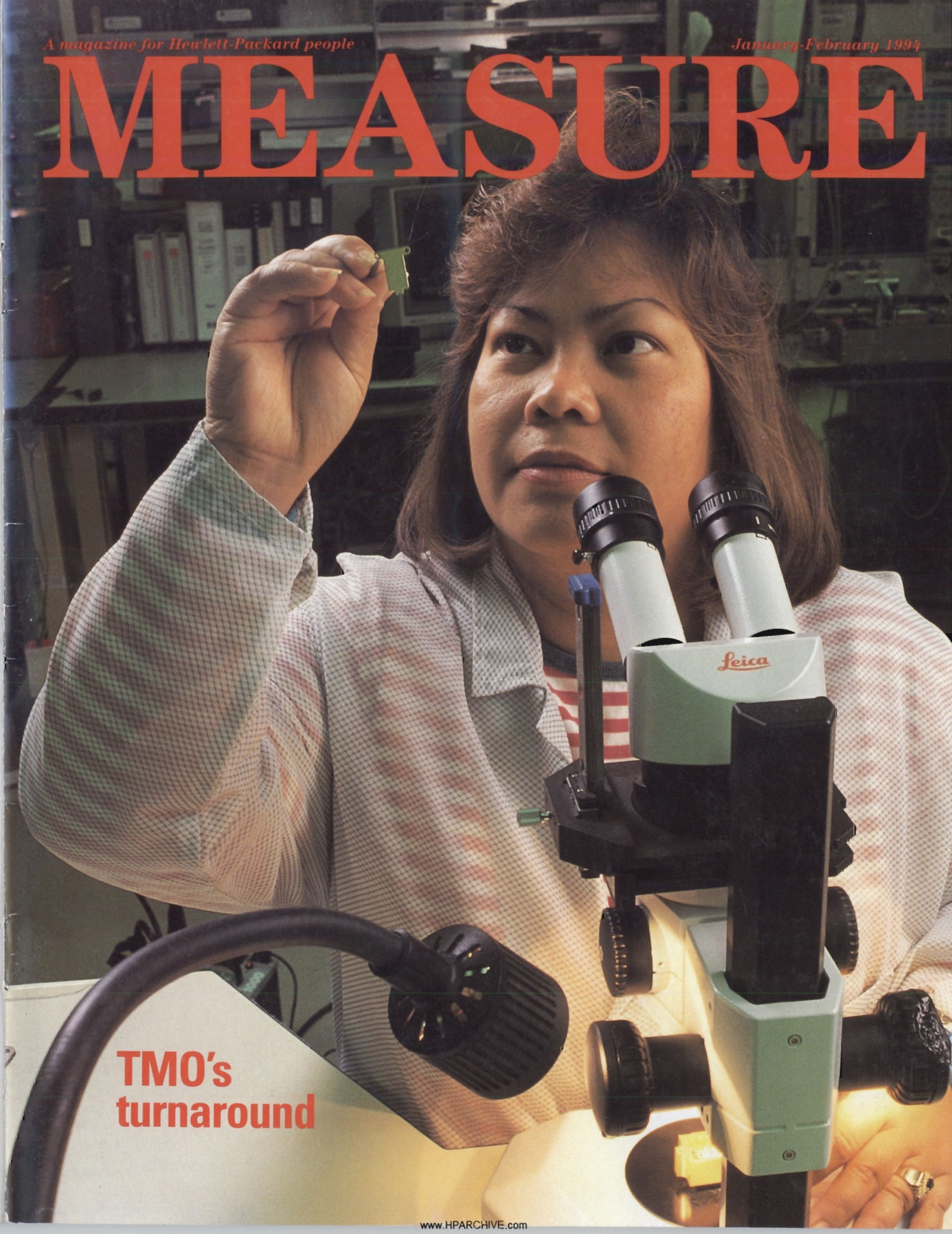
A magazine for Hewlett-Packard people

January-February 1994

MEASURE



TMO's turnaround

IN THIS ISSUE

This issue launches the 31st year of *MEASURE* publication. And we hope that the content reflects the current state of HP.

There's no more timely topic than change, so we begin with an examination of the Test and Measurement Organization's incredible turnaround. HP's oldest business, which depended largely on the defense industry, has undergone an impressive metamorphosis. Once "stodgy," as one employee described it, today it's pursuing the explosive telecommunications and multimedia markets.

This issue also reports on the results of two general managers' task forces, which examined two items of employee interest: the perceived loss of the HP way and—an irritating source to some—forced relative ranking.

We repeat our popular look at new products during the past year in "To market, to market," and highlight one product that typifies HP's global nature.

Next come two stories that probe drug testing: the role HP equipment plays in detecting drug use, and a debate on pre-employment drug testing by two employees.

The varied use of HP products also surfaces in "The Palmtop Nutritionist," an application story about the HP 95LX palmtop computer, and "Another roadside attraction?" which provides an inside report on Biosphere 2, the scientific experiment in the Arizona desert, which some experts claim yielded more fiction than science.

And Chairman, President and CEO Lew Platt unveils the first winners of the President's Quality Award—HP's version of the Malcolm Baldrige National Quality Awards.

There's one significant change in the January-February issue of *MEASURE* that should delight dozens of readers. Because we get our U.S. mailing labels from the master Personnel data base, if you work for HP in the United States, you automatically get a copy of *MEASURE*. For married couples who both work for HP, that means they each get a copy. Several employees have written or called to complain about this duplication.

So, starting now, a new computer program will generate only one mailing label per household, and the copy goes to the person whose name comes first alphabetically.

Of course, computer programs being what they are, if you list your address with Personnel as 100 Walnut Avenue and your spouse lists it as 100 Walnut Ave., you'll still get two copies. You can correct that with your Personnel department.

If you each want your own copy of *MEASURE*—roommates sharing an apartment, for example—contact us and we'll put you on a separate mailing list.

We hope we're providing the kind of employee magazine you want—both in content and delivery.

If you have suggestions for stories or other improvements, please let us know.

Jay Coleman
MEASURE editor

On the cover: Product/process assistant Angie Hagle works on a microcircuit for an HP network analyzer at the microelectronics center in Rohnert Park, California. Photo by Ken Kobre.

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FEATURES

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Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems recognized for excellence in quality and support. HP employs 96,200 people worldwide and had revenue of $20.3 billion in its 1993 fiscal year.

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The transformation of TMO

New customers, new products and new ways to do business propel HP's oldest organization on a fast track for change.

By Jeff Weber

It's no fairy tale. HP's Test and Measurement Organization (TMO), which had gone from riches to rags in recent years, is back on the road to prosperity again and is poised to reclaim its title as HP's "crown jewel organization."

Indeed, there are strong indications that TMO is again deserving of such lofty status. HP's oldest business has basically re-invented itself to capitalize on new opportunities in fast-growing areas such as communications.

And the results are promising.

While most of its major competitors are struggling to break even in a difficult economic environment, TMO grew by 4 percent in fiscal year 1993. And in the fourth quarter of 1993, TMO was HP's most profitable organization.

"Best of all," says Chairman, President and CEO Lew Platt, "when you talk to the people in TMO, there's a renewed sense of enthusiasm."

Not long ago, "enthusiasm" wouldn't have been the word to describe the atmosphere in TMO. "Apprehension" might have been more like it—or even "despair." In late 1989 and early 1990, TMO's business and profits started declining sharply. Worldwide spending on TMO's mainstay—defense and aerospace—was shrinking, and the organization was struggling to offset the decrease in orders.

The future didn't look particularly bright for any of the three major parts of TMO—the Electronic Instruments Group (EIG), the Microwave and Communications Group (MCG) or the Communications Test Business Unit (CTBU).

At the point when TMO's business appeared ready to go into a freefall, Ned Barnholt was named vice president and

general manager of the organization. (He has since been named a senior vice president.)

After studying the issues facing TMO, Ned came to two conclusions. On one hand, TMO was being buffeted by fluctuating business cycles. But more importantly, the organization was encountering profound changes in its customer base, in the kinds of products customers wanted to buy, and in the way TMO needed to conduct business to be successful.

Several factors were contributing to TMO's problems. A large amount of R&D spending wasn't paying off. The sales force wasn't always able to respond to customers' needs. And overall, the organization's size was not in sync with the level of business.

"We looked at all of that and decided we needed to change a few things to put our business on track again," Ned says.

One of the first decisions was a series of organizational changes in late 1991 and early 1992. "The changes allowed our divisions to focus more on key growth opportunities," says Ned. "We targeted the communications industry because it's going to be a major driver in the electronics business of the '90s."

The organizational changes helped TMO adapt to new paradigms and to target promising growth opportunities. In MCG, for instance, the Spokane Division refocused on wireless communications, a new lightwave organization was formed to concentrate on fiber optics, and the old Stanford Park Division was transformed into the Video Communications Division to concentrate on the explosive video and multimedia markets.

After the changes, Ned visited a number of divisions to get a first-hand view of the progress in TMO's transformation. It was an eye-opening experience. Says Ned, "I concluded there was more to change than reorganizing —we needed to take a deeper look at our organization and bring about even more profound change."

At the TMO general managers' meeting in September 1992, Ned talked about the need to build customer-focused organizations that are flexible enough to respond to changes in TMO's markets. He also talked about the importance of leadership to transform TMO.

"I felt it had become a survival issue for TMO," Ned says. "Our business had undergone fundamental changes, and we needed leadership to take us in new directions."

An HP research project headed by Susan Curtis, a specialist in organizational change, found that the company's senior managers had strong management skills—not necessarily strong leadership skills.

Ned told the general managers that they needed to lead change, not just manage it. "Managers are good at

KEN KOBRE

HP assemblers at MCG's microelectronics center in Rohnert Park, California, manufacture component parts that go into test and measurement instruments.

managing an ongoing business," he says, "but leaders build businesses."

At that same meeting, the general managers identified major impediments to change at TMO. The feedback was open, honest and emotional. For Ned, it was also depressing. "It sounded like lots of things were broken, and we needed to make even further changes in our organization and strategies to be successful."

But that dialogue—now known within TMO as "speaking the unspeakable"—proved to be a watershed in getting issues on the table and moving forward. A general managers' task force was assembled to identify TMO's key problem areas and benchmark best practices at HP's successful Computer Products Organization (CPO), as well as at other companies.

Task force members visited CPO facilities in Boise, Idaho, and were impressed with what they saw. "CPO is focused on what it takes to be successful," says Duane Hartley, G.M. of the Microwave Instruments Division and a member of the task force.

"Despite their success, they live in fear that success can go away very quickly."

"Despite their success, they live every day in fear that success can go away very quickly. They are highly motivated to maintain an obsessive focus on customer needs, as well as what the competition is doing."

The general managers' task force came away from Boise with many good ideas. The organization needed to work on several areas, including clarifying its strategy to win and improving leadership skills and key management processes. The task force also found room for improvement in TMO's decision-making process and in the way it handled accountability. As a result of the general managers' task force, the organization launched Project TMO—a set of principles, techniques and processes designed to help TMO succeed in an environment of rapid change.

MICHEL BLANC

TMO isn't stodgy any more, says Roberto Favaretto (right), G.M. of TMO's European Field Operations, here talking with colleague Tansel Ozyar.

The linchpin of Project TMO is the concept of visionary leadership. One problem identified by the task force was that TMO spent far too much time focusing on internal processes. "We weren't always focused on our markets and customers," says Ned. "With visionary leadership, we spend a lot more time in the market and with customers. Essentially, we build our whole culture around customers."

Visionary leadership starts with "scanning"—a thorough investigation of current and potential markets. In a technique known as scenario planning, information gathered through scanning is analyzed to determine if it could lead to successful new business initiatives. Carried out effectively, the process creates an environment encouraging change and risk-taking—exactly what TMO needed.

"In the late '80s and early '90s, we had run out of big ideas," Ned says. "We were doing evolutions of previous product lines. We weren't moving in new directions. We needed to break away and look at new opportunities from a fresh point of view."

Today, TMO is overflowing with new opportunities. A growing proportion of the organization is implementing many of the processes outlined in Project TMO, and the results are impressive. Nearly every division has adopted major new business initiatives. "We've gone from not knowing what to do to not having enough resources to do as much as we'd like," Ned says.

"Who would have thought stodgy old TMO would be in the multimedia business?"

Limited resources, coupled with an industrywide trend to focus on core competencies and outsourcing, have prompted some creative—and successful—solutions for TMO: partnerships, alliances, acquisitions and opportunistic organizational structures.

The reorganization of MCG, for example, shifted all of the group's traditional general-purpose test-and-measurement instruments into the Microwave Instruments Division (MID), freeing other divisions to focus on new opportunities in what MCG General Manager Dick Anderson calls a "communications revolution"—the convergence of computers, communications and consumer electronics.

So far, it looks like a shrewd decision. MID enjoyed a strong performance in 1993, and new product initiatives at the Spokane and

Video Communications divisions have greatly exceeded expectations.

Growth also is anticipated in two other relatively new product areas: fiber optics and systems solutions.

Another trend in the '90s—cross-divisional cooperation—is exemplified in EIG's alliance with Ford Motor Company. Nearly half of EIG's entities are involved in providing systems to design, manufacture and test sophisticated electronic networks in Ford vehicles. This teamwork helped EIG double its automotive business in one year, and G.M. Tom Vos believes there are many more opportunities in the auto industry.

But time is of the essence.

