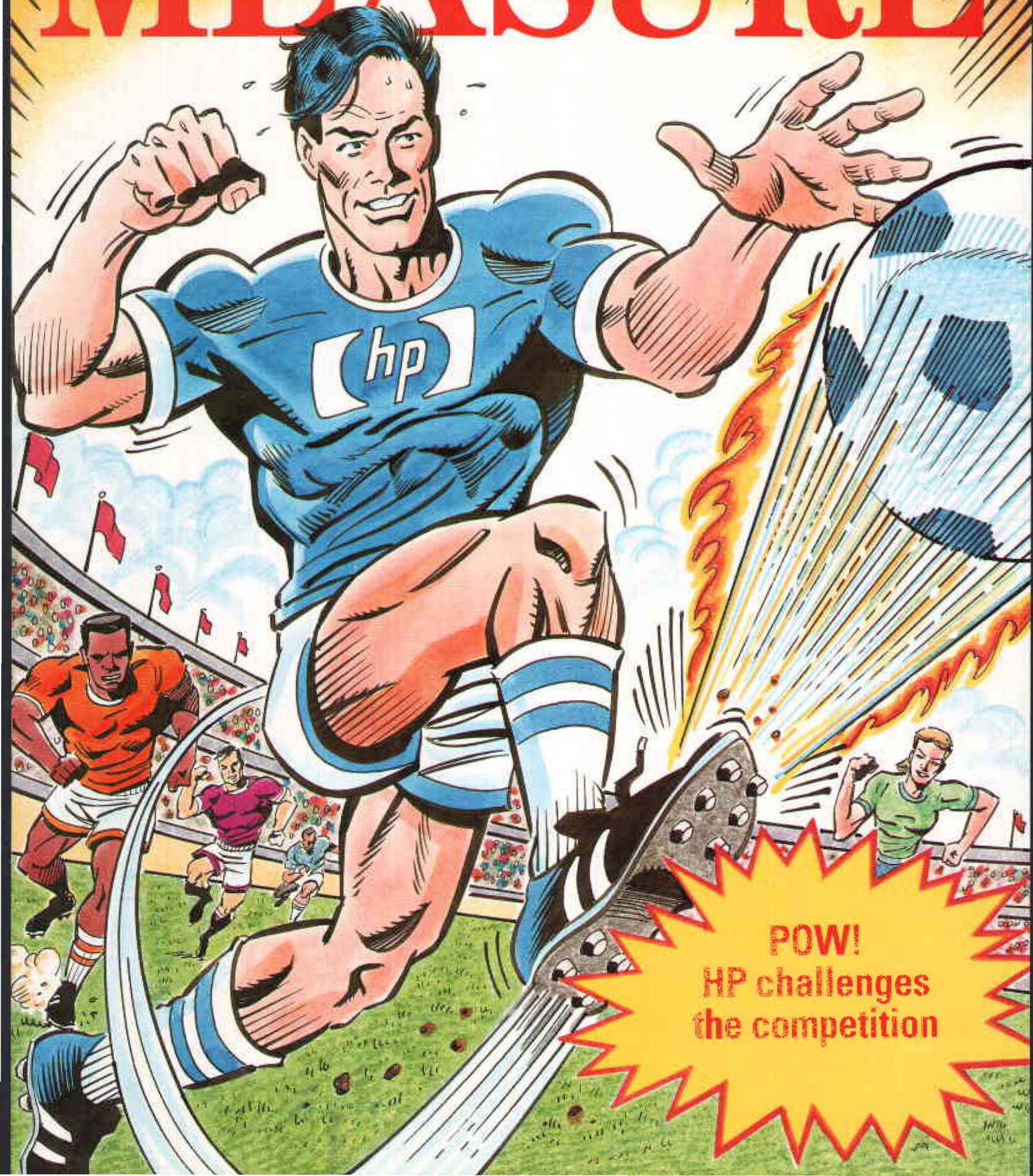


A magazine for Hewlett-Packard people

March/April 1994

MEASURE



POW!
HP challenges
the competition

A little over a year ago, I was working in my office when I sensed someone standing in the doorway. I looked up to see Lew Platt, HP chairman, president and CEO.

"My letter for the next issue of *MEASURE* is due today," Lew said, "but I'm not quite through writing it; it needs a little more work. Would it be okay if I bring it to you first thing tomorrow morning?"

I paused for a moment—more to collect my thoughts than to ponder the request—then said, "Sure. Tomorrow morning is fine."

To me, this anecdote describes Lew Platt perfectly.

He could have had his executive assistant, Myrt McCarthy, deliver the message. He could have sent a note or called. He could have said nothing at all. CEOs, after all, have better things to do with their time.

But it was important to Lew to deliver the message personally. And it was important to him to spend the extra time getting his *MEASURE* letter just right.

Stories about Lew's personal touch and attention to detail are pretty common throughout HP. You often hear about the warm note, the thoughtful telephone call and the in-person visit to an employee's cubicle.

That concern for individuals extends well beyond the corporate offices. As you'll read in his letter on page 29, Lew traveled more than 165,000 miles in 1993, visiting with world leaders, customers and employees. By all accounts, his first year leading HP was a remarkable one.

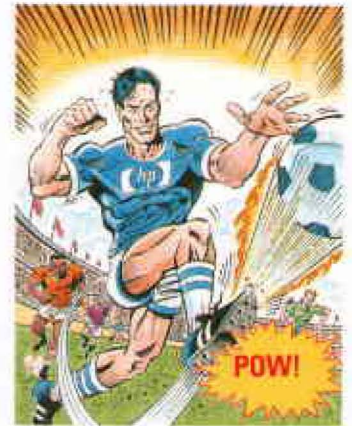
Understandably, he's slowing the pace a bit this year. There's no way he can continue to appear on every videotape, answer every HP Desk message, return every phone call and make every personal appearance he's asked to. After all, there are a few other things involved in running a \$20 billion global company with 96,000 employees.

You hear a lot these days about the disintegration—even death—of Hewlett-Packard's famed culture, the HP way. That won't happen with Lew in charge. He truly represents the traits that Bill Hewlett and Dave Packard envisioned in the HP way. Lew leads by example.

Lew's leadership should be enough to motivate all HP people to work harder and smarter. But if it isn't, there's a host of fierce competitors out there that surely will. Writer Andrew Ould and researcher Nancy Fong profile some of HP's toughest foes in their cover story, which begins on page 4.

How will HP fare as its competitors get tougher and tougher? Lew says he wouldn't trade HP's position with anyone. I'm glad he's on our side.

Jay Coleman
MEASURE editor



On the cover: Illustrator Pete McDonnell uses a sports metaphor to symbolize the fiercely competitive business world in which HP operates in an update of a 1987 *MEASURE* story on HP's competition.

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MEASURE

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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 96,600 people worldwide and had revenue of \$20.3 billion in its 1993 fiscal year.



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PETE McDONNELL

It's a tough fight...

By Andrew Ould

The computer and electronics business resembles sports in more ways than you might at first imagine.

In sports, teams win by having the right players, choosing the right strategies and executing those strategies better than their competitors.

Yet, because the competition is so intense, few teams manage to stay on top of the standings year after year.

This is as true in business as in sports. Consider, for example, *MEASURE*'s last list of HP's competitors, which appeared in the November–December 1987 issue.

Ten companies from that list of 18 don't appear this year, including such competitors as Prime Computer (now Computervision), Data General and Wang Laboratories.

Other key competitors—notably, IBM, Digital Equipment Corporation (DEC) and Tektronix—are going through serious restructuring. All three are reducing their workforce and have replaced their CEO in the last two years.

In the 1980s, Apollo Computer was doing a lot of things right in the engineering-systems market. HP took notice and acquired Apollo in 1989 for \$500 million—HP's largest acquisition to date.

One competitor on this year's list, SpaceLabs Medical, was spun off from a company on the 1987 list, Westmark International, in 1992 and is now a separate company.

Another of this year's top competitors—Lexmark—was spun off by IBM in a 1991 leveraged buyout.

Given how this list has changed in the last seven years, imagine how different it will look in another seven years. If anything, the pace of change likely will accelerate.



Hewlett-Packard Company

- Founded: 1939
- Headquarters: Palo Alto, California
- Employees: 96,600 (58,900 U.S.)
- Manufacturing/R&D: 54 cities in 16 countries
- Sales/Service offices: approximately 600 offices in 110 countries

- Revenue: \$20.3 billion
- Earnings: \$1.2 billion
- R&D: 8.9%

HP designs, manufactures and services electronic equipment for measurement, analysis and computation. HP's products are used in industry, business, engineering, science, medicine and education.

Computer Products Organization

In the inkjet printer market, the big news is the shift to color printing. In 1993, HP sold about 2 million color DeskJet printers worldwide. That's a 122 percent increase from the 900,000 units HP sold the year before.

In the laser printer market, networked printers are one of the fastest-growing market segments. This growth is being driven by the increased number of personal computers connected to local-area networks.

In the low end of the market, the HP LaserJet 4L has been very successful. HP's first laser printer to list for less than \$1,000, the LaserJet 4L has attracted many first-time laser printer buyers because of its affordable price.

In PCs, 1993 was the year that HP posted a sharp turnaround, more than doubling worldwide PC shipments during the year, according to market researchers.

Several factors caused this turnaround: HP's decision to meet competitors' pricing, a shift in buying preference away from no-name clone makers to well-known brand names, shorter product-development cycles and broader distribution.



HP NetServer LM

Canon

Canon Inc.

- Founded: 1937
- Headquarters: Tokyo
- Employees: 67,000
- Revenue: \$15.3 billion
- Earnings: \$287.2 million
- R&D: 5.3%

Canon makes cameras and camera accessories, copiers and other business machines, mask aligners for semiconductor chip production, special-purpose lenses and electronic components.

The business world is full of paradoxes, and HP's relationship with Canon is one of the oddest. Canon is one of HP's most important partners because it makes the engines for HP's LaserJet family of printers. Canon is also HP's primary competitor in inkjet printers, which Canon sells under the BubbleJet name.

According to market researchers, Canon has between 15 and 20 percent of the worldwide inkjet printer market, compared with HP DeskJet's 60 percent market share in 1993.

