values for which we stand. Only by resting on that solid foundation can we pursue any of our strategic issues with success.

NEWSCLIPS

Recaps the newsworthy events, changes and achievements within HP.

FIRST QUARTER FY84

Hewlett-Packard Company reported a 21 percent increase in sales and a 12 percent increase in net earnings for the first quarter of its 1984 fiscal year ended January 31.

Sales totaled $1.278 billion, compared with $1.055 billion for the corresponding quarter of FY83. Net earnings amounted to $95 million, equal to 37 cents per share on approximately 256 million shares of common stock outstanding compared with net earnings of $85 million or 34 cents per share on approximately 252 million shares for the same quarter in FY83. (Prior-year amounts have been restated to reflect the company's 2-for-1 stock split in August 1983.) Incoming orders for the quarter were $1.477 billion, up 31 percent over orders of $1.127 billion during the first quarter of FY83.

CHART CHANGES

Sales, support and field-related marketing activities in the European computer organization have been consolidated under **Franz Nawratil** in the newly created position of GM, Computer Marketing Group – Europe. **Heiner Blaesser** becomes GM of a newly formed Computer Support Division – Europe, which oversees European CEO and SEO organizations and related activities . . . . **Mario Fontana** is now GM of HP Switzerland and **Marius Furst** is GM of HP South Africa . . . . **Fred Schwettmann** has been named operations manager of the Corvallis Components Operation within the Computer Integrated Circuits Division . . . . **Bill Johnson** is operations manager of the Personal Computer Distribution Operation in the Personal Computer Group.

BOARD OF DIRECTORS

The annual shareholders meeting of Hewlett-Packard Company, held in Cupertino, California, on Feb. 28, marked the retirement of four long-time directors and the election of a new director, **Paul F. Miller Jr.** He is co-founder and senior partner of the investment management firm of Miller, Anderson and Sherrerd in Philadelphia, Pennsylvania.

Retiring from the board were **Ed van Bronkhorst**, who retired from the company at the end of February as senior vice president, treasurer and chief financial officer; and outside directors **Luis W. Alvarez, George F. Bennett**, and **Robert Minge Brown**.

NOTEWORTHY

King Carl XVI Gustaf of Sweden and a delegation of Swedish industry executives visited HP's corporate offices and Cupertino site on March 13 (see p. 21) . . . . HP ranks 75th in the Fortune 500 ranking of the largest U.S. industrial companies based on 1983 sales, up from 81st last year. Results appear in the April 30, 1984, issue of the magazine . . . . HP is listed among "The 100 Best Companies to Work for in America," a new book by Robert Levering, Milton Moskowitz and Michael Katz.

CANADIAN OPERATION

In Canada, HP has obtained an option to buy 25 acres of land in Waterloo, Ontario, which if purchased will be developed for a future permanent site for the Panacom Operation. **Chuck Bonza** has been named general manager of the operation. Its reporting relationship has changed from the Business Development Group to the Loveland Instrument Division within the Electronic Measurements Group.

NEW PRODUCTS

Introductions from the San Diego Division include the fast HP 7550A graphics plotter with automatic cut-sheet paper feed and the HP 7090A measurement plotting system that combines an HP-IB programmable plotter and recorder in one instrument to offer recording, plotting and computing . . . . The compact ThinkJet personal printer from the Personal Printer Operation uses ink-jet technology to put characters and graphics on paper by spraying ink from holes in a printhead. Price is $495 (U.S.); internal order number is HP 2225.

Colorado Telecommunications Division's HP 4951A protocol analyzer weighs only 14 pounds for portability in field service. Among other uses, it simulates a CPU, modem, terminal or group of terminals for partial testing of a network without shutting down the whole system . . . . From the same division: the HP 4937A transmission-impairment measurement set (TIMS) which allows a user to simulate a phone company's central office to see if a network is working properly.

Three new introductions are based on HP 9000 Series 200 desktops: the Scientific Instruments Division now uses those controllers with its award-winning mass-selective detector to provide enhanced performance in the HP 5970B. SID's new HP 5995C bench gas-chromatograph/mass-spectrometer is also based on the same desktops. The New Jersey Division's HP 6944S Series 200 multiprogrammer system is directly connected to a Series 200 (rather than via HP-IB) to provide for even faster operation.

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