"Many of these situations have finite windows, often less than five years," Tom says. "We've found ways to team up, rather than reorganize, to take advantage of opportunities."

So has CTBU, which is organized in a series of small R&D and marketing entrepreneurial units. CTBU prides itself on working closely with customers to find solutions. In one case, CTBU actually rented a competitor's product and loaned it to a customer until HP could provide a superior product. In turn, the customer worked with CTBU to develop test equipment for a new telecommunications system that transmits voice, video, data and images.

"It's an exciting time to work in TMO because there's so much dynamism..."

"We were first to market with that kind of test equipment, and now we have the major share of that market," says CTBU G.M. Byron Anderson, whose organization achieved dramatic growth in 1993. "It's an example of the power of good customer connections."

RENEE LYNN

"We've gone from not knowing what to do to not having enough resources to do as much as we'd like," says Ned Barnholt, senior vice president and TMO general manager.

Another factor in TMO's turnaround involves new manufacturing processes and consolidations, which have dramatically improved order fulfillment and product competitiveness.

While there have been notable success stories, Ned is quick to point out that Project TMO is "work in process." Several follow-up task forces are working on issues connected with TMO's management process, people and culture, decision-making and leadership.

"One important thing about Project TMO is the tremendous amount of learning going on among the general managers and everyone else involved," Ned says. "This collective learning is absolutely essential—and never-ending. As soon as we think we've got it figured out, something else will change."

Nimbleness wasn't previously TMO's hallmark. "Who would have thought stodgy old TMO would be in the multimedia business?" says Roberto Favaretto, G.M. of TMO's European Field Operations. "One of the complaints from the sales force was that the communications market was moving fast—but TMO wasn't fast enough with new products. I don't hear that complaint today."

A key challenge is making sure the principles of Project TMO are clearly understood throughout the organization. "As we drive change further in TMO, everyone must be involved," Ned says. "Our people have tremendous insight; they want to participate in building a successful organization."

From Roberto's perspective, it's only a matter of time before employees are as enthusiastic as senior managers about TMO's transformation. "It's an exciting time to work in TMO because there's so much dynamism in the way we're looking at market opportunities. TMO is fun again."

The luster's back on HP's crown jewel. **M**

(Jeff Weber is a senior communications representative for HP in Sonoma County, California.—Editor)

Teaching an old dog new tricks

By Cornelia Bayley

A long-time test and measurement veteran reflects on the organization and the challenging and sometimes "terrifying" move to a new field.

Remember the Sputnik satellite? The Russians launched it in the fall of 1957—the year before John Minck started working at HP. John remembers during his job interview talking with Barney Oliver (who was then V.P. for Research and Development) about Sputnik and its signal Doppler effect. HP engineers had helped Stanford Research Institute (SRI) use the Doppler effect to find the slant range of the satellite and to determine how high it was in the sky.

"I was doing okay discussing the Doppler effect, but pretty soon I was in over my head. Barney smiled at me and said, 'I think I'll have you talk to somebody in marketing' and that's how I started in marketing at HP."

"If we meet quota, I'll jump in that pool next year!"

With a master's degree in engineering administration from Stanford, John became marketing manager of the Microwave Division in Palo Alto, California, in 1964, which evolved into the Stanford Park Division (SPD).

John remembers an HP holiday party in 1964. There was a sprinkling of snow on the ground. The sales quota for 1965 had been set aggressively high—20 percent higher than the three previous no-growth years.

John recalls, "We were looking at the snow around the swimming pool, and I said, 'If we meet quota, I'll jump in that pool next year!' We had some great new products that year—including HP's first spectrum analyzer—and we hit 27 percent growth. Of course, everyone reminded me of my promise."

John rented an old-fashioned striped swimsuit with long legs, donned a stocking cap and gloves and jumped into the pool. Says John, "John Young was on the other side of the pool with a hot toddy for me when I got out. Those were fun times."

"John Young was the G.M. and he brought in professional management ideas. He introduced the processes for setting up product planning and real marketing procedures. We all felt the Microwave Division was the top division, the most professional division," he says.

The division grew rapidly in those early years and split off businesses about every 10 years. "In 1970, about half of the division went to Santa Rosa, California. What was left at SPD grew and in 1980 another half split off to become the Spokane (Washington) Division. In 1990, another operation, Microwave Test Accessories, also went to Santa Rosa.

"I call the Microwave Division the mother division," says John, "because even though it was only one of the four charter divisions, it was the division that brought in professional management ideas and spawned so many other divisions."

More recently, John has been part of another change, the end of his old home in SPD and the beginning of the

new Video Communications Division (VID), currently in Santa Clara, California.

The transition from SPD to VID caused a lot of turmoil for people—personally and professionally.

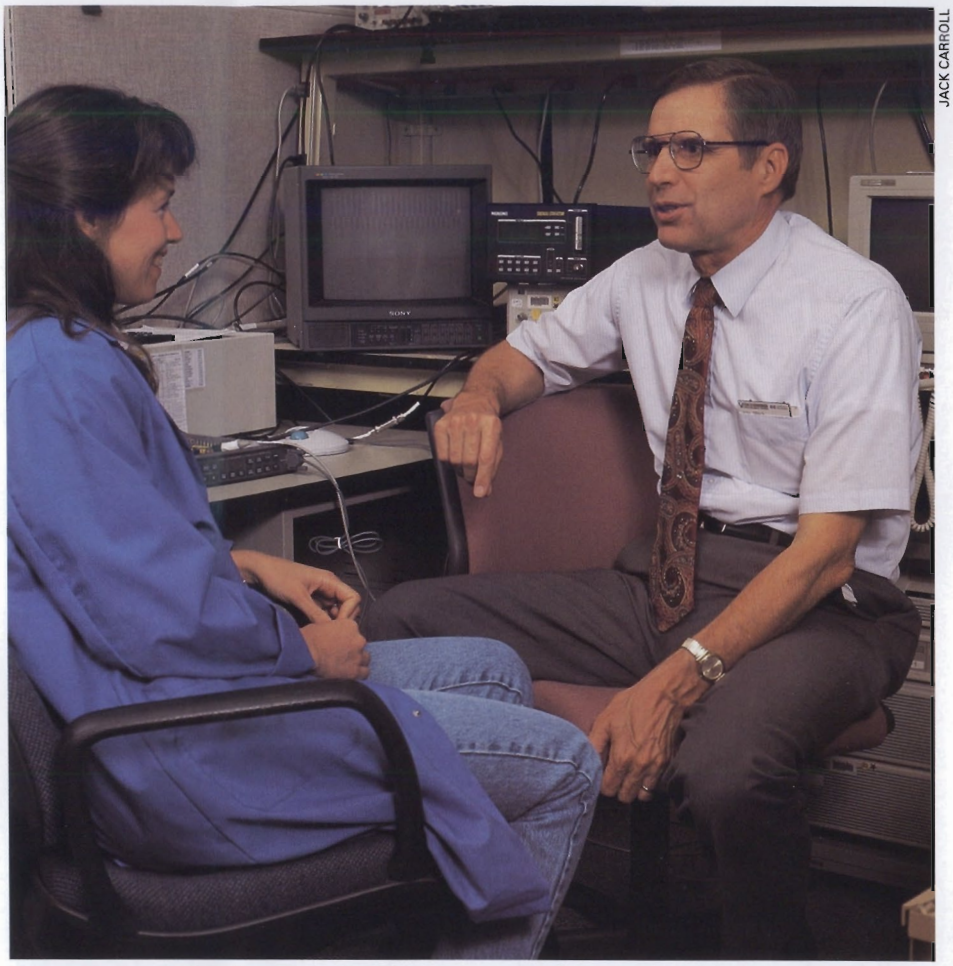
"I was troubled because I wasn't sure that somebody like myself with so many years in just the microwave line—and I'm an older man—I worried whether I could change my spots," admits John, who is now VID's marcom manager.

One of the first stages of the change was transferring SPD products to other divisions. This was especially hard because many of the products were brand new and highly successful.

"These were great products, and we sent them away. It hurt—even though it was the right thing to do. Like true soldiers, we just got together and started sending all the drawings and photographs and a few people, and away they went," says John.

VID's charter is to design and manufacture professional equipment for video applications in production and post-production studios, as well as broadcast and cable transmission operations. To learn about the video market in 1992, VID people traveled to hundreds of customer sites and companies where they spent time watching how the production studios operated and observing the video studio environment.

"There were so many things to do and so many things we weren't sure of."



JACK CARROLL

John Minck, who has been an outspoken proponent of women in management, talks here with Kaaren Marquez, a production manager for the Video Communications Division.

"They did the best market research job I've ever seen in all my years at HP," says John. "It's called 'BMFO,' building market-focused organizations."

There was something happening technologically just as HP entered the video market—video was changing from analog to digital technology.

The timing of this change gave HP an advantage. We had competencies that competitors didn't have and couldn't get very fast. John says, "It gave us that once-in-a-lifetime opportunity to move in during that transition, and launched us into the professional video studio business."

What did it feel like, entering this new field? "Terrifying," says John. "There were so many things to do and so many things we weren't sure of. Everybody was running 100 miles an hour."

Coming from a division that led the market to a market in which HP is an unknown was another challenge. "Success gives you a lot of confidence, and our customers loved our microwave products—they didn't know HP for video test equipment. We have a whole brand recognition image to build up, which we're starting to do."

Having been through so many HP transitions, John continues to be optimistic about HP's future: "I'm totally in Joel Birnbaum's court with the MC^2 idea. We have the tools around this company to do a smashing job meeting that vision of the future of communications!" **M**

Employer of choice?

By Mary Anne Easley

What is HP doing to keep and attract top talent? For starters, improving its ranking system and revitalizing the HP way.

To reassert HP's leadership as an "employer of choice" is one of Chairman, President and CEO Lew Platt's three Hoshin goals for 1994.

Lew plans to measure progress toward that goal by monitoring Employee Survey results. Until last year, Employee Survey scores had been declining and no longer exceeded industry norms in a few categories.

"We need to reassert our position as the best place to work in order to keep today's talented and committed employees," he says, "and to continue to attract the best candidates." HP's Employee Survey, begun in 1989, continually measures employees' satisfaction with HP. Before that, the company used an outside consultant to conduct two surveys—called Open Line—in 1979 and 1985. But HP needed feedback more frequently and from employees around the world.

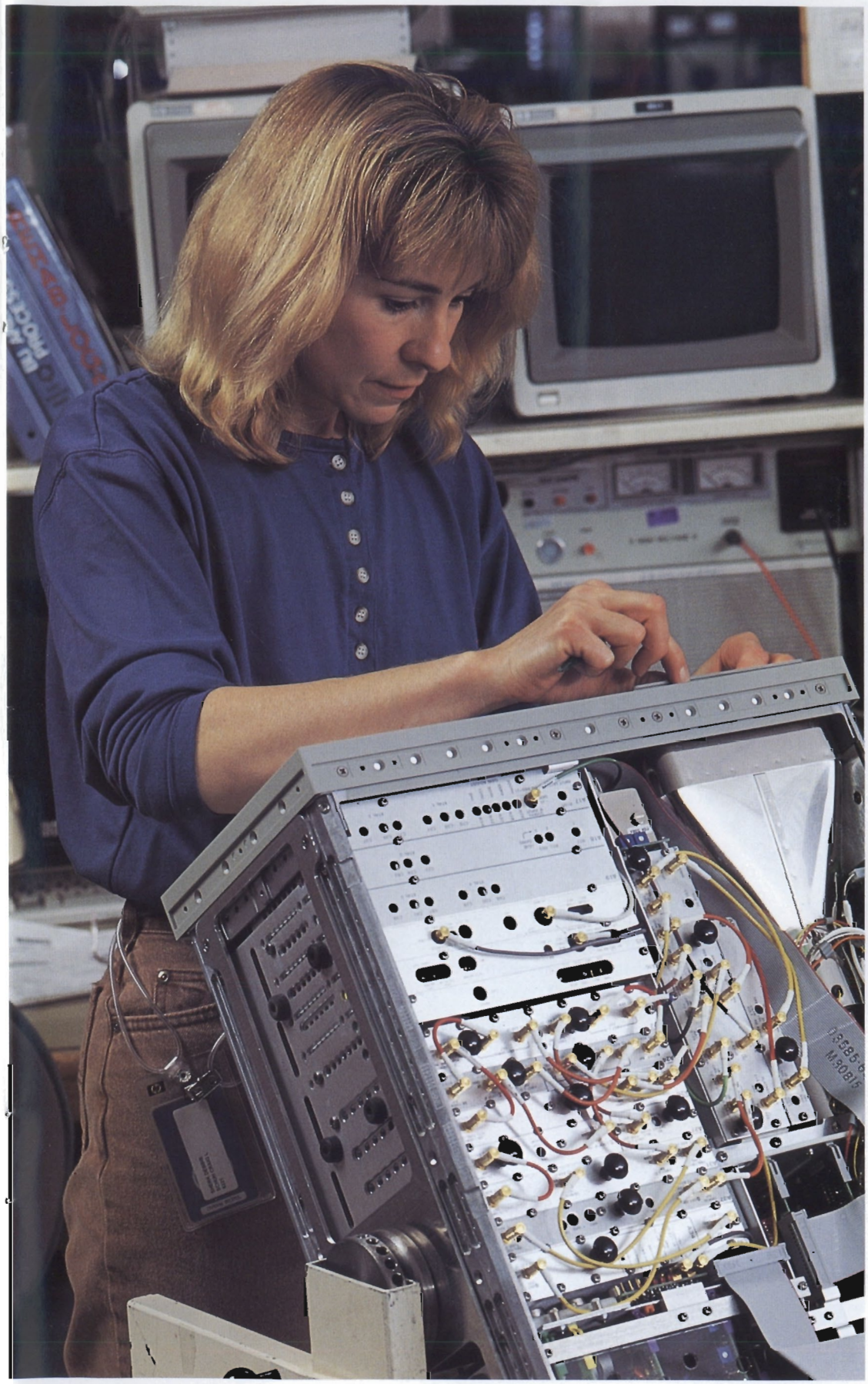
Today's survey—no longer administered by an outside consultant but by Corporate Personnel—measures employees' opinions and attitudes in 13 categories, including pay, benefits, communication, and entity and corporate management. At first optional, it has been required since 1992. Conducted in each division, sales region or country at least every two years, the survey is a way to continuously monitor whether HP employees think HP is an employer of choice.