During the first six months of 1993, Canon's total sales were \$4.9 billion, down 3 percent from the year-earlier period. Canon said its pretax profit dropped 61 percent to \$153 million. Canon cited sluggish demand in Japan and Europe and a stronger yen for the profit drop.

LEXMARK

Lexmark (privately held company)

- Founded: 1991
- Headquarters: Greenwich, Connecticut
- Employees: estimated 4,000
- Revenue: approximately \$1.8 billion
- Earnings: not available
- R&D: not available

Lexmark develops and sells personal printers, typewriters, keyboards and supplies.

In 1991, IBM sold 90 percent of Lexmark in a leveraged buyout to Clayton & Dubilier Inc., a private investment company. IBM retained a 10 percent stake.

Following the sale, Lexmark's management cut the manufacturing and management staff, and then hired a 1,000-person sales force.

Lexmark's executives say they can make decisions much faster than when the company was part of IBM. Product-

development cycles have been cut in half, to 18 months. And unlike HP, which buys its laser printer engines from Canon, Lexmark builds its own printer engines.

IBM remains Lexmark's biggest customer, and Lexmark can use the IBM name until 1996.

COMPAQ

Compaq Computer Corp.

- Founded: 1982
- Headquarters: Houston, Texas
- Employees: 9,500
- Revenue: \$7.2 billion
- Earnings: \$462 million
- R&D: 2.4%

Compaq makes servers, and desktop and portable personal computers.

Compaq had one of its best years in 1993. Worldwide total sales rose 75 percent while net income grew 117 percent.

Compaq remains the third largest PC supplier, behind IBM and Apple, according to market researchers.

Unit shipments worldwide rose 96 percent, boosted by strong PC demand and continuing PC price wars.

During the year, Compaq opened a sales office in Beijing, China, and established subsidiaries in Hungary, Poland and Portugal.

In December, Compaq announced it will abandon the laser printer business, which it entered in 1992. Analysts estimated Compaq's printer division had been losing \$1 million a month.

Tough fight

Computer Systems Organization

In the computer systems business, customers are moving from proprietary mainframes to more cost-effective and flexible alternatives.

Customers also are shifting from centralized computing to client-server computing, where the computing resources are distributed among many systems connected on a network.

These changes have hurt the traditional mainframe and minicomputer vendors, such as IBM and DEC, but have helped companies like HP, which sell powerful but less-expensive alternatives based on RISC (reduced instruction-set computing) and open systems. HP now is No. 1 in worldwide UNIX* system revenue and No. 1 in worldwide RISC system revenue.

In workstations, HP is a solid No. 2 and is gaining ground on Sun Microsystems, the market leader. According to market-research firm Dataquest, HP gained 4 percentage points of market share in 1993 while Sun's share of the market remained flat.

*UNIX is a registered trademark of UNIX System Laboratories Inc. in the U.S.A. and other countries.



HP PHOTO
PA-RISC 7100LC-based workstations and servers



International Business Machines

- Founded: 1924
- Headquarters: Armonk, New York
- Employees: 256,000
- Revenue: \$62.7 billion
- Earnings: (\$8.1 billion loss)
- R&D: 8.9%

IBM markets a broad line of computer and office equipment, including workstations, PCs, software and various computer peripheral equipment; provides maintenance and support services; and provides financing services to its equipment purchasers.

In 1993, IBM closed the books on the most tumultuous year in its history. During the year, IBM cut its workforce by 45,000, took \$8.9 billion in restructuring charges and replaced its top executive.



Sun Microsystems Inc.

- Founded: 1982
- Headquarters: Mountain View, California
- Employees: 13,300
- Revenue: \$4.3 billion
- Earnings: \$156.7 million
- R&D: 10.4%

Sun sells workstations and servers for engineering, scientific and technical markets. It also develops and produces software.

Along with HP, Sun is another beneficiary of the shift to open systems. During its 1993 fiscal year, which ended June 30, Sun's revenue grew 20 percent to \$4.3 billion. Net income for the year dropped 9.6 percent to \$156.7 million.

Sun said its operating results were affected by product transi-



Digital Equipment Corp.

- Founded: 1957
- Headquarters: Maynard, Massachusetts
- Employees: 92,300
- Revenue: \$14.4 billion
- Earnings: (\$251.3 million loss)
- R&D: 10.4%

Digital sells networked computer systems, software and services; offers a range of desktop, client-server and production systems and related peripheral equipment, software and services; and participates in strategic alliances with telecommunica-

tions companies, independent software developers and components manufacturers.

Like IBM, DEC is a company in transition. In fiscal 1993, which ended June 30, Digital hired a new CEO to replace founder Ken Olsen, cut its work force by 20,000 and posted a \$251 million loss. The company plans to cut another 7,000 jobs by June 1994.

In its systems business, Digital is attempting a difficult, but crucially important, product transition from Digital's traditional VMS line to a newer line



Total sales declined 2.8 percent for fiscal 1993, which ended December 31. IBM posted an after-tax loss of \$8.1 billion, compared with a \$6.9 billion loss in 1992.

The 1993 loss includes \$8.9 billion in restructuring charges to cut its work force and consolidate facilities. Before taxes and excluding these restructuring charges, IBM said it earned \$148 million from operations in 1993.

At the end of 1993, IBM's work force totaled 256,000. IBM plans to lower its work force to 225,000 by the end of 1994,

down from a peak of 405,000 in 1985.

In late March, IBM's board chose Louis Gerstner, who previously ran RJR Nabisco, to replace John Akers as chairman and CEO. The move made Gerstner IBM's sixth CEO and the first from outside the company.

In December, IBM announced plans to sell its Federal Systems Co. unit to Loral for \$1.6 billion. The sale will cut IBM's work force by another 10,000.

tions, including the shift to the Solaris 2 operating environment.

U.S. revenue rose 27 percent while international sales increased 13 percent. International operations accounted for 49 percent of Sun's total revenue.

During the year, Sun created a business unit, SunService, to offer support and training; FirstPerson, a business unit that is developing technologies for the consumer electronics market; and SPARC Technology Busi-

ness, a unit that makes SPARC silicon and system designs available to outside buyers.

of systems based on Digital's Alpha RISC chip, in which Digital has invested a billion dollars. The problem, analysts say, is that Digital's VAX sales are declining faster than Alpha sales are rising.

For 1993, revenue rose just 3 percent to \$14.4 billion. Digital posted a \$251 million loss, compared with a \$2.8 billion loss the year before.

During the last three years, Digital says it has cut \$2 billion in annual operating costs, reduced its manufacturing space by 3.3 million square feet and cut its work force to its lowest level since 1986.

During the six months from July to December 1993, total sales declined 10 percent to \$6.3 billion. The company said the drop was due primarily to continued sales decreases in VAX systems, associated software and services. Losses for those six months totaled \$155.3 million, compared with a loss of \$334.4 million the year before.



HP SupportPack



Worldwide Customer Support Operations

As many customers move away from centralized mainframes and adopt networks of decentralized computers, they have a greater need to support multiple data centers.

Many companies now are outsourcing the monitoring, management and overall support of these systems so they can dedicate staff resources to their core businesses rather than to day-to-day maintenance of their technology. To meet this need, HP has 27 response centers worldwide to provide around-the-clock service.

At the Finance and Remarketing Division (FRD), business has grown to more than \$1 billion financed annually. In line with the explosion of the desktop market, FRD has created new services to give HP a competitive edge in corporate acquisitions of workstations, PCs, networks and printers.

In the United Kingdom, Australia and Canada, FRD's technology-exchange plan is eliminating customers' chronic fear of obsolescence. This plan allows customers to swap equipment midway through their lease. FRD plans to introduce in the United States later this year a technology-refresh plan that will give customers the flexibility to upgrade in exchange for a long-term commitment to an HP platform.

Tough fight

Medical Products Group

One of the most important issues for the medical market is the mood of reform in the U.S. capital. The specific changes that emerge from Washington, D.C., could have a marked effect on the Medical Products Group's (MPG) business. Meanwhile, the health-care industry is making changes on its own.

One shift is a growing emphasis on outcomes research—studying the effectiveness of different clinical approaches to specific diagnoses. Doing this evaluation requires collecting extensive patient information.

Another trend is the growing desire among health-care institutions to integrate the different kinds of patient information scattered throughout the hospital. This involves collecting such information as bedside reports, X-ray results and other patient information in a database and then making this information available quickly to clinicians providing diagnosis and treatment.

MPG believes these changes in the way hospitals use technology will lower medical costs, improve patient outcomes and improve productivity.



Automated systems for the hospital bedside

SPACELABS MEDICAL INC.

SpaceLabs Medical Inc.

- Founded: 1958
- Headquarters: Redmond, Washington
- Employees: 1,630
- Revenue: \$248.7 million
- Earnings: \$19.2 million
- R&D: 12.3%

SpaceLabs sells and services patient monitoring and clinical-information systems for hospital use; it also sells other acute-care patient-monitoring equipment and supplies, such as ambulatory monitoring systems.

During 1993, total sales declined slightly to \$248.7 million from \$252.3 million the previous year; net income rose 12 percent to \$19.2 million from \$17.2 million in 1992.

Company executives said that uncertainty in the U.S. health-care market made 1993

a "challenging and difficult year" and that "health-care reform issues hampered our U.S. business." International sales increased to 22.5 percent of the company's total revenue, up from 20.5 percent in 1992.

Until June 1992, SpaceLabs was part of Westmark International, when SpaceLabs was spun off as an independent entity.

EMTEK HEALTHCARE SYSTEMS

Emtek Healthcare Systems, a Motorola subsidiary

- Founded: 1985
- Headquarters: Tempe, Arizona

- Employees: 100
- Revenue: not available
- Earnings: not available
- R&D: not available

Emtek sells clinical-information systems for use in hospitals.

Because Emtek is a wholly owned subsidiary of Motorola, financial details are not available.

The company began by selling clinical-information systems

for intensive-care and critical-care units. In 1993, it began marketing a new medical/surgical version of its system. Emtek's software runs on workstations from Sun and IBM.

ACUSON

Acuson Corp.

- Founded: 1981
- Headquarters: Mountain View, California
- Employees: 1,500
- Revenue: \$295.3 million
- Earnings: \$3.7 million
- R&D: 20%

Acuson sells and services medical diagnostic ultrasound-imaging systems.

During fiscal 1993, which ended December 31, Acuson's total sales declined 14 percent to \$295.3 million (from \$342.8 million) while net income dropped 90 percent to \$3.7 million (from \$36.8 million).

Executives cited "market softness resulting from the uncertainty surrounding U.S. health-care reform."

In June 1993, Acuson announced it would take a \$12 million pretax restructuring

charge and would cut its work force by about 250, or 15 percent of total staff. The company said it was responding to "uncertainties caused by the recession, slow market conditions and the pending U.S. health-care reform."

During 1993, Acuson's R&D spending increased to 20 percent of total revenue, up from 14 percent the year before.



TOSHIBA

Toshiba Corp.

- Founded: 1904
- Headquarters: Tokyo
- Employees: 168,000
- Revenue: \$39.9 billion
- Earnings: \$177 million
- R&D: 6.5%

Toshiba makes information and communications systems, electronic devices, heavy electrical equipment and consumer products.

Sales for the fiscal year ended March 31, 1993, declined 2 percent, and net income dropped 48 percent compared with the previous year. Toshiba's net income has dropped three consecutive years.

In 1993, Toshiba began a sweeping operational review to eliminate unprofitable product lines and to focus resources on higher-growth areas, such as LCDs and telecommunications.

For the six months from April 1 to September 30, 1993, sales decreased 2 percent while net income dropped 26 percent.

The vice chairman of Toshiba's U.S. subsidiary told a reporter in November that Toshiba has reorganized all its R&D efforts to exploit the convergence of consumer and computer devices.

NEC

NEC Corp.

- Founded: 1899
- Headquarters: Tokyo
- Employees: 180,000
- Revenue: \$30.6 billion
- Earnings: (\$392.7 million loss)
- R&D: 7.8%

NEC manufactures communications systems and equipment, computers, industrial electronic systems, electronic devices and home electronic products.

Total sales for NEC's fiscal year ended March 31, 1993, dropped 7 percent to \$30.6 billion. NEC posted a \$392.7 million loss, compared with a \$45.2 million loss the previous year.

For the six months from April 1 to September 30, 1993, sales fell almost 3 percent to \$15.5 billion while the company posted a loss of \$88 million.

NEC cited decreased sales in the Japanese computer and telecommunications market and the strength of the yen. Sales of memory chips remain strong, partly because of the PC sales boom in the United States.

In December, NEC agreed to invest another 7 billion yen (\$65 million U.S.) in the French state-owned computer maker, Groupe Bull. The investment continues NEC's stake in Bull at 4.4 percent.

In February 1994, NEC's president announced he would step down in June.



American Telephone & Telegraph Co.

- Founded: 1885
- Headquarters: New York, New York
- Employees: 312,700
- Revenue: \$67.2 billion
- Earnings: (\$3.8 billion loss)
- R&D: 4.6%

AT&T provides U.S. and international telecommunications services; provides electronic data interchanges and facsimile services; sells and services business information-processing systems; provides financing and leasing for its products; markets and services communication products such as telephones; and provides credit-card services.

In its latest fiscal year, ended December 31, revenue rose 3.5 percent to \$67.2 billion. However, the company posted a \$3.8 billion loss because of \$8.3 billion in one-time charges

to adopt new accounting rules. Without these and other special charges, AT&T said net income totaled \$4.3 billion, up 12 percent from the prior year.

In 1993, AT&T announced plans to buy McCaw Cellular Communications. AT&T said the investment signals its intention to be a leader in the wireless communications revolution.

In June 1993, AT&T sold its remaining 77 percent interest in UNIX System Laboratories to Novell in return for a 3 percent stake in Novell common stock.

Components Group

In the future, HP's Components Group will focus even more on the rapidly growing communications market.

Components Group's communication technologies—including wireless and fiber optics—will help enable both the wireless communications revolution and the data superhighway.

The growth of wireless communications—via cellular phones, for example—provides important expanding markets for the Components Group.

In 1993, HP completed the acquisition of BT&D, a joint venture between British Telecom and Dupont, located in Ipswich, England. Now renamed the Fiber Optics Components Operation, it gives the Components Group a complete range of fiber-optic components for telecommunications and data communications.



"Ultra-Miniature" LED displays

Tough fight

Test and Measurement Organization



HP 8146A Optical Time-Domain Reflectometer

The test and measurement industry is undergoing major changes brought on by a reduction of the U.S. defense industry and a blending of the communications and computer industries.

While the defense and aerospace industries remain important, T&M is increasingly focusing on new industries—especially communications.

Customer needs also are changing. Traditional and emerging markets no longer want stand-alone boxes but integrated systems solutions with testing functions built-in.

In response to increased competition, TMO products are being designed on computers to speed time to market and reduce the cost of product creation.

A key to success will be the ability to combine HP's unique strengths in measurement with computing and communications to offer customers value that no other company can.

TEKTRONIX INC.

Tektronix Inc.

- Founded: 1946
- Headquarters: Wilsonville, Oregon
- Employees: 9,840
- Revenue: \$1.3 billion
- Earnings: (\$55.1 million loss)
- R&D: 12.1%

Tektronix sells and services test- and electronic-measurement, design and display instruments and systems, such as digital and analog oscilloscopes, logic analyzers, color graphics printers, terminals, television waveform monitors, vectorscopes, transmission systems and other related equipment.

Fiscal 1993, which ended May 31, was a transition year for Tektronix. During the year, the company announced it would take a \$150 million one-time restructuring charge to reduce its work force by about 800 jobs

worldwide to consolidate facilities and exit non-strategic businesses.

As part of its downsizing, Tektronix said it is trying to sell its integrated-circuit and hybrid-components plants or find a partner to take over their day-to-day operation.

Del Yocam, a former executive vice president at Apple, joined Tektronix as its president and CEO in September 1992.

ADVANTEST

Advantest Corp.

- Founded: 1954
- Headquarters: Tokyo
- Employees: 1,400
- Revenue: \$534.3 million
- Earnings: \$345,000
- R&D: 7.9%

Advantest manufactures and sells electronic measuring equipment and automated test equipment.

In its last complete fiscal year, ended March 31, 1993, total sales declined 23 percent while net income dropped 99 percent, compared to the prior year.

Advantest's executives attributed the falloff to the recession in Japan, which caused semiconductor manufacturers to lower their capital spending for the kinds of equipment Advantest makes.

In the last several years, Advantest has struck several strategic alliances. In August 1992, Advantest and Rohde & Schwarz GmbH of Germany agreed on a joint marketing and product-development pact. In June 1993, Advantest and Tektronix concluded an agreement under which Tektronix will sell Advantest equipment in North America.

The head of Advantest's U.S. subsidiary told a reporter in November 1993 that Advantest would focus more efforts on the fast-growing telecommunications market.

TERADYNE

Teradyne Inc.

- Founded: 1960
- Headquarters: Boston, Massachusetts
- Employees: about 4,000
- Revenue: \$554.7 million
- Earnings: \$35.2 million
- R&D: 11.8%

Teradyne Inc. makes semiconductor test systems, board-test products, communications-test products and backplane connection systems used in electronics and telecommunication industries.

In 1993, sales rose 4.7 percent to \$554.7 million from \$529 million in 1992. Net income increased to \$35.2 million from \$22.5 million the year before, a 56.4 percent jump.

Fiscal 1993 marked Teradyne's third consecutive profitable year, following losses in 1990 and 1988.

Teradyne executives attribute the turnaround to adoption of total-quality-management practices. The company created some 500 work teams to cut costs and improve quality and manufacturing efficiency.

Analysts say Teradyne also has benefited by improved performance of U.S. semiconductor makers Intel, Motorola and Texas Instruments—important customers for Teradyne's chip-test equipment.



PERKIN ELMER

Perkin-Elmer Corp.

- Founded: 1937
- Headquarters: Norwalk, Connecticut
- Employees: 6,560
- Revenue: \$1.0 billion
- Earnings: (\$56.9 million loss)
- R&D: 8.3%

Perkin-Elmer develops, manufactures and distributes analytical instrumentation and life-science systems used in environmental technology, pharmaceuticals, biotechnology, chemicals, plastics, food, agriculture and scientific research.

In February 1993, P-E completed its merger with Applied Biosystems Inc., Foster City, California. The merger will expand P-E's presence in life-sciences markets, such as the synthesis and analysis of DNA molecules, the company said.

Later in 1993, P-E announced an alliance with The Dow Chemical Company that Perkin-Elmer said will enable it to develop and market systems for on-line analysis in industrial and environmental monitoring.

Thermo Instrument Systems Inc.

Thermo Instrument Systems Inc.

- Founded: 1986
- Headquarters: Waltham, Massachusetts
- Employees: 3,650
- Revenue: \$423.2 million
- Earnings: \$33.1 million
- R&D: 6.2%

Thermo Instrument Systems, a subsidiary of Thermo Electron Corp., sells instruments used to detect and measure air pollution, nuclear radioactivity, toxic substances and trace quantities of metals and other elements in a wide variety of liquids and solids, and performs laboratory services.

In August 1992, Thermo Instrument acquired Nicolet Instrument Corp., which added Fourier transform infrared spectrometry to Thermo Instrument's analytical technologies.

In May 1992, Thermo acquired GAs Tech Inc., extending Thermo's air-quality monitoring business.

For its 1992 fiscal year, sales rose 25 percent while net income increased 33 percent. The company said these gains were due principally to acquisitions.

For the first nine months of 1993, revenue rose 49 percent to \$426.7 million. Net income grew 33 percent to \$31.6 million.

MILLIPORE

Millipore Corp.

- Founded: 1954
- Headquarters: Bedford, Massachusetts
- Employees: 5,770
- Revenue: \$445.4 million
- Earnings: \$34.6 million
- R&D: 7.9%

Millipore sells products for analysis and purification of fluids, using primarily membrane, chromatography and bioinstru-

mentation separations technologies; and designs and engineers process systems specifically for the customer.