To see how HP stacks up, Employee Survey results are compared with those of other companies, including companies in the electronics industry. Outside the United States, data is compared with high-tech industry norms and with country norms.

Survey data is different for each entity and is made available only to employees in that entity, to group and sector management, and to Lew. A few issues, though, keep coming up at locations around the world. Here *MEASURE* reports on two issues of special concern to employees.

"I support your efforts to promote the HP way," Craig Porter, a software engineer in the Professional Services Division, told Lew in an HP Desk message. While most employees didn't send personal notes to Lew, many talked about the erosion of the HP way and still more were just thinking it. Results of Employee Surveys conducted around the world showed the same disappointment and frustration. Employees were concerned that the HP way was eroding and a special task force appointed in 1991 by then-CEO John Young recommended to Lew in his first months as CEO that he focus attention on revitalizing the HP way. That task force, led by John Weidert, G.M. of Integrated Systems Division in Sunnyvale, California, was composed of general managers representing HP's various businesses and geographies.

The Weidert task force was one of two that John Young appointed after he'd asked general managers to identify two or three issues from their



JOHN GALLAGHER

Debbie Sherk of Lake Stevens (Washington) Instrument Division's manufacturing department says of the HP way, "I think it's coming back. I'm seeing more managers become focused on making sure more people, especially direct-labor people, are feeling comfortable with the HP way."

Choice?

recent Employee Surveys that needed top management attention.

Of the issues they chose, one—pay and performance—was deemed so large as to need its own task force, and Larry Cattran, Analytical Product Group's U.S. factories operations manager, was named to lead it. John Wiedert and his group addressed the remaining issues, including the HP way, several organizational issues under the heading "corporate management" and development.

"Every member of our task force is earnest about improving HP as a place to work," says John. "We weren't selected because our divisions have the best scores."

They consolidated a dozen or so issues into five categories, determined probable causes of the problems and recommended solutions.

HP is losing its "human touch," they said. Because of business pressures, downsizing, speeded up product development and the growing complexity of the company, we've lost sight of the HP way. They recommended that all levels of management renew attention to the HP way and practice it.

In response to employee complaints that managers "sugar coat" bad news, they recommended more open, honest communication.

As to the organizational issues, they recommended the following solutions: hold managers more accountable for results; inform employees about the company's strategic vision so they can better understand frequent organizational changes; emphasize teamwork and cooperation across businesses; and better focus on fewer areas that are critical to the company, especially as the rate of change accelerates.

Part way through the process, task force members validated what they'd done so far. They tried out their ideas on people in their organizations.

"We knew we were right in the nerve stream of HP," says John. "People gave us good feedback and we modified our plan as a result. At my own division, I had two meetings with employees. I had great support from people. They could have talked all day."

Lew is taking these recommendations seriously, rekindling the HP way and asking all employees—especially managers—to pay attention to it. In his first year as CEO, he's managed by wandering around the world, and by example, listening to employees, talking about the HP way, encouraging teamwork, and "telling it like it is," avoiding putting a happy face on serious problems.

What is it that irritates employees most about HP's ranking system? Ask just about anyone and you'll get one or both of the following responses:

"Forced relative ranking."

"Being ranked by managers who don't know me."

In recent years, many entities have "forced" a designated percentage of employees into each of the five performance bands. In order to compare employees' performance with others who perform similar jobs, managers participated in cross-functional ranking sessions, often comparing the

The ranking system's new guidelines

	Performance Rank Band (PRB)		Distribution guidelines
Maximum pay	PRB5	Top performers	10-15% (15% absolute maximum)
	PRB4		80-90% (distribution within band is managed by supervisor and direct management chain)
	PRB3		
	PRB2		
Minimum pay	PRB1	Improvement needed	0-5%

The Weidert task force recommended:

- Renew attention to the HP way and practice it.
- Managers should communicate openly, honestly.
- Hold managers more accountable for results.
- Better inform employees about HP's strategic vision.
- Emphasize teamwork and cooperation across businesses.
- Better focus efforts and resources in the face of accelerating change.

performance of people in their own group with others they did not know. Both practices rankled employees and left many managers refusing to accept responsibility for the result.

The task force that dealt with the issue, led by Larry Cattran, accepted a tough assignment.

"We talked to lots of people in trying to understand all aspects of this issue, inside HP and at several other admired companies," says Larry. He says that while they found many people dissatisfied with ranking, HP people—almost without exception—share some basic beliefs: that pay should be based on performance; that people perform differently and those differences can be categorized; and that HP's pay system must remain competitive (in other words, we have to pay enough to attract and keep talented people, but we can't afford to pay more than the market leaders).

The task force that dealt with the issue (of ranking) accepted a tough assignment.

"Since we believe in pay for performance, there must be some way to differentiate performance. After looking at many alternatives, we finally concluded that a ranking system is still needed, but our current one needs some modifications."

HP will retain its five-band ranking system, but now allows managers much more flexibility in the three middle bands (see box on page 12). The only companywide guidelines will be in the top and bottom bands. They require that no more that 10 to 15 percent of employees be ranked in the top band and that 0 to 5 percent be ranked in the bottom band.

BING-DA LIN

David Lee (left, with Grace Lo and Willy Shih) of the Taiwan Customer Escalation Center thinks the ranking process is right for HP in today's competitive business environment, but he adds, "Communication between a manager and employee is very important to make the ranking process successful."

The other major change: cross-functional ranking sessions are no longer required. Instead, managers—with the approval of their management—will rank their direct reports based on how well they meet job expectations and performance objectives.

"I wish I could say ranking distributions will never be forced again," says Pete Peterson, vice president of Personnel. "But if overall pay is too far under or too far over the competitive market, managers may have to use them to make adjustments."

These two changes—allowing more flexibility in the middle bands and allowing direct management ranking to replace cross-functional ranking meetings—effectively eliminate what irritates employees most.

"Of course, this doesn't mean every employee will now be ranked higher," says Pete, adding that with flexibility comes more responsibility at each entity for managing overall salaries relative to the competitive market.

"This is not a perfect system," Larry admits. "In fact, from polling other companies, our task force learned there is no perfect pay system."

"I had great support from people. They could have talked all day."

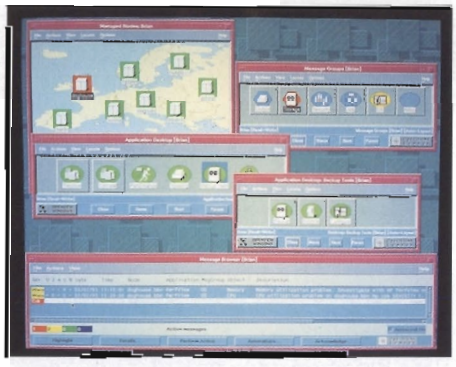
However, adds Pete, "I believe these changes take into account employees' concerns with the ranking process and our business need to ensure that HP's pay is competitive." **M**

To market, to market

Looking back at the tough economic and competitive environment of 1993, HP Chairman, President and CEO Lew Platt said order and revenue growth indicated "we've successfully swum upstream—a very pleasing result and a testament to the effectiveness of our new-product programs." Here's a sampler of the year's new products:

The HP 3D Capillary Electrophoresis system uses a different technique for separating compounds than HP's other analytical systems. Fully automated, it incorporates a new high-sensitivity diode-array detector designed for on-capillary detection. HP Extended Light Path Capillaries provide triple the usual sensitivity. Low levels of impurities in biological macromolecules and compounds (such as amino acids, vitamins and pesticides) can be analyzed.

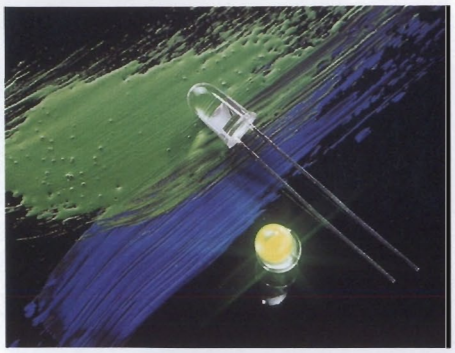
The HP OmniBook 425 is HP's first 486-based superportable personal computer, with almost a 50 percent improvement in performance over the 386-based HP OmniBook 300 introduced earlier in the year. The new model is the lightest 486-based portable PC with a full-sized keyboard.



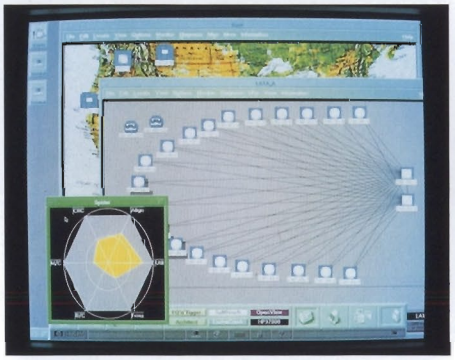
The HP OpenView Operations Center broadens the market-leading OpenView network-management software platform to include systems management. With it, such tasks as software distribution, backup, print-spooling and performance monitoring can be done remotely, giving the IT staff centralized control over its distributed multivendor client/server network.

The HP ENVIZEX family of X stations is the industry's first complete multimedia X terminal family. It offers audio support, local scanner support and an internal floppy drive so users can make the maximum use of collaborative multimedia software applications such as HP MPower.

The HP DeskJet 1200C and 1200C/PS printers, already recipients of several awards, are inkjet office printers with full-color graphics capability. Both print high-quality black text (600 x 300 dots-per-inch in high-quality mode) at laser speed (up to 7 pages per minute). Both printers are optimized for plain paper printing.



The HLMA-CP00 greenish-yellow lamp expands HP's high-brightness light-emitting diode lamp line. The AlInGaP LED lamp produces 1,000-millicandela typical intensity when operating at 20-mA current—more visible light than an equivalent incandescent lamp with the same electrical input, and ideal for outdoor use, such as moving message panels.



The HP SS7 signaling network-monitoring system provides telephone companies and carriers with real-time information that serves as an early warning of developing trouble. Completely independent of existing network equipment, it operates during network overloads or failures—collecting data on problems and diagnosing their cause.

The HP VidJet Pro print manager uses new imaging technology to capture, organize, analyze and archive video information from any source and print it on plain paper or transparencies, using most HP printers. Its market is professional broadcast engineers; a version for home users will follow.

The HP 75000 broadband series test system for the development and testing of ATM and broadband ISDN (B-ISDN) networks is the first product of its kind. A new and comprehensive approach to testing, it meets the needs of designers who are challenged with high-speed and new complex broadband network services.

The HP 83000 F330t digital IC test system is HP's entry into the digital IC production-test market. New software makes it possible to set up tests in two to three days that could take up to several weeks on conventional systems. It is designed to help manufacturers of high-performance devices ship quality parts less expensively.

Other 1993 products of note: HP LaserJet 4L and 4ML printers, first to conserve energy when not in use, and HP LaserJet 4Si and 4SiI MX printers... HP Vectra 486 PCs with built-in networking capability and infrared technology...HP Optiva 95R remanufactured toner cartridge...HP NetServer LM series...HP JetDirect EX external network interface...HP 100LX palmtop PC...Corporate Business Servers with the industry's highest on-line transaction processing (OLTP)...HP Dashboard 2.0 for Windows...HP Trapezoidal Linear Array transducer...HP ChemServer 4900 network-server family...a total-performance benchtop GC/MS system...HP 7686 PrepStation system which automates sample preparation... HP 70000 modular measurement system...HP 8921D dual-mode cell-site test system...HP 75000 Series 95 family of VXI modules for SONET tributary production test...HP TestJet technology, which enhances the HP 3070 board-test systems.

And turn the page for one more...

World traveler

The HP DesignJet 650C color plotter —which uses HP's inkjet technology to speed up the formerly painstaking process of making large-format plots— is a good example of the cosmopolitan nature of many of HP's product offerings.

Both its content and its manufacturing locale reflect the global nature of HP's business today.