In November 1993, Millipore announced plans to sell the Waters Chromatography unit, which in 1992 accounted for some 40 percent of the company's total sales. Millipore did not include the results of its Waters unit in its 1993 fiscal year results.

Executives said they decided to divest the Waters unit because they believe Millipore's major businesses will

be more successful as separate businesses.

In January 1994, Millipore's chairman and chief executive officer said, "Our divestiture plans are on track and we remain optimistic about their successful conclusion in the first half of this year."

During its 1993 fiscal year, which ended December 31, sales (excluding Waters') rose 4.3 percent while net income grew 4.2 percent.

Analytical Products Group

HP's ability to link its analytical products with computers is a key differentiator. HP is one of the few companies that can combine expertise in so many fields of the analytical market with strong computing technology.

For example, HP ranks either first or second in gas chromatographs, liquid chromatographs and mass spectrometry.

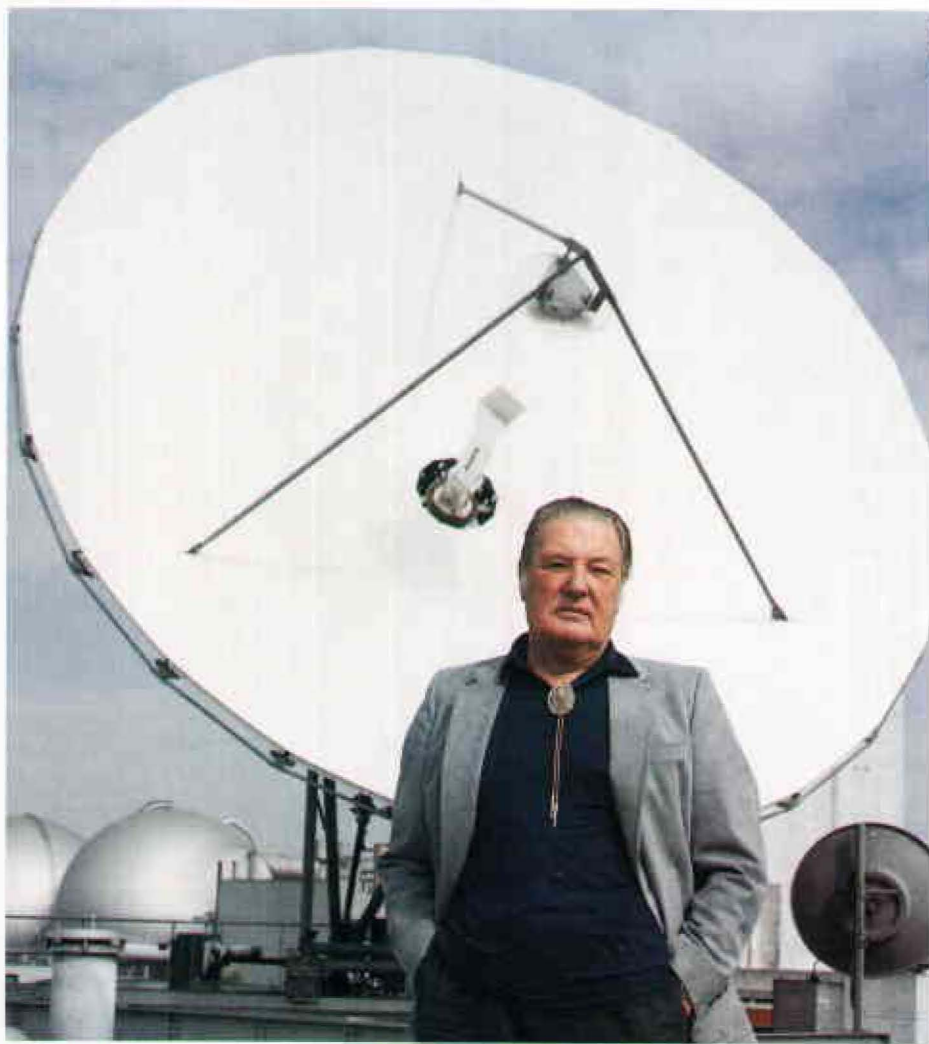
HP continues to lead in the chemical, petroleum and pharmaceutical markets. In the future, the Analytical Products Group (APG) plans to expand its focus to such areas as inorganic and elemental analysis products for the biotechnology, food processing and drug screening markets. The environmental market also will become more important. **M**

(Andrew Ould is a senior press relations representative in HP's Corporate Communications department. Additional research for this story was provided by Nancy Fong, 1993-94 MEASURE intern.—Editor)



HP 7686 PrepStation

Long-time HP technology chief Barney Oliver continues his focus on finding intelligent life elsewhere in the universe.



Since 1981, Barney Oliver has devoted most of his time to the Search for ExtraTerrestrial Intelligence, which listens for radio transmissions from throughout the galaxy.

Hello, Barney! This is Alpha Centauri calling...

By Gordon Brown

Fast forward to the year 6965, a mere blink in astronomical terms. At Flushing Meadows, the mayor of New York City unseals a time capsule buried at the close of the 1965 World's Fair—5,000 years before! Among its contents is an article on "Radio Search For Distant Races." Author: Dr. Bernard M. Oliver, vice president of R&D at Hewlett-Packard, head of

HP Labs and 1965 president of the Institute of Electrical and Electronics Engineers.

Barney, as he is known to friends and associates, retired from HP in 1981 after some 30 years with the company. That was preceded by 12 years at Bell Labs, where he worked on a variety of high-tech programs, including automatic radar tracking during World War II.

In 1983, he was named chief of the SETI (Search for ExtraTerrestrial Intelligence) office at the National Aeronautics and Space Administration (NASA) Ames Research Center in Mountain View, California.

SETI's mission is to listen for radio transmissions from technology-using species on the planets and stars beyond the earth's solar system.

Today, Barney's interest in the search for intelligent life elsewhere in the universe is still very much on his

Barney's scientific contributions to SETI have been as profound as his earthbound activities for HP.

agenda. But, due to budget cuts by the U.S. Congress, SETI has had to undertake a major shift from its affiliation with NASA to that of a privately endowed (non-profit) organization: the SETI Institute. Barney continues to serve the privatized version as its senior technical expert.

By January 1994, the SETI Institute had raised \$4.4 million in private funds—including major donations from Barney and HP co-founders Bill Hewlett and Dave Packard—to ensure at least its short-term future.

Barney's scientific contributions to SETI have been just as profound as his more earthbound activities were for HP and the electronics industry.

One example: His Ames Lab team—with help from Stanford University—created a single VLSI circuit that replaced a giant circuit board consist-

ing of dozens of components. Reducing hardware from 30 cabinets to two enables the team to process incoming antenna signals much more efficiently. Even more important, he headed the 1970 team that developed the "Project Cyclops" report for NASA, analyzing the scientific and technical issues faced by SETI.

Barney's interest in astronomy began with books provided by his parents in their Soquel home near Santa Cruz, California. In those times, astronomers had been persuaded to think of the universe beyond Earth as lifeless. That was discouraging because, in Barney's mind, "The universe seemed so vast that for us to be the only inhabitants to appreciate it seemed to me to be a colossal waste.

"I didn't like the idea that we were alone in the universe. What has happened since then is that new discoveries have made the possibilities of life out there vastly more tenable."

Barney kept in touch with these changes and, in 1960, read about a new project at the Green Bank Observatory. He was soon in touch there with astronomer Frank Drake (now president of the SETI Institute) and began thinking of ways that electronics technology could be employed in the design of more efficient antenna arrays used for tuning in to those intragalactic signals. As a result of such efforts, he was chosen to direct Project Cyclops in 1971.

Along with the other recent SETI changes, Cyclops has now become Project Phoenix. This change reflects the fact that SETI is now past the experimentation stage and ready to deploy its new state-of-the-art microwave listening equipment. Another change is that Phoenix will concentrate on a "targeted search" of specific stars, and will not continue the "all-sky survey" efforts to sweep the galaxy for signals.

First stop for Phoenix will be at Parkes, New South Wales, Australia.



Barney (far left) checks out a new scope in 1965 at HP Labs along with Pete Lacy (center) and George Mathers.

Hello, Barney!

This will be a five-month effort through the first half of 1995, during which some 200 sun-like stars in the Southern Hemisphere will be targeted, all within about 100 light-years.

Things then will move to the upgraded Arecibo Radio Telescope in Puerto Rico—the world's largest at 1,000 feet in diameter. In all, Project Phoenix will observe nearly a thousand target stars in the next 10 years.

The NASA program, of course, is not the only SETI program. The Planetary Society has supported Project META at Harvard University, and more recently in Argentina. And a University of California-sponsored project, named SERENDIP (Search for Extraterrestrial Radio Emissions from Nearby Developed Intelligent Populations), eavesdrops on radio signals coming in to astronomers at Arecibo.

Meanwhile, back to the future at Flushing Meadows. The mayor of New York carefully opens the ancient time capsule, then uses an HP 6964A scanner to translate Barney's document into the current common language.

"Hey," he says to his aides, "we got it—proof that we beat those Alpha Centaurian sister/brother cities in seeking to establish communications.

"That ought to be worth a few billion Federation votes!" **M**

(Gordon Brown, a Los Altos, California-based free-lance writer, is a former editor of MEASURE.—Editor)



LARRY BRAZIL

Barney chats with HP co-founder Bill Hewlett during an event honoring the company's 50th anniversary in 1989.

"The one and only..." Barney

That was the headline of the *MEASURE* profile on Barney Oliver in March-April 1981—just one month before his HP retirement. For that report, HP co-founder Bill Hewlett was asked to comment on his association with Barney. He hesitated. He hemmed and hawed. Finally, he made clear that it was a problem of information overload:

"Just consider some of the things the man has done," he said, citing a biography that listed 40 technical papers and 52 U.S. patents. Bill went on to say that Barney's chief

role in the company was to set people on the right course in solving technical problems and then to remove himself while the work was under way.

But sometimes, said Bill, he became highly involved, particularly when some new concept or esoteric function intrigued him.