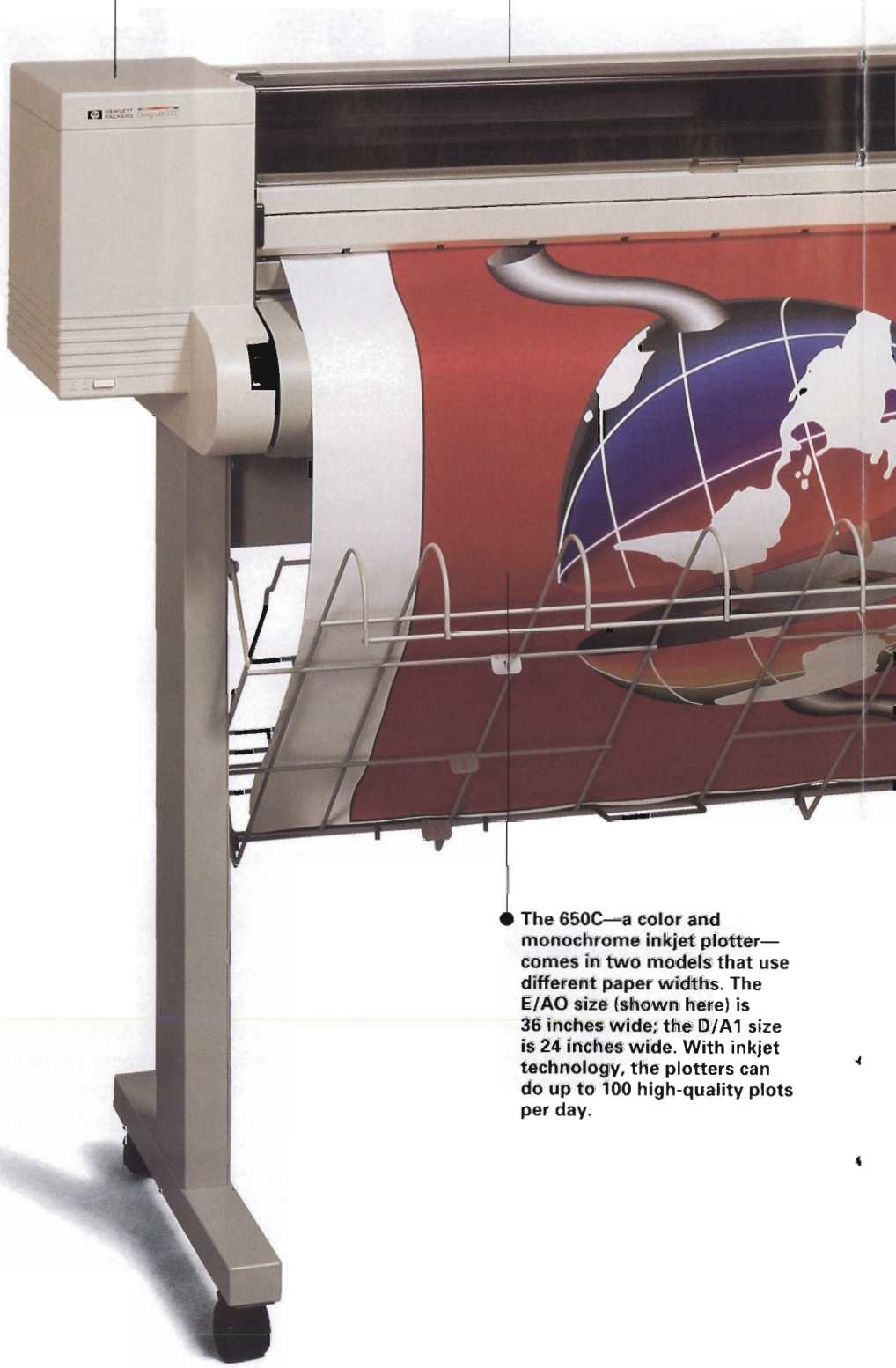
Introduced in May, the 650C was designed by the San Diego (California) Division (SDD), working closely with the Inkjet Supplies Business Unit. It was necessary to redesign the inkjet cartridge size to fit the needs of the two 650C models, which make plots up to 24 or 36 inches wide. Sweeps of ink—monochrome or color—move rapidly across the paper, producing output up to 10 times faster than possible with the line-by-line drawings of pen plotting.

In terms of dollar value, half the material going into the 650C comes from sources in Asia Pacific and Europe. Inkjet cartridges are made in San Diego and Corvallis, Oregon. Other parts of low-to-medium value are sourced locally.

This April, the 650C will complete a phased move of production to the Barcelona (Spain) Division as SDD shifts to a new charter. Worldwide marketing of the plotter already is done in Barcelona.

In addition to serving the market for technical drafting, the big plotter is being used to design brochures, packages, T-shirts and posters and output for continuous-roll applications. And more big ideas for the 650C are coming all the time. M

—Betty Gerard



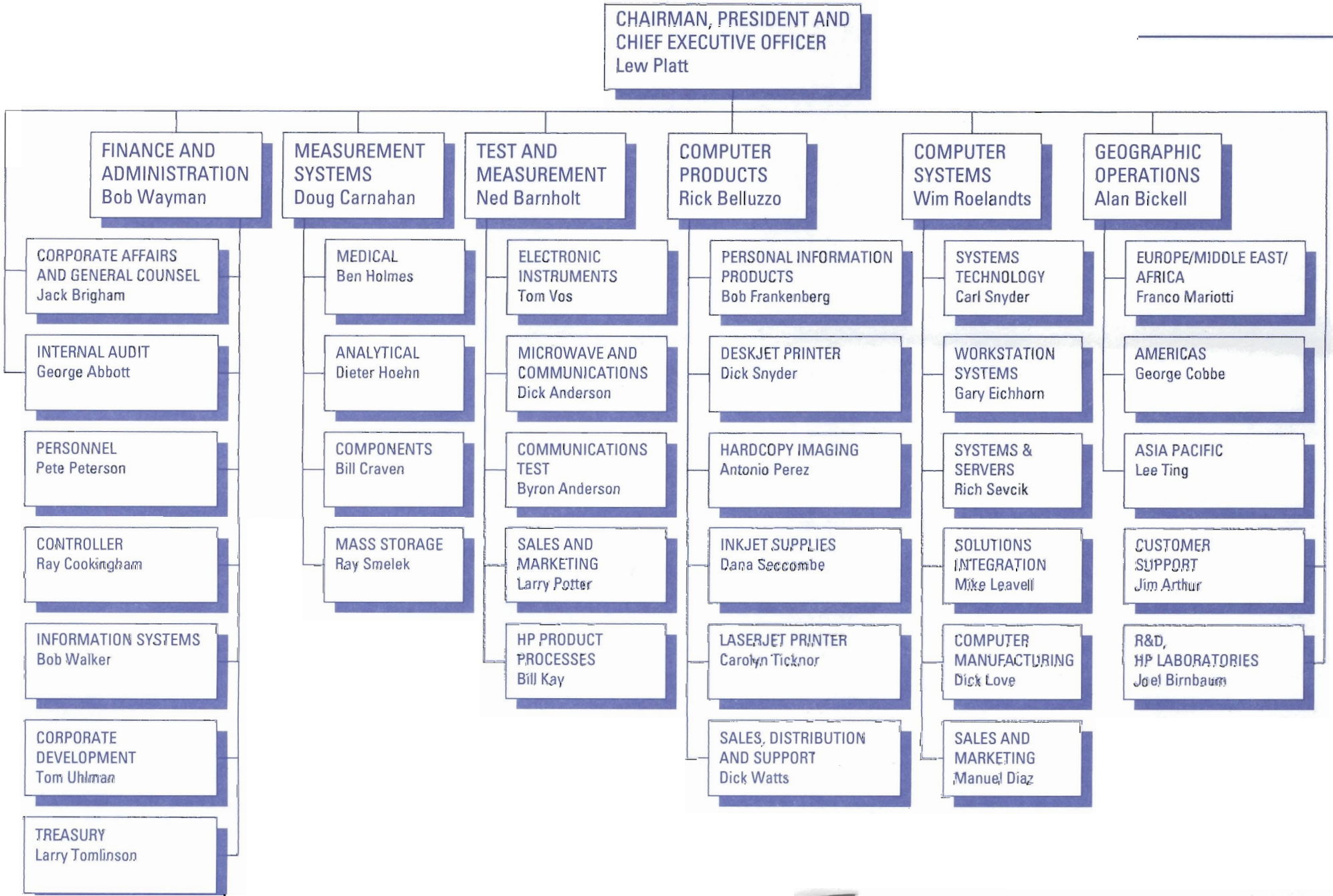
Local suppliers provide sheet-metal parts (such as the back panel tray holding the main board); plastic-molded parts (the end cover and top part); gears and hardware.

Special large-size inkjet cartridges using HP's proprietary technology are made for the 650C by the Inkjet Supplies Business Unit's operations in San Diego, California, and Corvallis, Oregon.

The 650C—a color and monochrome inkjet plotter—comes in two models that use different paper widths. The E/AO size (shown here) is 36 inches wide; the D/A1 size is 24 inches wide. With inkjet technology, the plotters can do up to 100 high-quality plots per day.

Hewlett-Packard Corporate Organization

January 1994



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Senior Vice President

EUROPE/MIDDLE EAST/AFRICA
Franco Mariotti
Senior Vice President and Director

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Manufacturing: France, Germany, Italy, Spain, United Kingdom, The Netherlands

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General Manager

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Manufacturing: Brazil, Canada, Mexico

ASIA PACIFIC
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General Manager

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Larry Tomlinson
Treasurer

Note: Listed here are divisions and some operations—the latter typically have significant worldwide product-line responsibility and report directly to group or business unit management.

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Vice President and General Manager

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Product Businesses Unit
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Malaysia Components Operation
Singapore Components Operation
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Boise Site Operations
Colorado Memory Systems
Computer Peripherals Bristol Division
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- Imaging Systems
- Interventional Cardiology

Clinical Systems Business Unit
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- Prenatal and Anesthesia Care
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- Manufacturing Test Division

Boeblingen Instrument Division
Colorado Springs Division
Integrated Systems Division
Korea Instruments Operation
Lake Stevens Instrument Division
Loveland Manufacturing Center
Lyon Instrument Systems Operation
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Telecommunications Systems Division
Telecommunications Test Division

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Barcelona Division
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LASERJET PRINTER GROUP
Carolyn Ticknor
General Manager

Advanced LaserJet Operation
Boise Printer Division
Bergamo Hardcopy Operation
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Manufacturing Operation
Media Operation
R&D

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Manuel Diaz
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- Americas Sales/Marketing
- Asia Pacific Sales/Marketing
- Global Accounts/Strategic Partners
- Global Marketing/Channel Strategy

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Dick Love
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Boeblingen Computer Manufacturing Operation
Computer Interconnect Operation
Exeter Computer Manufacturing Operation
France Manufacturing Operation
Hachioji Computer Manufacturing Operation
India Manufacturing (HCL/HP)
Networked Computer Manufacturing Operation
Europe Order Fulfillment
Americas Order Fulfillment
Asia Pacific Order Fulfillment

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Integrated Systems Division
Professional Services Division
Telecommunications Systems Business Unit
- Singapore Network Operation
- Telecom Network Operation
- Telecom Platform Operation

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Panacom Automation Division
Workstation Technology Division

SYSTEMS TECHNOLOGY GROUP
Carl Snyder
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Open Systems Software Division
Systems Technology Division

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Cooperative Computing Systems Division
General Systems Division
System Peripherals Operation

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General Manager

Mechanical Design Division
Network and Systems Management Division
Software Engineering Systems Division
Work Management Operation

HEWLETT-PACKARD COMPANY has four major business organizations. Computer activities are organized into the Computer Systems Organization, which is responsible for systems-related products (sold primarily through its direct sales force, with additional channel partners), and the Computer Products Organization, responsible for printers and personal computation products (sold primarily through dealer and third-party sales channels). The Measurement Systems Organization includes medical, analytical, components and mass storage businesses and oversees integrated-circuits activity. The Test and Measurement Organization comprises a wide range of advanced electronic-based measurement products and systems, and an HP Product Processes organization. The latter provides all the HP businesses with vision, access, education and implementation assistance in product-related processes that will provide a sustainable competitive advantage.

Support activities for all products are focused in a separate Worldwide Customer Support Operations.

Field activities are organized into three geographies, which are responsible for finance, accounting, legal, personnel, quality, information systems, facilities, fleet and other infrastructure serving the sales and support functions. Management of Europe/Middle East/Africa and Asia Pacific also has a coordination responsibility for manufacturing in these geographies, which have their corporate development and public affairs functions. Management of Americas has similar responsibilities for Canada and Latin America.

BUSINESS ORGANIZATIONS

Within the four major organizations, the company's major fields of interest are organized into six product-related businesses (Computer Systems, Computer Products, Test and Measurement, Medical Products, Analytical Products and Components). Each business determines its respective market strategies, ensures that products and systems satisfy customer needs, and is responsible and accountable for activities ranging from product generation and manufacturing to sales and marketing.

Worldwide field marketing and manufacturing enable the company to apply its unique range of computation and measurement solutions to the business and technical problems of customers globally.

GROUPS, BUSINESS UNITS, DIVISIONS, OPERATIONS

Each product group represents a portfolio of related businesses and is responsible for directing and coordinating the activities of its divisions and operations.

A business unit is typically a subset of a group, concentrating on a single business. While the entities within a business unit may be geographically dispersed, they are linked by a common strategy designed to offer customers fully integrated HP solutions.

HP divisions have worldwide product-line responsibility for their respective product lines. Many divisions are vertically integrated, with their own R&D, manufacturing, marketing, personnel, controllership and quality-assurance functions. All divisions have important social and economic responsibilities in their local communities.

Operations are organizational units dedicated to particular tasks, usually in support of a product group or various divisions within a group. They generally are smaller than a division and don't have the full complement of functions, relying instead on a host division or site for some services. Operations often evolve into divisions.

FINANCE AND ADMINISTRATION

The functions within Finance and Administration provide expertise, leadership and direction in their areas of responsibility to support the company's interests with employees, shareholders, customers, government and communities.

Finance, comprising Controller, Treasury, Tax, Licensing and Customs, along with Real Estate and Corporate Development, works together with HP's businesses to achieve the company's financial and operating objectives. Information Systems provides the system capabilities to support HP's business processes. These functions oversee financial, business planning and other administrative processes, and have responsibility for managing financial assets and shared service activities that are integral to effective resource utilization.

Personnel provides leadership in the worldwide development and communication of personnel policies, processes and programs which facilitate, measure and improve the quality of management and teamwork. It provides people-related data and consulting services that contribute to business decision-making, and administers those people-related processes that can be done most cost-effectively when centralized.

The Corporate Affairs departments of Communications, Government Affairs and Philanthropy address HP's many constituencies.

The General Counsel oversees the Corporate Legal Department, which has responsibility for providing advice and counsel on legal issues, legal risks and the protection of company assets in the context of the legal environment. The General Counsel is responsible to the Chairman, President and CEO to assure legal matters are appropriately addressed company-wide.

Internal Audit provides the Board Audit Committee, Chief Executive Officer, operational management and the external auditors with an independent review and evaluation of the internal business controls established by the company to safeguard its image and assets and to ensure compliance with company standards of business conduct, applicable laws and regulation.

RESEARCH AND DEVELOPMENT

HP Laboratories is the corporate research and development organization that provides a central source of technical support for the product-development efforts of HP operating divisions. It researches or develops advanced technologies, materials, components and theoretical analyses for immediate use by divisions and for the development of new areas of business.

Research and development activities are broadly decentralized throughout the operating units. The Senior Vice President of R&D also serves as the Director of HP Laboratories.

BOARD OF DIRECTORS

The Board of Directors and its Chairman have ultimate responsibility for the legal and ethical conduct of the company and its officers. It is the Board's duty to protect and advance the interests of the shareholders, to foster a continuing concern for fairness in the company's relations with employees, and to fulfill all requirements of the law with regard to the Board's stewardship.

The Board counsels management on general business matters and also reviews and evaluates the performance of management. To assist in discharging these responsibilities, the Board has formed various committees to oversee the company's activities and programs in such areas as employees' benefits, compensation, financial auditing and investment.

CHIEF EXECUTIVE OFFICER

The Chief Executive Officer is responsible for the direction and long-range performance of the company, subject to the authority of the Board of Directors.

Reporting directly to the CEO are management of the four major business organizations and Geographic Operations, which provides infrastructure for their activities, Finance and Administration, Worldwide Customer Support Operations, Research and Development, Internal Audit and the General Counsel.

MANAGEMENT COUNCIL

Primary responsibilities of this body are to review and formulate operating policies, and to turn policy decisions into corporate action. The Council, chaired by the Chief Executive Officer views on a quarterly basis the achievement of performance expectations as reflected in the forward planning of the business organizations, and monitors their operating results.

Management Council members serve variously on five committees charged with policy-setting responsibility for operations, personnel, sales and marketing, planning and quality, and information technology.

MANAGEMENT STAFF

The Management Staff is chaired by the Chairman, President and CEO, and serves as the senior business staff of the company. Its emphasis is on issues which span major organizational boundaries, with a focus on ensuring coherent strategy and implementation. It is involved in major resource allocation decisions and certain decisions delegated by the Board of Directors. It comprises the heads of the four major business organizations, Finance and Administration, Geographic Operations, Worldwide Customer Support Operations, Research and Development, General Counsel/Corporate Affairs and Personnel.

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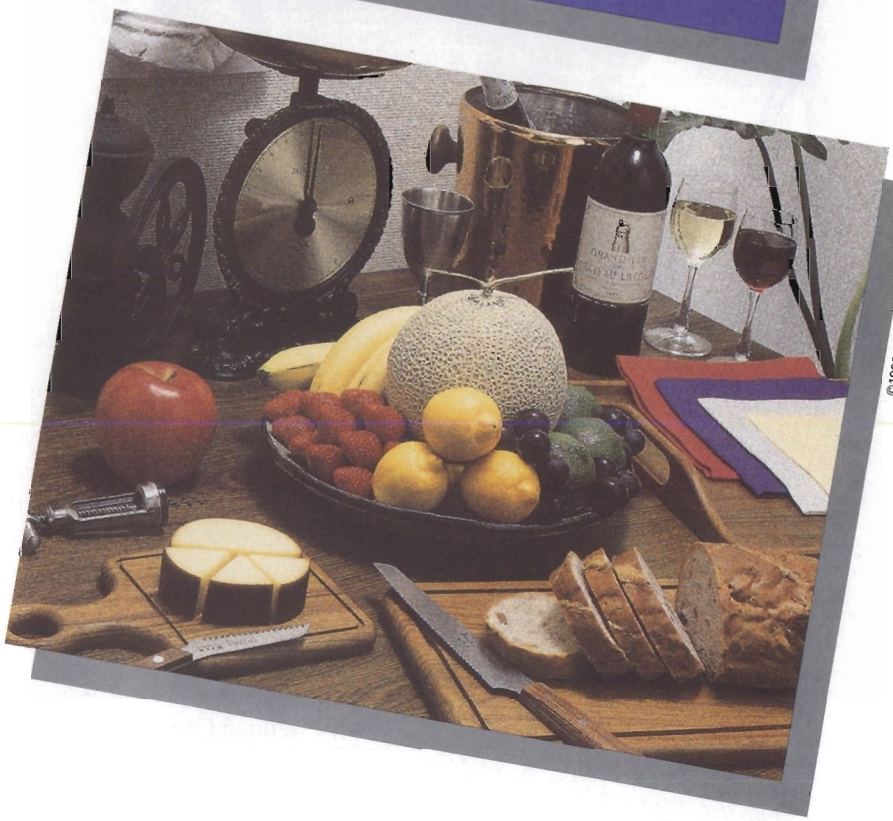
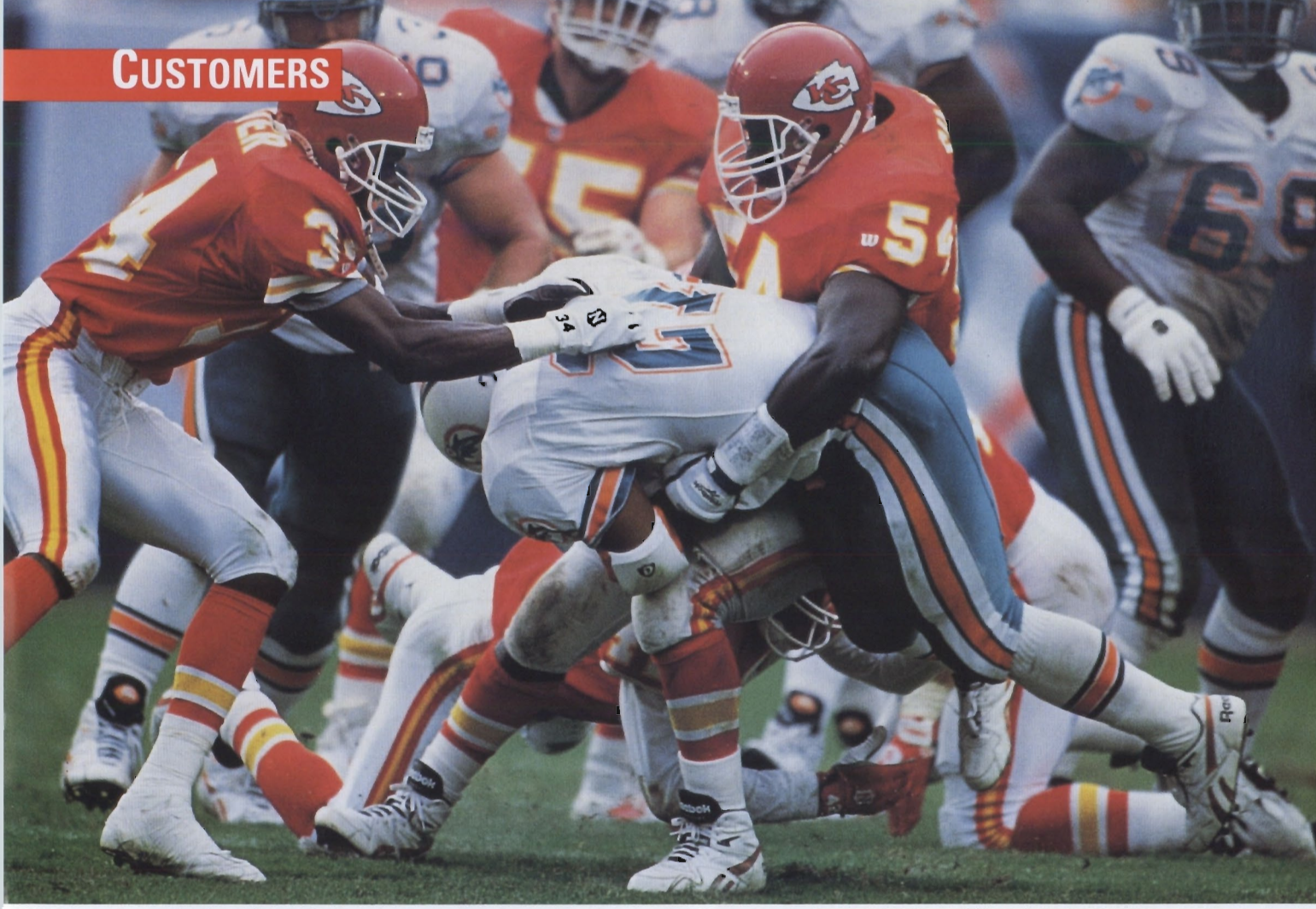
● Most motors, fans and sensors used in the HP DesignJet 650C color plotter come from Taiwan and Japan, with one motor from Germany. Assembly of the carriage board for sensors is done by HP's Grenoble Surface Mount Center in France.

● Below are two examples of output from the 650C. Computer-created graphic designs or mechanical designs (top) can be printed out. Photos (bottom) or other illustrations can be scanned in and printed.





All professional football teams undergo rigorous testing for possible use of anabolic steroids in an HP-equipped lab.

A sporting chance

HP analytical gear and a Midwest drug-testing lab help level the playing field for collegiate and professional athletes.

INDIANAPOLIS, Indiana—Dr. Larry Bowers isn't faster than an Olympic sprinter, stronger than a professional football defensive tackle or able to leap 20-foot-high pole-vaulting bars in a single bound. But he may have just as much impact on the event results.

Dr. Bowers is the director of the Indiana University (IU) Sports Medicine drug-testing lab—the lab that tests for anabolic-steroid use by every college and professional sports team in the United States.

Each year the IU lab—a part of the IU Medical Center on the Indiana University/Purdue University at Indianapolis (IUPUI) campus—handles 18,000 specimens. A positive result could mean that the athlete is banned from competition for a matter of a few weeks—or for life.

The lab uses a battery of HP analytical equipment—including high-performance liquid chromatographs, gas chromatographs and mass spectrometers—that resembles an HP showroom.

"Our lab puts a gleam in our HP salesman's eye," Larry says. "There are 23 International Olympic Committee (IOC)-accredited labs in the world, and by and large, everyone is using HP equipment."

Founded in 1984, the IU lab got its first real test in 1987 when it handled all drug testing for the Pan American Games, held that year in Indianapolis.

The lab grew in prominence during the late 1980s, mirroring the increase in performance-enhancing drugs by college and professional athletes. The biggest culprits were anabolic steroids—banned substances that increase muscle mass and endurance.

Only one other U.S. lab—at the University of California at Los Angeles—is accredited by the IOC. So the IU lab's 15-person staff maintains a busy pace year round.

"About 75 percent of the 18,000 specimens come to us in two three-month periods," Larry says. "There's usually a 14-day turnaround for results, although we can produce results in three days when it's essential."

HP played a key role in the IU lab's dramatic rise in productivity a year ago when the lab switched from Pascal workstations to an HP-UX network. Tests that used to take 54 minutes now are finished in 28 minutes.

"We doubled the peak capacity of the six gas chromatograph/mass spectrometer systems to an equivalent of 12," Larry says, "just by changing the software.

"HP's service and support are probably just as big selling points. It's important for us not to have down time, and HP has given us very good service all along the way."

PATRICK BENNETT

Dr. Larry Bowers, director of the Indiana University Sports Medicine drug-testing lab in Indianapolis, talks with HP customer engineer Vince Blue.

There are two kinds of testing:

- In-competition testing determines whether athletes were using anabolic steroids during events. The classic example is Canadian sprinter Ben Johnson, who was stripped of his gold medal at the 1988 Summer Olympics in Seoul, Korea, when his drug test came back positive.
- Out-of-competition testing occurs at any time—for example, during training sessions. The athlete may be given two days' notice or the tests can be unannounced. "A team official may walk up to the player and say, 'It's your day,' " Larry says.

The IU lab analyzes as many as 256 samples per day, and one sample can generate seven to eight tests that require further analysis. In a year, the lab accounts for more than 75,000 reportable results. The laboratory is "blind" as to the identity of the athelete, so personal confidentiality is maintained.