Earlier yet, Bill recalled their association at Stanford University: "Although Barney started a few years behind Dave (Packard) and me, he talked his way into taking a graduate course in radio engineering taught by Fred Terman, even though he had not had the usual background studies. Professor Terman was reluctant, but said 'OK—however, we'll review the situation at midterm.' At midterm Barney had the highest results in the class and, of course, stayed on."

Bill recalled one solution Barney had before he even joined the company: "We were trying to increase the frequency range of the RC oscillators, and about 1945, I remember Barney asking if we had thought of using a three-phase oscillator. No. Yet this became the genesis of a new instrument, the 650A. Then he came out here and did so many more of those sorts of things that you begin to lose count."

Everything is shipshape in New Zealand

AUCKLAND, New Zealand—No matter where you are in New Zealand, you're not far from the water. This three-island nation with more than 3 million residents has depended upon shipping and the surrounding sea during much of its 150-year history.

Nowhere in the country is that more true than in Auckland, the largest city. It's called the "City of Sails" and life for many is on or near the water. Sailing craft dart through the harbor, huge cargo ships unload containers onto piers and ferries carry locals from the central business district to their homes in the residential suburbs.

Employees can watch it all from the windows of HP's offices in the Ports of Auckland building on historic Quay Street. HP moved into this "inverted thumbtack" in December 1991. The interior design, created by award-winning architect Ian Athfield, resembles a ship, down to the buffed metal walls, the portholes and the aquatic color scheme.

HP employs 20 people in Auckland, another 45 in the capital city of Wellington, and one support engineer in Christchurch, the largest city on the South Island. In 1993, HP's orders in New Zealand topped U.S. \$30 million. **M**



above

HP's offices in Auckland, New Zealand's largest city, are on the fourth floor of the Ports of Auckland building on Princes Wharf. Employees there enjoy a panoramic view of life on the water in this port city.

left

The interior of the Auckland office is based on a nautical theme. The reception desk resembles a ship's prow cutting through the water.

New Zealand

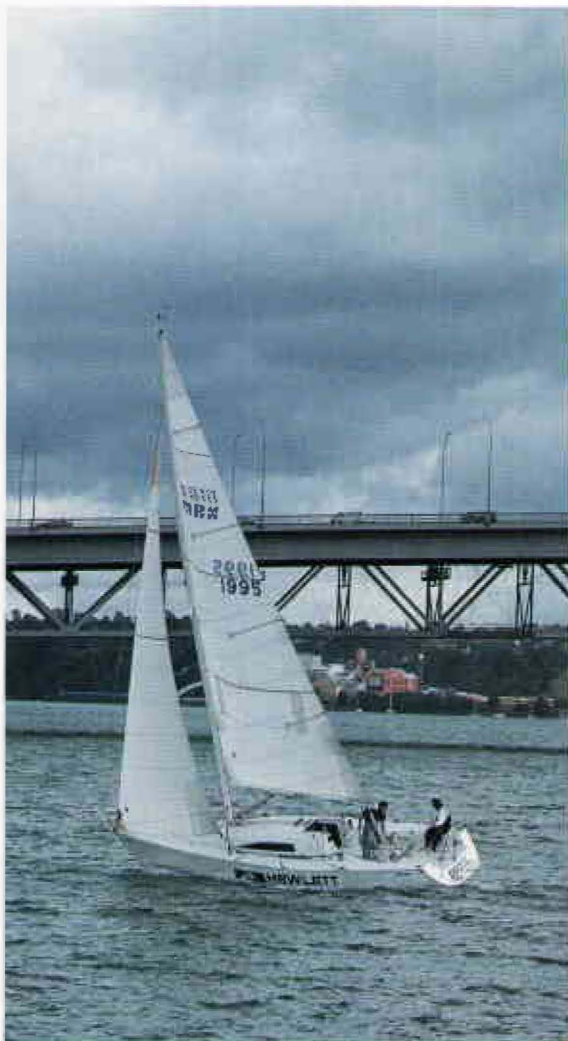
JOSEPH BRIGNOLO PHOTOS

right

HP sponsors one MRX yacht in a fleet of 11 such boats built for match racing. As a sponsor, HP can use the yachts from time to time for customer events. CSO sales secretary Leanne Robertson takes the yacht for a shake-down sail near Auckland Harbor Bridge with Freddy Prohuber, one of the MRX team skippers.

far right

New Zealand's famous entry in the 1988 America's Cup sailing competition, KZ1, is parked in front of HP's office in the "City of Sails." HP computers have been used to design and sail New Zealand's last two entries in the America's Cup.



bottom left

Each year HP sponsors the National Keelboat Championship in Auckland Harbor, attracting some of the best skippers from the world's sailing community. Auckland is also one of the stops for the Whitbread Round the World Race.

bottom center

The walls of HP's Auckland office are made of buffed aluminum sheets which resemble the plated hull of a ship. Architect Ian Athfield also designed the HP office building in Wellington, the nation's capital.

bottom right

The Ferry Building, an Auckland landmark, is a short walk along Quay Street from HP's office. Ferries carry passengers from Auckland's Northshore residential suburbs to this building in the central business district. The Ferry Building, built in 1912, also houses two restaurants and many small shops.





The China connection

By Shirley Horn

An Englishman from an HP division in Scotland is helping develop the telecommunications infrastructure for the People's Republic of China.

LunSi, when translated loosely, means "ethical gentleman" in Chinese.

Lawrence Lowe, an Englishman who has lived in Scotland for 20 years, has adopted a Chinese name: Luo LunSi.

Luo is a Chinese family name similar to Lowe. LunSi, when pronounced correctly, sounds a little like Lawrence. Loosely translated, LunSi means "ethical gentleman."

Why has he taken on a new name and what is he doing in the People's Republic of China (PRC)?

Lawrence is the China strategic development manager for HP's Telecommunications Test Division (TTD) in Queensferry, Scotland. "Ethical gentleman" is an apt description for his new role of developing HP's long-term telecommunications test business in China.

Working with the government-owned Beijing Instrument Research Institute (BIRI), Lawrence is helping the PRC upgrade its telecommunications infrastructure, which is growing at a tremendous rate.

For a Western company to break into the world's fastest-growing economy, Lawrence will tell you that it is as important to understand the national culture and to develop strong personal relationships as it is to have products and technology that are of interest to the customers.

"Understanding the subtleties of negotiation and hospitality are vital to developing a good business relationship in China," Lawrence says. "For example, you can be involved in a meeting or negotiation, and as long as your cup of tea is 'topped up,' you are welcome by your hosts. If a half hour goes by and your host has not added even a drop of water to your tea cup,

then you may have worn out your welcome and it is time to leave."

To help bridge some of these cultural gaps, TTD offers Mandarin classes to its employees. The classes train HP people in basic language skills, Chinese politics and culture, and the courtesies of addressing people.

"Through our long-standing joint venture—China Hewlett-Packard—the Chinese government already was predisposed to working with HP in other areas," Lawrence explains. "BIRI came to HP because its people look upon us as leaders in quality and technical expertise in an industry similar to their own. The institute is looking for long-term partnerships—and for partners who are willing to invest time and resources to help China develop its own expertise.

"HP can offer the experience of a mature company, not just in terms of technology and manufacturing knowledge, but also for marketing, general business and people management. In return, HP gets the opportunity to be

"Those who try to break in later...will find the market much harder to crack."

in on the ground floor of China's fast-growing telecommunications industry."

Lawrence has been traveling to China and working with BIRI since May 1993. Much of his time during his early visits was spent giving lectures to Chinese managers and engineers



JIANHUA GAO

On the Great Wall of China, HP's Lawrence Lowe (left) confers with Ming-Qian Wu of the Beijing Instrument Research Institute and Jianhua Gao of China Hewlett-Packard.

about modern management techniques, project management and quality standards such as ISO 9000. He also spent time studying the BIRI factory, labs and products, and making recommendations for improvements.

"The Chinese engineers are very keen to listen, show their work and seek advice," Lawrence says. "They are well educated and very enthusiastic, but they also are starved for modern development equipment and design techniques. A lack of 'hard' Western currency and rigid import restrictions prevent them from purchasing the latest technology.

"To an engineer in a typical HP lab, what the BIRI engineers have achieved with such limited resources is really remarkable."

BIRI provides telecommunications test equipment to the Chinese market, and has funding from the United Nations Development Fund to help modernize its business. In the initial phase of the HP/BIRI partnership, HP will provide subassembly kits to BIRI, which will do final assembly and test at its Beijing factory, then market and distribute the products in China.

Why is TTD willing to invest Lawrence's time and other resources in a project that probably won't yield great profits for years?

"Today, most industrialized nations have 60 to 80 telephones per 100 people," explains Chuck Acken, TTD general manager. "In China, there is one phone for every 1,000 people. The Chinese government's highest priority

is to change that. We believe that in five to eight years, China will be the size of TTD's other major markets in the United States, Japan and the United Kingdom.

"This market is young and immature," Chuck adds. "The companies who go in now and work with the Chinese to help them develop their telecommunications infrastructure will be the ones who benefit in the future. Those who try to break in later—without this up-front investment—will find the market much harder to crack."

Byron Anderson, general manager of the Communications Test Business Unit, says, "Ours is a global business. It is critical for our people to be closely connected to customers in all parts of the world. Each major market segment has its own special requirements and you can't understand them and effectively satisfy customer needs from behind a desk in a factory on the other side of the world. You've got to get out there and get practical experience with global customers."

Lawrence, a former research and development manager at the Queensferry Microwave Division, also is helping other HP Test and Measurement Organization divisions establish key relationships in China. Böblingen Instrument Division (BID) is developing a program with BIRI, and Lawrence has accompanied BID's G.M. on visits in China.

"My job isn't just telling China about HP," says Lawrence. "It's also telling HP about China." **M**

(Shirley Horn is the director of corporate communications for HP Ltd. in the United Kingdom.—Editor)

And the winners are...

By Betty Gerard

It's not easy for an entity to take home the new President's Quality Award. How did the first seven award winners do it?

Winning one of the first President's Quality Awards leaves Jim Cyrier, general manager of the Patient Care Monitoring Systems Business Unit (MSY), feeling elated—and humble.