As a dedicated sports enthusiast, Larry views his job both from a clinical and a fan's perspective.

"From an analytical standpoint, it's very interesting to see what new drugs are being used and how that changes constantly. That keeps us on our toes.

"As a fan, I think that potentially we could have a deterrent effect on drug use. Maybe athletes will see that these drugs are bad for their health, and we can help convince young athletes never to use drugs in the first place." M

The pros and cons of drug testing

(Editor's note: Some people like it and others hate it, but few people are neutral on the subject of drug testing.

On January 1, HP joined the growing number of U.S. companies who use drug testing in some form when the company began testing new hires as a condition of employment. By March 1, it will be used at all locations in the United States.

The decision to begin drug testing prompted a number of employees to speak out—some for and some against the new policy. Here's how two employees see it. (The letters are printed with permission).

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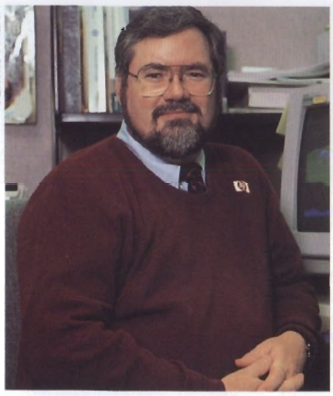


DENNIS AHERN

By Gary Hypes

Having seen a variety of electronic postings protesting HP's decision to begin testing of job applicants for illicit drug use, let me offer a contrary point of view: I'm glad to see it, and I think it's long overdue.

As I see it, HP's interview and selection process has always looked beyond the candidate's technical ability to do the job. Character, judgment, citizenship and discipline are all among the factors typically evaluated in assessing a candidate's potential for long-term contribution. Illicit drug use, in my opinion, raises significant questions in each respect.

I agree that requiring a candidate to provide a urine sample is awkward—for both parties—and is invasive of the individual's privacy. So too, however, are many of the laws, rules and customs we live with (e.g., having to wear an ID badge). I have worked in environments (outside of HP) where drug use was unchecked, and in those environments, the kinds of problems frequently cited to justify testing—theft, absenteeism and lowered productivity—were rife.

There are other companies whose policies and practices I personally find restrictive and invasive, and for that reason I would not work for them under any condition. That is my choice. If any job candidate values his or her "right" to illicit drug use more than the potential for a job and career at HP, then so be it.

Drug use and abuse is not a victimless crime; it is a deep and pernicious societal behavioral problem that inevitably impacts the abuser's friends, family and coworkers. HP's testing policy may be an imperfect attempt to deal with that problem within the range of its corporate rights and responsibilities, but it is at least a start and, again, a welcome one.

(Gary Hypes is a learning products engineer at HP's Network Printer Division in Boise, Idaho.—Editor)

Putting new hires to the test

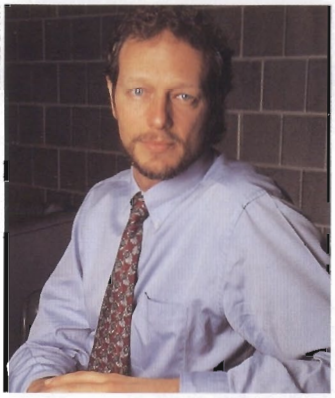
Drug testing of all applicants who receive a job offer began January 1, 1994, at four HP sites: Boise, Idaho; Corvallis, Oregon; Roseville, California; and Vancouver, Washington. On March 1, all HP sites in the United States will follow suit.

HP tests for five classes of drugs: marijuana, cocaine, opiates, phencyclidine (PCP) and amphetamines. The pre-employment drug test is a condition of all U.S. new hires, including college recruits and internal temporary workers. HP has no plans at this time to conduct random testing of current employees.

"We have a commitment to providing a safe and productive work environment," says Pete Peterson, vice president of Personnel, in explaining why HP reluctantly instituted drug testing. "This is an effort to screen out future problems...

"We've been in a small minority of large companies that don't drug-test applicants when making a job offer, and in some of the communities where we operate, HP has been the only large employer not doing so."

CON:



RENEE LYNN

By Dennis Mitrzyk

I find myself compelled to write regarding HP's new pre-employment drug-testing policy.

As with most issues involving civil liberties and our rights to privacy and protection from unreasonable search, this is an emotionally charged issue for me and many other HP employees. There are many reasons I feel this program is ill-advised:

1) Drug testing doesn't fit HP's image as a company that trusts and believes in its people. My understanding of the HP way is that you have faith in your people to do the right thing and if they show they can't handle this responsibility, then you take appropriate action. Drug testing sends just the opposite message: guilty until proven innocent.

2) Everyone I talk to in Personnel acknowledges that HP really doesn't have a "drug problem" per se. Furthermore, there's no data available on damage to HP resulting from job-related drug abuse.

3) I've asked many HP managers why we are so determined to do this. The most common answer is because everyone else is doing it—about two-thirds of the Fortune 500 companies have drug-testing programs. However, in Silicon Valley very few companies have pre-employment drug testing. Some—Silicon Graphics comes to mind—have made it clear they will not subject employees to drug testing.

4) Drug tests are unreliable. False positives and false negatives are not uncommon. Unless the procedure is closely monitored, tests easily can be defeated by a variety of methods. To eliminate fraud, HP is requiring a witness in the room to observe the sample process.

5) The legality of the procedure for positions not impacting public health and safety is still a gray area in California. Subjecting HP to the risk of a lawsuit seems expensive and unnecessary.

6) Drug testing is already having a negative impact on the morale and productivity of many HP employees, particularly those people who have to explain this program to college students. Many of the campus recruiters I've polled are very upset with this policy and plan to quit college recruiting when pre-employment drug testing is implemented. Others have said they will refuse to participate in on-site interviews of candidates subjected to drug testing. After several years as campus coordinator for the University of Michigan, I'm sorry to say I will no longer be involved with campus recruiting.

7) Pre-employment drug testing is going to result in the loss of valuable talent to some of our fiercest competitors. I know a very talented consultant who has worked with HP over the years who said he wouldn't even consider working for HP again if he were required to suffer this "affront to [his] dignity."

8) According to my calculations, this program is going to cost HP $150,000 or more annually—almost enough to put another salesman on the street.

9) HP is testing for five classes of drugs; of those, only marijuana is detectable more than three days after use. If tests are scheduled, "hard-core" users easily could "stay clean" for the test. Casual marijuana users, on the other hand, would test positive.

10) Legal drugs (alcohol, caffeine, nicotine) cause significantly more property damage, health problems and death than all illegal drugs combined.

I've been with HP my entire career of 13 years. Over the years, HP has continued to be a great company and a great place to work because it's never forgotten that its people are its most important resource. I implore HP to rethink pre-employment drug testing.

(Dennis Mitrzyk is the headquarters account manager for General Electric in HP's Global Accounts Sales Program in Cupertino, California.—Editor)

The palmtop nutritionist

By Mary Lou Simmermacher

For 10-year-old Ryan Lee, there's no such thing as a spontaneous snack. Because he has juvenile diabetes, Ryan eats six times a day and chooses foods carefully to keep his blood sugar at the proper levels. In the middle of the night, low blood sugar feels like monsters entering his body through his feet. When his blood sugar is high at school, it's tough for Ryan to think clearly and spell correctly.

Jay Lee, Ryan's father and a component engineer at HP's Colorado Springs (Colorado) Division, has found the "perfect tool" to analyze Ryan's food choices: the HP 95LX palmtop computer running the Personal Food Analyst, a nutritional software program from Mirical Corp. Jay and his wife, Nancy, review what Ryan eats, his blood sugar and his activity level to determine how much insulin Ryan needs.

"Ryan enjoys the palmtop because it's game time with dad," says Jay. "He goes through the list of what he ate, and we have time to talk about his day at the same time. Then he practices spelling on the HP 95LX or plays games like Tiger Fox and Space Invaders. It's terrific to have a bright little guy to work with."

The Personal Food Analyst, an encyclopedia of nutrition, runs on the HP 95LX from a tiny disk the size of a credit card. Users first create a personal nutrition profile by answering a few short questions about their age, weight, height, gender and activity level. Then they enter foods they eat, such as a Big Mac sandwich from McDonald's or one-half cup of sliced strawberries. The Personal Food Analyst automatically records the calories and nutrients and displays the remaining calorie and nutrient values they should have that day. It averages food intake for up to seven days, displaying dietary statistics in bar graphs that quickly show patterns of excesses or deficiencies.

When Jay, who is a runner without a health or weight problem, began monitoring his own diet, he was surprised at how he ate. Although he was confident his fat intake was just right —less than 30 percent of his total calories—the Personal Food Analyst showed that it actually was 40 to 45 percent.

"It's terrific to have a bright little guy to work with."

"I quickly discovered that the contributor was my choice of the shortest cafeteria line—a daily cheeseburger at lunch," Jay says. "When I started eating more chicken and salad, fat levels went down and my other nutrients went up. Physically, I felt better."

Mike Hidrogo, who is president of Mirical Corp. and had worked for HP in Colorado Springs for 13 years, decided in January 1992 to accept HP's voluntary-severance incentive to complete development of the Personal Food Analyst with his partner, Ric Rooney, vice president of marketing at Mirical.

Because of their common interest in sports, nutrition, exercise and electronics, Mike and Ric often brainstormed ways to monitor what they ate. "We hated having to write everything down and tally totals at night," says Mike. "We wanted to design a professional-caliber nutritional program for the average person that was powerful, easy to use and portable."

With the introduction of the HP 95LX in April 1991, "HP basically gave us a gift," says Mike. "We were so excited because this is what we had been waiting for—a computer the size of a calculator and as powerful as a desktop; one that prints, figures percentages and does mathematical analysis in bar graph form."

Mike and Ric now could put information into users' hands. "So many people go to doctors or trainers and pay for their technical expertise over and over again. Carrying the Personal Food Analyst is like having your own personal nutritionist in your pocket."

While Mike and Ric appreciate the feelings of health and productivity that result from years of sound nutrition, Mike admits that "no one can eat perfectly all the time. We have fun cheating a little on our food plan because as long as we stay within the

REG FRANCKLYN

Nancy and Jay Lee use an HP 95LX palmtop computer to analyze their son Ryan's nutritional needs during breakfast in Colorado Springs.

boundaries that the Personal Food Analyst recommends, we can go ahead and enjoy the experience."

On a recent business trip, they were pleased with their dinner choices: vegetable pasta for Ric and a chicken sandwich for Mike. The Boston cream pie on the dessert tray, however, was irresistible. "Ric and I looked at the pie, then at each other and said at the same time, 'If you'll do it, I'll do it.'" says Mike. "And we did."

Another advocate of healthy eating is Jil Feldhausen, a registered dietician and clinical lecturer at the University of Arizona College of Medicine. She is using the HP 95LX and the Personal Food Analyst to simplify nutrition education for medical students.

"Without a doubt, nutrition should be a concern for everyone," says Jil. "There are two major killers in the United States: heart disease and cancer. For both, nutrition is at least 50 percent of the problem."

Jil's students assess their own diets with the HP 95LX and the Personal Food Analyst. They also use these tools to monitor the diets of pregnant women during another part of their program.

"Low birth weight is a risk factor for babies, and proper food makes a big difference in their size and health," says Jil. "Good nutrition needs to start very young to have the most impact. The problem is that symptoms don't show up until age 40, 50 or 60, so older people often begin eating more fruits and vegetables.

"We know that the most effective place to affect choices is at the point of purchase," says Jil. "If you ask, 'Should I have a hamburger and french fries?' and you have information on the amount of fat in the palm of your hand, then that would make a big difference in your choice. Information can make a difference if people put it into practice."

Mirical Corp. has two mottos: Application of knowledge is power, and education helps prevention. "So many people simply eat the food they see; we help them see the food they eat," Mike says.

For more information, call Mirical Corp. at 1-800-732-7707. **M**

(Mary Lou Simmermacher is a press relations representative in HP's Corporate Communications department.—Editor)

Another roadside attraction?

By Tom Ulrich

The HP equipment inside Biosphere 2 worked well, but is the experiment a breakthrough or a bust?

ORACLE, Arizona—It's late September—an hour north of Tucson, where Highway 77 meets the red clay and saguaro of Cañada del Oro. Sunlight burnishes Biosphere 2, whose mechanical lungs swell with dank vapor. The Biosphere holds its breath in the crisp morning air.

Gulping the desert mist and surveying the vast horizon, eight men and women march away from the airlock of this 21st-century cathedral. Wired with the tools of our age and replete with tower, farm, wilderness and 3,800 species of plant and animal, Biosphere 2 cloistered eight biospherians in a three-acre world for two years.

"They've had a lot of difficulties over two years...a lot of surprises."

"Re-entry into the Earth's biosphere," as project leaders describe the September 26 celebration, completes the first part of a 100-year study designed to separate Biosphere 2 from the rest of the planet.

The biospherians endured.

"It's a different atmosphere—a very different atmosphere!" says Abigail Alling after she emerges from Biosphere 2. "I keep wanting to breathe more, because it feels so good."

Alling managed a 7,200,000-cubic-foot vivarium that project visionary John Allen sought to seal off from our own biosphere. Light, energy and information could enter Biosphere 2—gases, liquids and solids could not.

JEFF ROBBINS/AP WIDE WORLD PHOTOS

Abigail Alling leads the eight "biospherians" out of Biosphere 2 during the September 1993 re-entry ceremonies.