"We think we still have a lot to learn about quality," he says.

But MSY, like the other winners of the first award, convinced some of the most exacting judges in the company that close attention to quality has a direct relationship to solid business performance.

Lew Platt announced the winning entities to a gathering of worldwide general managers in January: MSY and the Customer Services Business Unit, both in the Medical Products Group (MPG); U.K. Sales; Taiwan Sales; Malaysia Manufacturing; Support Materials Organization; Optical Communication Division and the Singapore Components Operation (combined entry).

To be in the running for the award, each entity had to score 3.0 or above (on a scale of 0 to 5) on HP's in-depth Quality Maturity System (QMS). QMS, first implemented five years ago, looks at an entity's strategic and customer focus, business planning, process management and improvement projects.

In 1993, the rigorous QMS review was strengthened to make it more business-focused, and place added emphasis on leadership by entity management and broad participation by employees.

Along with a high QMS rating, each winner had to have customer-satisfaction results at or above its own target, excellent employee satisfaction as measured by the Employee Survey, and solid financial performance for the last three years.

The Planning and Quality Committee of the Management Council reviewed

the finalists suggested by the businesses, and Lew Platt and his Management Staff made the final selection.

Not an easy course to run, certainly, and the winners used a variety of individual techniques to reach their impressive results.

MSY, for instance, put a year into designing and conducting a "voice of the customer" survey in the United States, which now will be rolled out in other countries. R&D and marketing managers co-designed a questionnaire to learn what's important to the medical technologists who use HP's monitoring systems. MSY then tested its objectives against these attributes to make sure its products were right.

MSY measures its managers on how well they demonstrate teamwork—both with other functions and other HP entities. Special attention is paid to defining and improving cross-organizational roles and practices.

U.K. Sales also emphasizes listening to the customer. In fact, the sales force developed a finely tuned ear for the customer's voice. Each HP business collected data on what upset its customers, such as a slow response to getting requested literature, or the difficulty of finding the right person to answer a question. The data then was organized in order to take action.

Simple fixes—such as pulling together a "front line" team of Analytical people that could answer any question—had striking results in improved sales. General Manager John Golding calls it "a structured approach to common business sense."

A "Share Faire" is held each year to celebrate successes, such as a warehouse team that cut turn-ins of "defective" toner cartridges dramatically by writing its own primer for dealers to use in coaching customers through instructions.



On the production line in Waltham, Massachusetts, Henry Young and Maria Medeiros share in MSY's concern for high quality.

Taiwan Sales turned to U.K. Sales for a process format it had published, as well as a form for consolidating oral or written replies to a questionnaire related to strategic planning. All managers and longer-service employees were asked such questions as "What would you like HP Taiwan to be in five years?" and "What business do you think we should be in?"

"Some employees wrote three or four pages of their thoughts, and many included models with diagrams," says General Manager Ho-Ming Huang. "Their inputs were a very effective tool for the staff to use in planning."

An employee suggestion program draws hundreds of submissions annually. Most are ways to grow the business or to improve the cost structure.

Ho-Ming credits HP Taiwan's excellent business results to focusing on a few Hoshin (breakthrough) objectives

each year. It adopted the Hoshin planning and review system eight years ago.

The Optical Communication Division (OCD) and the Singapore Components Operation (SCO) made the push for business growth highly visible through T-shirts and caps with the slogan, "Dare to Double." And with that goal achieved, this year's aim is "Dare to Double Again!" It's all part of getting the goal for improvement clear to everyone, say OCD General Manager Rick Kniss and SCO Operations Manager Ho Fatt Lun.

Other winners have their own success stories.

Malaysia Manufacturing, with high quality and on-time shipments over 97.5 percent, has won many awards from major customers under the leadership of General Manager Ted Kavranian.

The Support Materials Organization, under General Manager Tom Ashburn, has aggressively reduced

customer costs and waiting time and simplified warranty claim processing.

The Customer Service Business Unit (MCS), headed until recently by General Manager Steve Rusckowski, consolidates MPG supplies, customer support and system integration. Along with meeting its own high goals for customer satisfaction, MCS has some of the best Employee Survey scores in the company—and they keep going up each year.

The winners won't be able to rest on their laurels, Jim Cyrier thinks, because "we're shooting at a moving target in quality. The strategies of yesterday may not work today. It's not enough just to improve our present processes—we also must look for new and innovative approaches to win in the market."

Given that challenge, who will step up to the podium to collect next year's President's Quality Awards? **M**

HOLDERS OF Swiss bank accounts no longer just hide their money there. Today, they want their money to make money.



LEW SORIMAN

HP has seized a golden opportunity during the past three years by selling workstations to the Swiss banking industry, which has upgraded its computer systems significantly.

The newest secret in Swiss banking

By Jane Glasser

GENEVA, Switzerland—You'll never guess the hottest new application for HP workstations: banking and finance. That's right. Out of the labs and engineering corridors into the world of portfolio management and stock exchanges.

And what better proving ground than Switzerland—home of famous banks—and bank accounts.

Olivier Trancart, who manages HP's Swiss Financial Services Industry (FSI) group, explains, "As recently as 1989, HP virtually was absent from the banking scene. We were perceived as a calculator company. But the banking industry spends billions of francs each year on computer equipment—much more than the manufac-

turing industry. Needless to say, we quickly became interested."

In three short years, Olivier's group has sold millions of dollars worth of HP workstations and established relationships with some of the nation's leading banks. In fact, since 1991 the group has more than doubled its banking sales. And 1994 looks very promising, too.

What's the secret to the HP group's success?

"It's tied to major changes going on in the banking industry right now, especially the Swiss banking industry," Olivier explains. "For centuries, very wealthy people brought large sums of money to Switzerland to be

safely—and secretly—stored. They weren't interested in having the money multiply—just sit safely. They required confidentiality and cordiality from their banker (but) not much more than that."

All that has changed, Olivier says.

"Global competition has eaten away Switzerland's monopoly on big, prestigious accounts because no one can afford to have money sit and do nothing. People want their money to make money. There's a lot of pressure for experienced and productive portfolio management."

Where computer systems are concerned, that has meant a change from "back-office" mainframes that merely stored numbers and occasionally spat out standard summary reports to the use of "front-office" workstations that can nimbly respond to ad hoc inquiries and instantly put portfolio managers in touch with multiple financial instruments worldwide.

"Today's portfolio managers need to have integrated internal and external data," says HP's Philippe Batard, banking and finance program-development manager, who is responsible for the French-speaking part of Switzerland. "This allows them on-line decision making and impressive quality service for their customers. HP workstations have proven to be an ideal tool for staying on top of global financial markets."

HP's strategic weapon has been the HP 9000 workstation running the UNIX® operating system and the Motif™ graphical user interface. Traders can tap into multiple stock exchanges, the mainframe and local applications by using a single desktop tool. They can check instantly on a particular stock, plan an order, conduct a trend analysis of an entire port-



HP's Olivier Trancart (right) developed a customized software solution for Marcel Gaillard and Paribas Bank.

folio and ask "what-if?" questions—none of which they could do before.

HP's first big sale was to the United Overseas Bank in Geneva, which bought 270 HP 9000 workstations. Next came a sale of 200 workstations to Darier Hentsch & Company, the third largest private bank in Switzerland. In 1993, HP completed a deal with Paribas Bank, a French bank

"The banking community in Switzerland is very close-knit, so word of our success has spread quickly."

with offices in more than 60 countries. Paribas moved its portfolio-management "off-shore" department from Paris to Geneva and overhauled its entire technology infrastructure.

HP beat out competitors such as IBM, Digital Equipment Corporation, Sun Microsystems and Data General with a total solution that involved not only HP workstations but integrated portfolio-management software.

"We knew we did not have the expertise in-house to meet all of Paribas' needs," Olivier says. "So we joined forces with a Swiss software company called Unicible that specializes in banking software."

HP Switzerland intends to win even more banking business. The Paribas deal is unfolding in stages, with systems installed in the Geneva and Lugano, Switzerland, offices this year, in Zurich and Basel next year, and the entire Paribas banking system after that—in Paris, Monaco, Luxembourg, Brussels, London, Milan, New York and Singapore. Ultimately, about 350 portfolio managers will use the HP/Unicible system. That will be worth about U.S. \$6 million in sales to HP. There also are deals pending with a few banks in Germany and several other banks in Switzerland.

"The banking community in Switzerland is very close-knit, so word of our success has spread quickly," Olivier says. "And that potentially means a lot of business for HP. People joke that there are as many banks in Switzerland as there are cafes in France. Well, maybe not that many, but around 500.

"I'd say Philippe and I have our work cut out for us." **M**

(Jane Glasser is a Sherwood, Oregon-based free-lance writer.—Editor)

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Motif is a trademark of the Open Software Foundation in the U.S. and other countries.

A "Touching" solution

By Rick Petreycik

A Midwestern dairy chain teams with HP to make convenience-store buying even more convenient.

CINCINNATI, Ohio—Sometimes a chance meeting can trigger a practical solution to a nagging business problem.

That's what happened when Frank Braun, vice president of information systems with United Dairy Farmers (UDF)—a 215-unit convenience-store chain headquartered in Cincinnati, Ohio—stopped by the booth of a video rental company at a retail food-industry convention.

Frank was concerned about the frustration new employees experienced while learning to operate the electronic cash registers in his company's stores.

In addition to feeling somewhat intimidated by the terminals' keyboards, employees had to memorize the price look up (PLU) numbers of more than 50 key items whose prices fluctuated due to changing market conditions. Instead of ringing up the prices of these items, employees had to enter their corresponding PLU numbers manually.

"To complicate matters," Frank says, "our stores are a cross between a 7-Eleven convenience store and a Baskin-Robbins ice cream shop. So, in addition to selling grocery items, we sell self-service ice cream products, including milk shakes, cones and banana splits—all of which can't be scanned. And if a customer adds a lot of extras, such as whipped cream or chocolate topping, it makes it even more difficult for a cashier to ring up the sale correctly."

The frustrations led to some employee turnover.

That's when Frank saw the demonstration by the video rental company. It showed how clerks could ring up items by touching a PC-based screen as opposed to operating a cumbersome keyboard.

"A light bulb went off," Frank says. "So when I returned from the show, I approached upper management with the idea of developing the software for a PC-based touch-screen system tailored to the convenience-store industry. They trusted my judgment and gave me the green light."

Frank enlisted the support of his alma mater, Miami University, in Oxford, Ohio, to assist with the development of the software. He also contacted Buzz Walker, a Hewlett-Packard account manager, who had worked with Frank and United Dairy Farmers. Buzz had played an instrumental role in UDF buying the HP 9000 computer.

"I thought it was a great idea, and I already knew that HP was interested in getting more involved in the retail arena," Buzz says.

Within a few months, HP forged a retail partnership with United Dairy Farmers' newly created TouchScreen Systems, Inc.

The open-architecture system consists of a color TouchScreen monitor, an HP Vectra PC, a programmable cash drawer, a receipt printer, a uniform price code barcode scanner and a magnetic stripe reader for conducting credit card transactions. One program displays a variety of sizes of milkshakes, cones, freezes and sundaes. With this feature, a clerk can

accurately ring up the sale of a seven-ounce cup of yogurt that contains extra nuts by touching the appropriate category on the screen.

In addition, store managers can program maximum cash parameters for security purposes. Once the total amount of cash in a terminal exceeds \$50, for example, the system tells the operator that it's time to make a deposit.

What's more, the system allows operators control over various transaction types such as taxable items, specials, coupons, food stamps and alcoholic beverage sales.

For example, Ohio prohibits the sale of alcoholic beverages between 1 a.m. and 5:30 a.m. If a customer attempts to purchase a can of beer between those hours, the system alerts the cashier and voids the sale.

"The bottom line is that the system prevents employees from making any mistakes at all," says Ernie Zimmer, a



UDF clerks can ring up purchases accurately just by touching the appropriate category on the HP 9000 screen.

district supervisor who oversees 10 United Dairy Farmers stores. "What's great is that the TouchScreen system has substantially reduced the time needed to train cashiers because it literally knows everything. It can



How do you scan a hot dog? United Dairy Farmers' (UDF) Frank Braun (left) discusses some of the challenges his company faced with HP account manager Buzz Walker.

easily walk them through any transaction." In six years, cashier training has decreased from two weeks to 15 minutes.

Perhaps the system's most important feature is its capability of capturing valuable demographic information, which allows more focused marketing, merchandising and purchasing decisions.

United Dairy Farmers' TouchScreen system captures not only what's selling, but also who sold it, when, how many were sold, and the purchaser's sex and approximate age—all at the touch of a screen.

"It's important for us to know if our gasoline customers also are buying ice cream, or if the guy who's picking up the newspaper in the morning is also buying a cup of coffee," Frank says. "Those types of relational sales are important in terms of telling not only what items to stock but also which ones to promote."

Because of this important feature, Ernie adds, profit margins among each of the 50 UDF stores using the technology are up at least 2 percent.

Within the next couple of years, the remaining 165 stores will use the TouchScreen system, Frank says.

Because TouchScreen has the capability of communicating with operators in Spanish, German, French and Italian, as well as English, there's been a great deal of international interest. A South American division of the 7-Eleven chain has approached TouchScreen with the idea of installing the system in some stores.

"It's funny, but when we came up with the idea for TouchScreen, a lot of people thought we were from outer space," Frank recalls with a laugh. "Now, they're realizing it can be a very powerful sales and marketing tool." **M**

(Rick Petreycik is a Bridgeport, Connecticut-based free-lance writer. —Editor)

A step back?

I hereby express my deepest concerns about HP's relationship with Weyerhaeuser Co. as explained in the November-December 1993 issue ("A cut above the rest").

It is no secret that Weyerhaeuser is one of the biggest destroyers of forest in the world, in North America as well as in Eastern Siberia and in tropical areas. As per recent Greenpeace reports, Weyerhaeuser also did not keep promises concerning local investments and reforestation at several locations. This was also the reason for Greenpeace protests against Weyerhaeuser that took place during last year—and from past experience, nobody can accuse Greenpeace of careless research work!

I doubt that it can be HP's intention to get involved with dubious partners or to publicly announce such relationships. HP has always been a "clean" company, and has taken several steps towards a more ecologically oriented operation. Therefore, a relationship with companies like Weyerhaeuser is a major step back.

I think HP should not do business with anyone just to make quota, but should also check that the potential partner has a clean image.

DIETER PUGANIGG
Vienna, Austria

"Weyerhaeuser is proud of its environmental record," a Weyerhaeuser spokesperson told MEASURE. "We've been a world leader in sustainable forestry for more than 50 years and

we'll continue to be in the vanguard of responsible forest management that's sensitive to ecosystems.

"The company does not have any operations in tropical areas. Also, Weyerhaeuser provided 1 million-plus seedlings for planting in Siberia to help reforest areas that had previously been logged for decades by others. We've offered our knowledge to help them replant, but we have no business contract at this time to harvest trees.

"Weyerhaeuser is looking to the future, and the only way to do that is managing the forests to preserve and promote biodiversity while meeting society's needs for forest products based on sustainable forestry practices."

How Napoleon met his Waterloo?

I was saddened by the "Parting Shot" article about (HP employee Jerry Allen's encounter with a) Napoleon Wrasse (fish) at Ras Mohammed. As Ras Mohammed is an underwater reserve, it is illegal to disturb or feed the animals there.

There are also quite a number of articles in the dive literature on the negative effects of feeding wild fish unnatural foods, including some stories about Napoleon Wrasse that died from being fed too many hard-boiled eggs and plastic bags by divers.

I hope that this feeding episode was not responsible for the absence of the Napoleon Wrasse at Ras Mohammed when I dove there last summer.

MONTE SMITH
Santa Clara, California

"Monte is quite correct in his comments on the negative effects of feeding wild marine animals," Jerry says. "I'm certainly more aware of this issue now than I was in 1985 when I took the photograph. Hopefully, the Red Sea dive operations have discontinued encouraging this practice."—Editor

Keeping in touch

Every issue cannot be perfect, nor can every article. Overall, *MEASURE* is a great company magazine and has improved throughout the years. As a retiree, this is my contact in keeping up with the company I worked for for 25 years.

I know that some people think it is an unnecessary expense, but I can't imagine that to stop publication would make that much savings.

Thank you.

LENORE PATRICK
North Hollywood, California

A question of balance

The January-February issue of *MEASURE*, as usual, was informative and interesting. An external consultant working with me said that *MEASURE* is the best company magazine she has seen; it helps her understand the strength of the HP culture.

Her comment made me a bit uncomfortable because the January-February issue seems unbalanced to me. All the articles that feature HP's leaders are about men. Certainly it's

true that the majority of upper-management positions in HP are held by men, but it seems unbalanced when so few stories feature women's achievements.

SUE STETAK
Palo Alto, California

MEASURE strives for balance—organizationally, geographically and by gender—in every issue. However, you won't see a perfect blend of all three factors in any one issue. During the course of one year, we believe that you will see that balance.

We welcome suggestions of co-workers you think would make a good feature story. Send your nominations to MEASURE editor Jay Coleman on HP Desk, by fax (415-857-7299) or to the address on the back cover.—Editor

It's a Mirical

With reference to your article "The palmtop nutritionist" in the January-February issue, please provide me with a mailing address and international (non-800) phone number for Mirical Corporation.

MEASURE forgets from time to time that its readership is multinational. It is not possible to call 800 numbers internationally. But don't stop the information anyway; *MEASURE* still does a good job.

DAVID LORD
South Queensferry, Scotland



Nancy and Jay Lee use an HP 95LX palmtop computer and Mirical software to analyze their son Ryan's nutritional needs.

You're right, David; we should have included an address and a non-800 phone number. You can call the Mirical Corporation at 719-598-5276 or write to the company at 4606 Northpark Drive, Colorado Springs, Colorado 80918 U.S.A.

By the way, Mirical President Mike Hidrogo reports that more than 250 MEASURE readers have contacted the company since the article appeared.—Editor

Herd mentality

I want to thank Dennis Mitrzyk for his article in opposition to pre-employment drug testing at HP in the January-February issue. I am disappointed that our company is going along with the herd mentality of other Fortune 500 companies by instituting this policy, which shows a lack of trust in its employees.

It is ironic that this new policy is being instituted as the John Weidert task force considers means to renew attention to and practice of the HP way.

In your article regarding the Employee Survey and the Weidert task force, the author states that "...we can't afford to pay more than the market leaders." As a company, the marketplace continually challenges us to produce products and services that lead our industry. Our policy regarding employee compensation also should strive toward market leadership.

GREG STEPHENS
Pleasanton, California

Correction

An article in the January-February issue of MEASURE on HP's pre-employment drug-testing policy inaccurately stated that HP is requiring a witness in the room to observe the sample process. In fact, no witness is required.—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, 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.

"We returned to England—a family"

By Barry Wright

Hewlett-Packard people in Brazil reach out to help a co-worker in the U.K. with a gift of love.

BASINGSTOKE, Hampshire—In late 1991, my wife, Jackie, and I nearly had given up on our dream of having a family after years of hoping and unsuccessful fertility treatments. When we considered adoption, United Kingdom Social Services informed me that I—at age 36—was too old to adopt a child under 12 months of age.

Today we have Julia. At six months, she is gorgeous, alert and happy. She loves yogurt and would very much like to crawl. She goes swimming with Jackie, and cries when I leave our home for work each morning. For the gift of Julia and each of these small daily miracles, I feel a debt of gratitude to Hewlett-Packard and some special people in Brazil.

Fate stepped in when we met a couple who had adopted a child from Brazil. They explained the complex steps required by U.K. and Brazilian law they had followed. We learned the process—home assessments, reports, approvals, notarizations, translations—easily could take two years. We knew this was our chance at having a family!

It was after we had been approved in the United Kingdom that I wrote to a judge in Brazil, asking if he could help. He replied and asked for our home assessment. It was while waiting for the approval from the Brazilian Supreme Court, which we knew could



Barry and Jackie Wright celebrate their homecoming in the U.K. with newly adopted Brazilian daughter, Julia.

take up to a year, that a brain wave hit me: I work in HP's U.K. Response Centre and knew that HP also has a Response Centre in Brazil.