"They've had a lot of difficulties over two years," says Margaret Augustine, project manager for Biosphere 2. "A lot of surprises—things they didn't expect."

Counting re-entry, technicians opened the airlock 29 times to retrieve samples or bring in supplies.

In some ways, the biospherians' two-year study was less a scientific experiment than a morality play.

Project leaders did not build Biosphere 2 to test scientific hypotheses in a traditional way. They placed their faith in the Gaia hypothesis, which states that the Earth is a living creature. Its climate and surface are controlled by the plants, animals and micro-organisms that inhabit it. Taken as a whole, the planet behaves, not as a zillion-ton rock shaped by geological forces, but as a biological super-organism that adjusts and regulates itself.

And adjust and regulate Biosphere 2 it did.

Across the cart path from Biosphere 2, technicians track conditions inside the Biosphere over a 10-megabit-per-second local-area network. An HP 9000 computer running HP-UX retrieves data from HP computers located in the command room and basement of the wilderness areas. Workstations beneath the rain forest, savannah, desert and agricultural areas gather data from nearly 2,000 sensors. More than 20 HP 9000 Series 300s located along the Ethernet gave technicians and biospherians a window on their biological world.

"HP computers performed their tasks with minimal problems," says Norberto Alvarez-Romo, vice president of mission control.

"Our greatest challenge," added HP project manager Roger Brathwaite, "was coordinating data collected from the sensors with analysis performed in the analytical lab. Sensors reported data instantaneously; analytical equipment can take hours, if not days, to verify a single result."

"Our greatest challenge was coordinating data collected from 2,000 sensors..."

Typically, scientists craft experiments that allow them to change a single variable while holding others constant. This much control allows them to establish cause-and-effect

relationships. Inside Biosphere 2, thousands of variables change simultaneously.

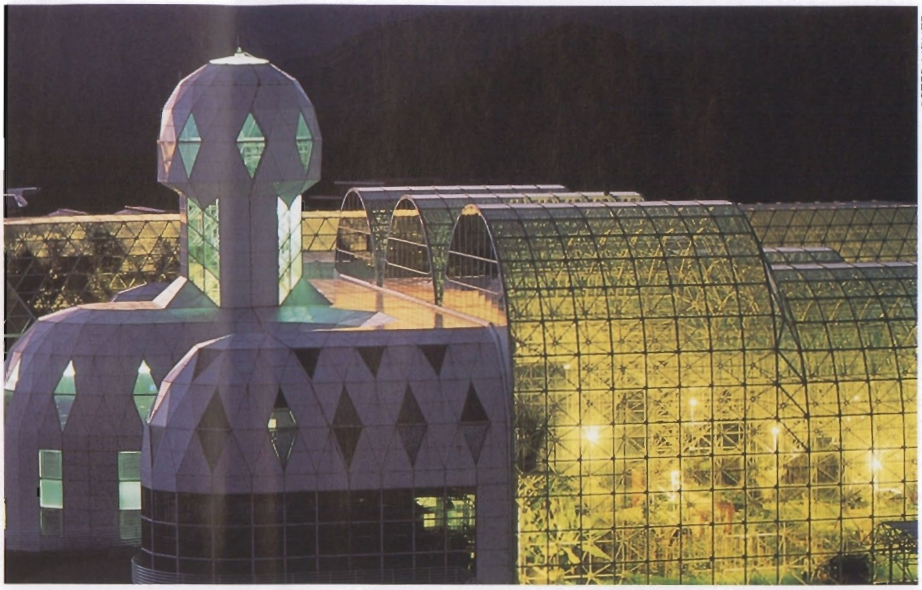
Computers controlled variables such as temperature and precipitation in ways that reflected natural ecosystems. They kept the desert dry and the rain forest wet. They couldn't regulate the balance of gases inside the Biosphere.

Once technicians sealed the air lock on September 26, 1991, Biosphere 2 started to evolve its own atmosphere —one that supported life, but not the biospherians. By January 1993, atmospheric oxygen fell to 14.2 percent—the concentration found at 13,400 feet above sea level. Biospherians complained of fatigue, headaches, sleeplessness and other symptoms of altitude sickness.

Once technicians sealed the air lock, Biosphere 2 started to evolve its own atmosphere.

Technicians pumped 30,000 cubic pounds of liquid oxygen into the Biosphere through its mechanical lungs. Atmospheric oxygen rose to 19 percent. By late August, oxygen concentration slipped to 17 percent. Technicians added 15,000 cubic pounds of liquid oxygen to raise the concentration to 21 percent.

While oxygen levels inside the Biosphere decreased one-third, carbon dioxide concentration increased tenfold. Microbes in the soil robbed oxygen from the air, converting it to carbon dioxide gas, which seeped into the Biosphere's concrete foundation.



PETER MENZEL

"Great technology, but no science" is how one scientist described Biosphere 2's initial two-year experiment. HP computers performed extremely well, according to Biosphere officials.

"Technology and automation are no substitute for solid science," HP's Roger Brathwaite says.

Five months after sealing Biosphere 2, Edward Bass, chairman of the board for Space Biospheres Ventures, gathered eight scientists to evaluate the Biosphere. While members of this review board recognized its potential as a laboratory to study bio-geochemical cycles, restoration ecology and human isolation, they questioned the less-than-rigorous science practiced here.

Panel members observed that project leaders created a network to collect and store data without software to interpret results. "They chose to invest in collecting data, not analyzing it," Roger said. "We suggested analytical packages, but that decision could only be made by scientists."

The Scientific Advisory Committee issued a report midway through the project. The committee recommended that project leaders hire a director of basic science, write a science plan, publish findings in peer-review journals and develop procedures to guarantee integrity of computer data.

"Great technology, but no science," concluded Gerald Soffen, Scientific Advisory Committee member and director of university programs for NASA's Goddard Space Flight Center in Greenbelt, Maryland.

"It is my great hope," primatologist Jane Goodall says at re-entry, "that some of the technology and understanding that will come as the result of the last two years is subject to scientific scrutiny. That this truly will help human beings all over the planet —throughout Biosphere 1—to learn more about the effect that each one of us has on the planet on which we live."

A crew of six or seven plans to enter Biosphere 2 in March for a 10 1/2-month stay. **M**

(Tom Ulrich helped write the original proposal for the computer network that operates Biosphere 2. He works for HP's Integrated Systems Division in Sunnyvale, California.—Editor)

Stay out of politics

I'm dismayed to see Lew Platt and other HP representatives lobbying employees and Congress in favor of NAFTA. NAFTA may appear to be worded to do good things, but it's fatally flawed in execution and enforcement provisions.

An ABC-TV poll showed public opinion running against NAFTA by 4 percent margin (before the vote in Congress). Lew's communications to managers and employees to send favorable letters to the Congressmen didn't present the alternative and majority viewpoint, effectively disenfranchising those U.S. employees who have studied NAFTA and come to a different conclusion.

Volunteer environmental organizations (such as the Sierra Club) and consumer advocates (such as Ralph Nader) have opposed NAFTA. But environmental and labor side agreements were stripped by the Clinton Administration. We can't trust politicians on the basis of promises alone.

I feel that HP should stay out of controversial politics.

STEVE HEAD
Cupertino, California

HP was convinced that passage of NAFTA would be crucial in order to continue growing our own international business in the three countries involved, and to bulwark U.S. efforts to negotiate similar deals to open export markets elsewhere in the world. Your assessment of the value of NAFTA and the company's are therefore in wide disagreement. HP employees are, of course, entitled to their own opinion, and HP has an equal right to determine the business impact of such critical public policy issues—and to offer its views to legislators.

While HP has shared its positions with employees in the past, this is the first rather broad appeal for individuals to get involved in an issue directly. The decision to encourage letters to Congress on NAFTA was made only after setting guidelines. They call for an issue of overriding importance to HP—and one where employees' individual efforts can make a crucial difference in the outcome. Employees are free to express—or not express—their personal opinions on either side of the question.

JIM WHITTAKER
Government Affairs

Rough passage

I was rather disappointed with the "Passage to HP India" photo feature on HP India in the September-October 1993 *MEASURE*. There were factual errors like the statement that in 1970, HP booked high-tech passage to India by launching a joint venture with India's Blue Star Ltd. to distribute HP's analytical products and electronic components. In fact, it was not a joint venture; it was a distributor agreement. It was for T&M, computers and medical products, besides analytical. I think, at that time, components were a part of T&M!

The cover is misleading, too. While rickshaws are not uncommon (in big cities like Bombay, Delhi, Madras, Bangalore, you can find them only in certain areas), I wonder what percentage of our sales/service people travel by this mode on a day-to-day basis? I would assume it is less than 1 percent!

Again, in 1989, when the New Delhi office was formed, it was not with 190 employees there!

RAJANGA SIVAKUMAR
Bangalore, India

You are correct: from 1970 to 1989, HP had a distributor agreement and not a joint venture with Blue Star. In fact, Blue Star was the distributor for all HP products until October 1989, according to Himanshu Jani, corporate communications and education manager for HP India.

On November 1, 1989, the distributor agreement ended and gave way to an HP and Blue Star joint venture, forming Hewlett-Packard India Limited (HPI). HPI handles T&M, CSO and CPO products. With the formation of the HCL HP joint venture in December 1991, CSO was moved out of HPI. In November 1990, HPI took over HP's medical products, and analytical products were still distributed by Blue Star until November 1993.

The 190 employees cited to be in the New Delhi office were actually spread across six sales and support offices in India.

As for the rickshaw (or more precisely—the triped) cover, the intent was not to imply that it was a dominant mode of transportation in India but rather one of the many different ways of traveling around town.—Editor

Please send mail

Do you have comments about something you've read in *MEASURE*? Send us your thoughts. If we publish your letter, you'll receive a free *MEASURE* T-shirt (one size fits most).

Fax comments to (415) 857-7299. Address HP Desk letters to Jay Coleman; by company mail to Jay Coleman, Building 20/BR, Palo Alto. Please limit your letter to about 150 words, sign your name and give your location. We reserve the right to edit letters.

LETTER FROM LEW PLATT

HP's chairman, president and CEO announces the first winners of the President's Quality Award.

I'm proud to announce the first recipients of the President's Quality Award—awards that we presented at the recent General Managers' meeting in Santa Clara, California.

The seven winning entities are:

- the Customer Services Business Unit and Patient Care Monitoring Systems within the Medical Products Group;
- two sales organizations—HP Taiwan and United Kingdom;
- Malaysia Manufacturing;
- the Support Materials Organization;
- and a combined entry of the Optical Communication Division and the Singapore Components Operation.

What makes these entities so special? As you probably know, they survived a demanding review process to achieve this honor.

First, they had to score at least 3.0 on the Quality Maturity System (QMS) review—our internal program that examines the entity's strategic and customer focus, its planning, process management, improvement, and its leadership and employee participation. Group G.M.s have chosen 92 entities to be reviewed during the past two years.

Of the 92 reviews, 12 entities scored 3.0 or higher on a scale of 4.0. In November, business-organization managers and group G.M.s nominated 10 of those 12 entities for consideration for the President's Quality Award. HP's Planning and Quality Committee then reviewed the entries and recommended seven finalists. In December, I examined the finalists with my staff and we agreed on the seven entities above.

Clearly, these entities represent the very best of HP. They really are quality role models for the rest of the company.

JEFF SCHEID

Lew (center) celebrates the sale of HP's 20 millionth printer with Dick Hackborn (left), recently retired head of the Computer Products Organization, and Dick's successor, Rick Belluzzo, at the COMDEX computer show in Las Vegas, Nevada.

Why are they the elite?

First, they have proven financial success. Second, they have high customer-satisfaction ratings. And, finally, they have improving employee-satisfaction results as measured by their HP Employee Survey scores.

That's why I like the President's Quality Award better than other quality measurement programs such as the Malcolm Baldrige award. The Baldrige award does an excellent job of measuring an organization's quality processes. However, it doesn't stress all three components and give each equal weight in the way the President's Quality Award does.

Our award also ties in nicely with our CEO Hoshins this year of improved profitability (financial success), order fulfillment (customer satisfaction) and "our people" (employee satisfaction).

You probably noticed that our first President's Quality Award winners don't include any entities from our three largest organizations—Computer Systems, Computer Products, and Test and Measurement. I'm confident that this will change over time and that entities throughout the company will work hard to rank among HP's quality elite.

I'll visit each of the seven winning entities during 1994 to congratulate those employees personally. And you can read more about the winners in the March-April issue of *MEASURE*.

If you work for one of those entities, you should be very proud. If you don't, you can learn a lot from them.

Lew

News from around the HP world

HP women "attaining full potential"

HP women from Germany, France, Italy, the U.K., Spain, Sweden and Belgium broke new ground in November by attending a two-day conference entitled, "Women in Europe: Attaining full potential," to share their experiences and to give as well as garner advice.

The conference was sparked by a videotape of Lew Platt's June speech at the U.S. Technical Women's Conference.

The European group of 20 women came from a cross section of different cultures, functions, businesses and experience. The workshops tackled tough issues such as the "glass door," career development and balancing work and family.

The conference generated open and frank discussion. "Women have to be twice as good to go half as far," said Mariana Andriecut, an HP Romania manager. "Even though people make you feel that it's not true, you know that it's a reality."

Conference organizers cited a worldwide survey by the Geneva-based International Labor Organization that said, based on current trends, women will take 475 years to achieve equality with men in managerial positions in companies of all sizes.

MICHEL BLANC

(From left) Clare George, Antonia Figini, Rosewitha Kolb and Nora Cantini discuss common issues at the recent European Women's Conference in Geneva.

RENEE LYNN

Retiree Bob Tuttle and Bill Gray from HP Facilities talk about the good old days as they watch the demolition of Building 40 on the Cupertino, California, site.

Laying an old friend to rest

A group of current and retired HP employees gathered on a gray, rainy November morning in Cupertino, California, to bid farewell and lay an old friend to rest.

They watched as Building 40—first the home of the Cupertino Division, then the Data Systems Division—was torn down, piece by piece.

Former occupants mused that Queen Elizabeth strolled through Building 40 in 1983. Current CEOs Jim Treybig of Tandem Computers and Ed McCracken of Silicon Graphics had worked for HP in Building 40 at one time.

Chuck Silberstein, HP district sales manager for sales force 40, still remembers "looking out the windows and seeing apricot orchards all around the parking area and rabbits coming up to our windows." He joked, "We never had to worry about parking back then."

Quoteworthy

"When you talk to the people who are actually doing the work, you can learn a lot."

Alan Bickell, senior vice president, Geographic Operations, talking to HP employees during communication sessions at sales offices in Rockville, Maryland, and Fort Lauderdale, Florida.

"You've heard the story of the blind man walking around an animal trying to find out what it is. I think '93 was the year we discovered our order-fulfillment problem is an elephant, not a dog."

Chairman, President and CEO Lew Platt describing his 1993–94 order-fulfillment Hoshin goal at an employee communication session in Palo Alto, California.

HP is a bargain for $4,100

A new board game, Palo AltoOpoly, is a takeoff of the original game, Monopoly, and features landmarks well-known to Palo Altans, including Printer's Inc. bookstore, Jose's Carribean restaurant and, of course, Hewlett-Packard Company.

HP is a bargain at a mere $4,100, but you can lose your shirt at Stanford University, which charges $500 in tuition each time you land on it. Even worse—players landing there lose two turns because they must finish their dissertation.

HP employees can buy the game through the HP Company Store. For game and store information, call Telnet 857-3000. For every game sold, the Lucile Salter Packard Children's Hospital at Stanford receives one dollar.

RENEE LYNN

Instead of going to jail, a roll of the dice can land a player in the recycling bin, and passing "Go" earns a whopping $2,200 on the board of the Palo AltoOpoly game.

$2.65 million worth of recognition

HP has donated $2.65 million in computer equipment and cash to the Massachusetts Institute of Technology's (MIT) Media Lab.

The donation will be used in a collaborative project with HP to improve human interaction with computers by programming them to recognize more than just numbers and text.

In the first year of the three-year program, the Media Lab will receive 11 HP 9000 Series 700 workstations, in addition to test and measurement instrumentation.

The grant is part of HP's External Research Program, which allows HP collaboration with educational researchers at U.S. universities.

Early printers make a big impact

Early models of the HP DeskJet 500, HP ThinkJet and HP LaserJet printers soon will become part of the Smithsonian Institution's National Museum of American History.

They will be housed in a collection called "Computers, Information and Society."

The collection, says the Smithsonian's Dr. Jon Eklund, consists of "those things that were widely accepted in the marketplace and therefore had a big impact on people's lives." HP was the first to make high-quality printing available to people at an affordable price, Jon says. "You'd have to be blind, deaf and dumb not to realize the position HP has in the marketplace."

HP sold its 20 millionth printer in 1993.

JEFF SCHEID

Models of HP's early printers, including the HP ThinkJet, are now part of the Smithsonian Institution's collection.

MARC LONGWOOD

Janet Logan took top vegetarian honors for her meatless meatloaf.

Where's the beef?

The Beef Council would be outraged, Betty Crocker and Julia Child would be envious, but country singer k.d. lang would sing its praises.

When Janet Logan whipped up her meat-free meatloaf for family dinners, she didn't know it would win her accolades among meatloaf connoisseurs.

Her meatloaf recipe won first place in The Great American Meatloaf 1992 National Recipe Contest—Vegetarian Division.

Retired from HP Corporate Personnel in 1987, Janet now lives in Paradise (yes, it really exists), California, and spends her time chasing intellectual and culinary pursuits.

As vice president of Prime Timers, an age 60-and-over lifelong learning program, she continues her education about new subjects and things—including new ways to make meatloaf.

Even with her newly won fame, Janet says she's not a strict vegetarian—and still likes to have a real beefy hamburger or steak every now and then.

If you'd like a copy of Janet's barbecue veggie-burger loaf recipe, contact Joan Gruenebaum on HP Desk or at Telnet 857-4140.

BOTTOM LINE

For the fourth quarter of fiscal year 1993, ended October 31, Hewlett-Packard reported an 87 percent increase in net earnings, a 32 percent increase in net revenue and 24 percent growth in orders.

Net earnings for Q4 totaled $298 million or $1.18 per share on some 254 million shares of common stock outstanding, compared with $68 million, or 28 cents per share, in the year-ago quarter (after special charges taken in Q4 FY92).

Net revenue increased to $5.7 billion in Q4, compared with $4.3 billion in the same quarter of FY92.

Q4 orders were a record $5.5 billion, up from $4.4 billion in the year-ago quarter.

Looking at total FY93 results, HP's net revenue rose 24 percent to $20.3 billion, compared with $16.4 billion in FY92; orders were up 24 percent to $20.8 billion (from $16.8 billion) and net earnings were $1.2 billion, an increase of 21 percent over the $972 million earned in FY92 (before special one-time charges were taken).

Despite this good performance, HP's stock dipped on the New York Stock Exchange on the day HP announced Q4 earnings. Financial markets apparently were disappointed that earnings fell slightly short of their expectations, and that HP reported a continued increase in cost of sales.

CPO CHANGES

Executive Vice President **Dick Hackborn** retired from HP on November 30, and V.P. **Rick Belluzzo** succeeded him as general manager of the Computer Products Organization (CPO). Hackborn continues on the board of directors.

The Hardcopy Products Group that Belluzzo headed ceases to exist; three of its business units (DeskJet Printer, Hardcopy Imaging, LaserJet Printer) have been elevated to group status and report to Belluzzo, along with the Inkjet Supplies Business Unit. Also reporting to Belluzzo is the Personal Information Products Group (PPG) and the Mass Storage Group (MSG), which has transferred in from the Measurement Systems Organization (MSO).

HP and the environment

Environmental progress flows

Hewlett-Packard has cut chemical releases in the United States by 24 percent from 1991 to 1992, for a cumulative reduction of 76 percent since 1987.

That translates into a reduction of 192,000 pounds in 1992 and 2 million pounds during the past five years.

This performance is based on reports to the U.S. Environmental Protection Agency that companies are required to file if they use or manufacture any of approximately 300 chemicals above certain quantities.

Companies must describe the amount of these chemicals that they release to the environment, send to sewage plants or send offsite for handling.

DRAWING BY ZIEGLER; @ 1993/THE NEW YORKER MAGAZINE, INC.

NEW OFFICER TITLES

Promoted to senior vice president: **Ned Barnholt,** V.P. and G.M. of the Test and Measurement Organization (TMO); **Joel Birnbaum,** V.P.-R&D and director, HP Labs; **Wim Roelandts,** V.P. and G.M. of the Computer Systems Organization (CSO).

Elected V.P.: **Ray Cookingham,** controller; **Manuel Diaz,** G.M., CSO worldwide sales/marketing; **Gary Eichhorn,** G.M., Workstation Systems Group; **Larry Potter,** G.M., TMO sales/marketing.

MORE CHART CHANGES

In MSO, the Mass Storage Group has a new Storage Systems Division under G.M. **Bob Tillman.**

CPO's LaserJet Printer B.U. has a new Advanced LaserJet Operation under **Neal Martini**.

In TMO's Communications Test B.U., the former Queensferry Telecom Division is now the Telecom Test Division; a new Telecom Systems Division is under G.M. **Tom White.**

In Worldwide Customer Support Operations (WCSO), the former System Support and Software Technology divisions have been restructured. Newly formed entities: the Multivendor Services Division under G.M. **Roger Costa** and the Software Services and Technology Division under G.M. **Mark Solle. Lane Nonnenberg** is G.M. of a new Operations Services Division.

Transferred to WCSO: the Finance and Remarketing Division, and Complementary Products Sunnyvale with **Jeff Landre** as the new G.M.

NEW HATS

Laine Meyer to director, Corporate Real Estate...**Ray Brubaker** to G.M., San Diego Printer Division.

Cynthia Danaher to G.M. of Imaging Systems in the Medical Products Group...**Mike Matson** to G.M., Integrated Circuits Business Division.

Virgil Marton to G.M., Telecom Networks Operation...**Heng Te** to G.M., Telecom Platform Operation...**Peter Bohn** to G.M., Mechanical Design Division.

Wolf Gruber to G.M. of HP Austria...**Stein Surlien** to G.M. of HP Sweden...**Kunio Hasebe** to G.M., Hachioji Semiconductor Test Division.

Starstruck

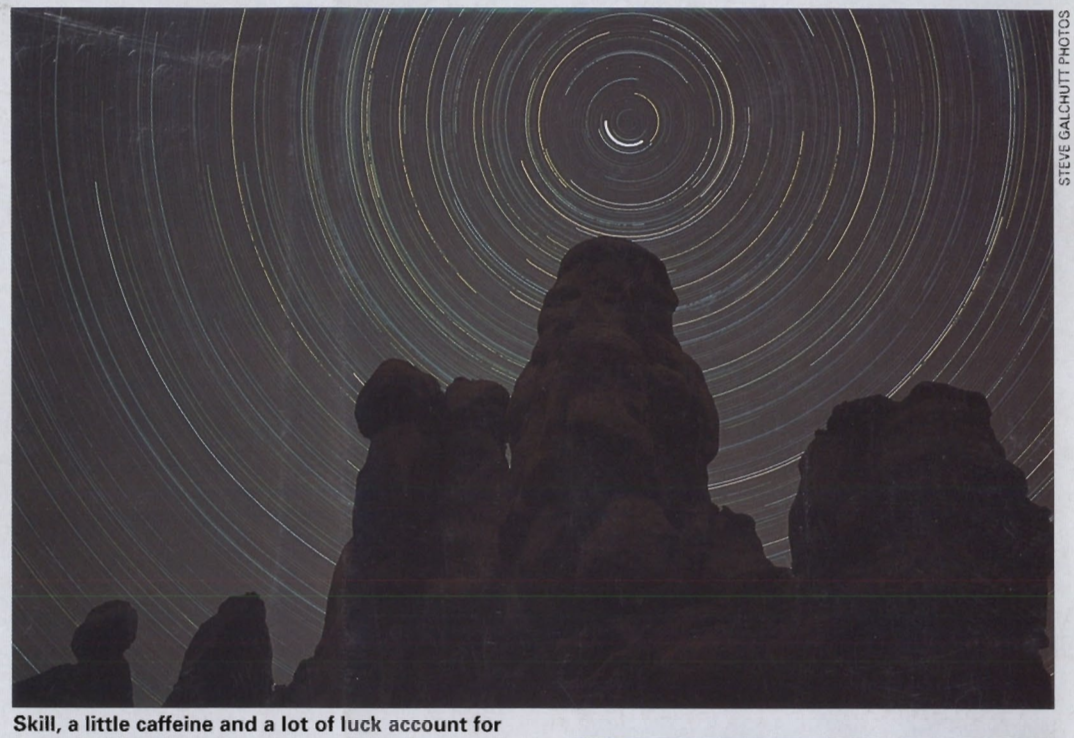
What a difference a night makes—particularly when comparing the two day- and night-time photos that Steve Galchutt, HP Colorado Springs, Colorado, marcom program integrator, took. He was on a backpacking trip in Utah's Needles National Park. He recounts his star-snapping tale:

"I was watching an uneventful sunset (no clouds) when I got the idea to try photographing the stars.

"After I readied my camp for nightfall, I set up my tripod and pointed my camera at the North Star. It's just off the edge of the Big Dipper.

"After dark, I set my lens wide open (f3.5), and with a cable release, I locked the shutter open to record the swirl of celestial bodies.

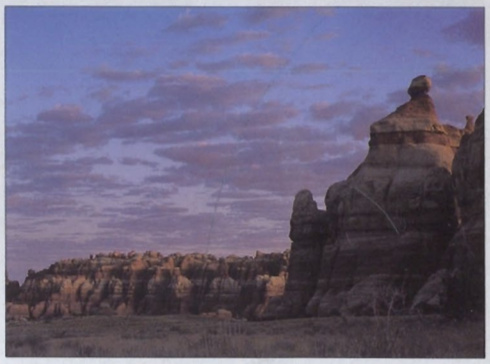
"Fortunately, I had one too many cups of tea before bed and woke up just before the morning light. I've tried star photography before and have overslept the daybreak, which overexposes any star traces left on the film.



STEVE GALCHUTT PHOTOS

Skill, a little caffeine and a lot of luck account for Steve Galchutt's perfect timing while photographing the sky over Utah's Needles National Park.

"This time I was pleasantly surprised when I got my film back and saw the results. What I find amazing is how time allowed me to record an image not visible to the human eye. It makes one wonder what images remain hidden from our conventional vision."



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