I contacted the then-secretary, Giselly Saboia, who kindly connected me with Euclides Rosa, head of Edisa Hewlett-Packard's legal department. Euclides sent our home assessment to the Adoption Commission in the Supreme Court of Sao Paulo to ensure all was in order.

For the next several months, two other Edisa HP legal department employees, Nilson Franco and Marcia Regina, helped us work with the Supreme Court toward being approved by the Adoption Commission. We were approved in July 1993 and arrived in Sao Paulo on August 16 after being told there was an 8-month-old boy available for adoption.

Unfortunately, the child was so severely handicapped that we felt we would be unable to provide the care

he required. We spent the next week registering with social services, orphanages and judges.

On August 23, we learned about Julia, who weighed less than five pounds when she was six weeks old. A judge gave us legal rights to take her into our guardianship from the Institute for Abandoned Children.

Julia flourished while we waited for a September 9 hearing, at which the adoption was granted. We returned to England—a family—10 days later.

The people of Edisa HP offered us endless support and hospitality. Another Brazilian, Anna Maria Linhares Geisbrecht, does not work for HP but basically gave us the will to carry on after the horrendous disappointment during our first week there. We became part of her family.

Even the judge we worked with was so kind and helpful. We always will be in debt to these kind people and look forward to the day when we can take Julia back to visit all of them. **M**

(Barry Wright is a technical-support engineer with HP's U.K. Response Centre.—Editor)

Tell us what's on your mind

Do you have a suggestion about how to improve HP, an anecdote about the HP way or an HP-related comment in general? Send your "On My Mind" article—up to 500 words—to Jay Coleman on HP Desk, by fax (415-857-7299) or to Jay at the *MEASURE* address on the back cover.

HP's chairman, president and CEO summarizes 1993—an exhilarating and exhausting year.

Now that we're well into 1994, I want to stop and reflect briefly on 1993—my first year as president, CEO and now chairman of Hewlett-Packard.

It was a year that was as exhilarating as it was exhausting. Let me zero in on a few areas that were particularly memorable:

• **Our position.** Perhaps the most impressive realization for me is the strength of HP. During 1993 I had the opportunity to meet with CEOs from many major corporations including IBM, Apple and Digital Equipment Corporation. Most of these companies are going through a chaotic period due to major restructuring, downsiz-

I found myself in an enviable position: HP's business fundamentally is in good shape.

ing and the general downturn in business. Consequently, the CEOs have had to focus their efforts on where to direct their businesses in the short term.

I found myself in an enviable position: HP's business fundamentally is in good shape. That allowed me to spend much of my first year in this



Lew Platt (far left) meets with (from left) German Chancellor Helmut Kohl, Menno Harms, head of HP Germany, and Werner Kanthak, HP Germany's director of Government Affairs.

office on the road—meeting customers, visiting with HP people and getting to know parts of our business that I didn't know particularly well. HP's sound business foundation gave me a clear advantage as CEO in 1993.

• **Travel.** In all, I logged more than 165,000 airline miles last year. That may sound exotic to some people, but it also means that I ate more than 100 airline meals. So there's a downside to travel, too.

I'll still spend a fair amount of time traveling in 1994, including visits with each of our seven President's Quality Award winners. However, as important as each of those 1993 trips was to me, to customers and to HP employees, it was a pace that I simply can't sustain. I hope you'll understand if I'm not able to visit your site soon.

• **Geographic opportunities.** Another positive aspect of travel was the chance to learn firsthand about the tremendous business opportunities HP has worldwide.

I was especially impressed with the emerging markets in Latin America, Southeast Asia, Central Europe and China, for example. There are some astounding growth possibilities in each of these markets, and HP is exceptionally well positioned to capitalize on this growth.

• **People.** Because of the respect HP enjoys worldwide, we have ready access to major world leaders. In 1993 alone, I was able to spend time with President Carlos Salinas de Gotari in Mexico, Chancellor Helmut Kohl in Germany, President Bill Clinton in the United States and with other top political leaders. They value and welcome HP's opinions.

Most of all, I enjoyed meeting thousands of HP employees around the world. Your support, warmth and willingness to pitch in made 1993 a special year for me. With that kind of support, it makes it difficult to fail.

Believe me, we're still working in an extremely difficult business environment; there's no room for complacency. However, as I view 1994 for HP, here's what I see: a great business position; great prospects for the future; a great management team; and a great group of employees.

I wouldn't trade our position with any other company.

News from around the HP world



LUCCI B. WILLIAMS/IAN JOSE MERCURY NEWS

Joey Mijares (left) and Bill Shelton spent 16 hours wrestling a "monster" 78-foot root from an HP parking lot storm drain.

It's a loooooooooooooong story

What's 78-feet long, slimy, black and hairy, and was living under HP's parking lot at the Finance and Remarketing Division in Sunnyvale, California?

If you guessed the lead-ing contender for the title of 1993 Monster Root of the Year—you're right.

It took a three-man crew two days to remove the gargantuan root from the storm drain it was clogging.

"We kept pulling and pulling and pulling—it wouldn't stop," said Bill Foley of Roto-Rooter, the drain-cleaning company called in to tackle the dirty job.

With luck, HP's root will ascend to a place of honor alongside other rangy rhizomes at the Monster Root Hall of Fame in West Des Moines, Iowa.

Quoteworthy

“It is difficult to predict what HP might do next. Twenty years ago, we were a nobody in the computer business. Today, we've surpassed DEC. Ten years ago, we were just starting in the printer area. Today, it is a franchise of incredible value.”

Bob Wayman, HP executive vice president and chief financial officer, in a speech to Goldman, Sachs & Co.'s Technology Investment Symposium, February 1994.

CHART CHANGES

In the Workstation Systems Group, **Rose O'Donnell** has been named general manager of a recently formed Workstation Technology Division. The Measurement Control Systems Division no longer exists.

The Hardcopy Imaging Group has formed a new San Diego Imaging Operation under **Vyomesh Joshi**.

The Inkjet Supplies Business Unit has created a new Media Operation under **Ralph Patterson**.

In the Automated Test Business Unit, the AOT Operation has been renamed the California Semiconductor Test Operation.

A correction of the January-February 1994 *MEASURE*: The Mass Storage Group is now part of the Measurement Systems Organization.

MEDICAL MOVES

The Medical Products Group has created a new Americas Geographic Business Unit under **Ed McDonald** and G.M. **Mike Blomeyer** has been named to the newly

defined position of group marketing manager. Functions of the former Marketing and Distribution Business Unit have been reassigned.

A new Health Care Re-engineering Application Business Unit will be headed by **Steve Rusckowski** as G.M.

Kin Chua is G.M. of Medical's Asia Pacific Geographic Business Unit.

NEW HATS

In the Computer Products Organization, **Carolyn Ticknor** has been named G.M. of the LaserJet Printer Group.

In Geographic Operations' Americas, **John Regan** to Atlanta (Georgia) Technology Center site manager...**Homer Wong** to manager, Direct Marketing Organization.

Paul Balnys to manager, North American Response Center...**Bob Robertson** to G.M., CSO Asia/Australasia.

Several existing activities have been merged into a newly formed Computer Products Distribution Europe under **Max Fallet**.





The force of the January 17 earthquake toppled nearly everything, as Tom Chapman (standing, below) and Mike Record found during the cleanup.

In the wake of the quake

"It hit like an explosion," says Patricia Ing. "I thought an airplane had crashed into the building." For Ava Silver, "the ground was shaking so violently, you couldn't walk. You had to crawl to move."

That's how two employees from HP's Van Nuys sales office described what happened when a 6.8 earthquake struck Southern California at 4:31 a.m. on Monday, January 17.

None of the approximately 780 HP employees in the area was seriously hurt. Three employees lost their residences.

The Van Nuys office was hit hardest by the quake. It was violently tossed about, but suffered no structural damage. The office shut down for four days for cleanup.

Two other area offices, Fullerton in Orange County, and nearby Los Angeles,



suffered minor damage but business was not interrupted.

HP donated \$50,000 to the local American Red Cross to help victims of the quake. An earthquake relief fund was established in Southern California to help local employees.

(Editor's note: Thanks to the unshakable Steven Cavallero, U.S. field communicator based in Van Nuys, California, for the photos and story.)

RESEARCH AND DEVELOPMENT

HP Labs has formed a new science center under **Abraham Lempel** at the Technion-Israel Institute of Technology in Haifa, Israel. Science centers established earlier are at Stanford University and the University of California at Berkeley, both in California, and the University of Pisa in Italy.

In the Computer Systems Organization, **Todd Reece** now heads the Networked Systems Architecture Lab.

BOTTOM LINE

Hewlett-Packard reported a 24 percent growth in net revenue and a 41 percent increase in net earnings in the first quarter of its 1994 fiscal year ended January 31. Orders for the quarter set a record.

Comparisons of the 1994 first quarter with the year-ago quarter are shown in parentheses:

Net revenue for the first quarter totaled \$5.7 billion (\$4.6 billion); net earnings were \$368 million or \$1.42 per share on some 259 million shares of common stock outstanding (\$261 million or \$1.03 per share on some 252 million shares);

orders were \$6.1 billion, up 18 percent (\$5.2 billion).

GETTING TOGETHER

HP has acquired the mass spectrometry assets of **Biomolecular Separations, Inc.** of Reno, Nevada, which will continue to manufacture the MS products for a year for the Analytical Products Group.

HP has agreed to purchase a 15 percent stake in **Taligent, Inc.** The Cupertino, California, joint venture, founded by IBM and Apple Computer, is developing system software environments based entirely on object-oriented technology.

Other agreements: HP and **Pacific Telesis Video Services** to build an interactive video system offering movies and other programs on demand...HP and **Tele-Communications, Inc.** to develop set-top terminals for compressed digital TV...HP Canada and **Bell SYGMA** jointly to provide outsourcing services to the worldwide telephony market...HP and **Nokia Telecommunications** of Finland to develop intelligent network systems.

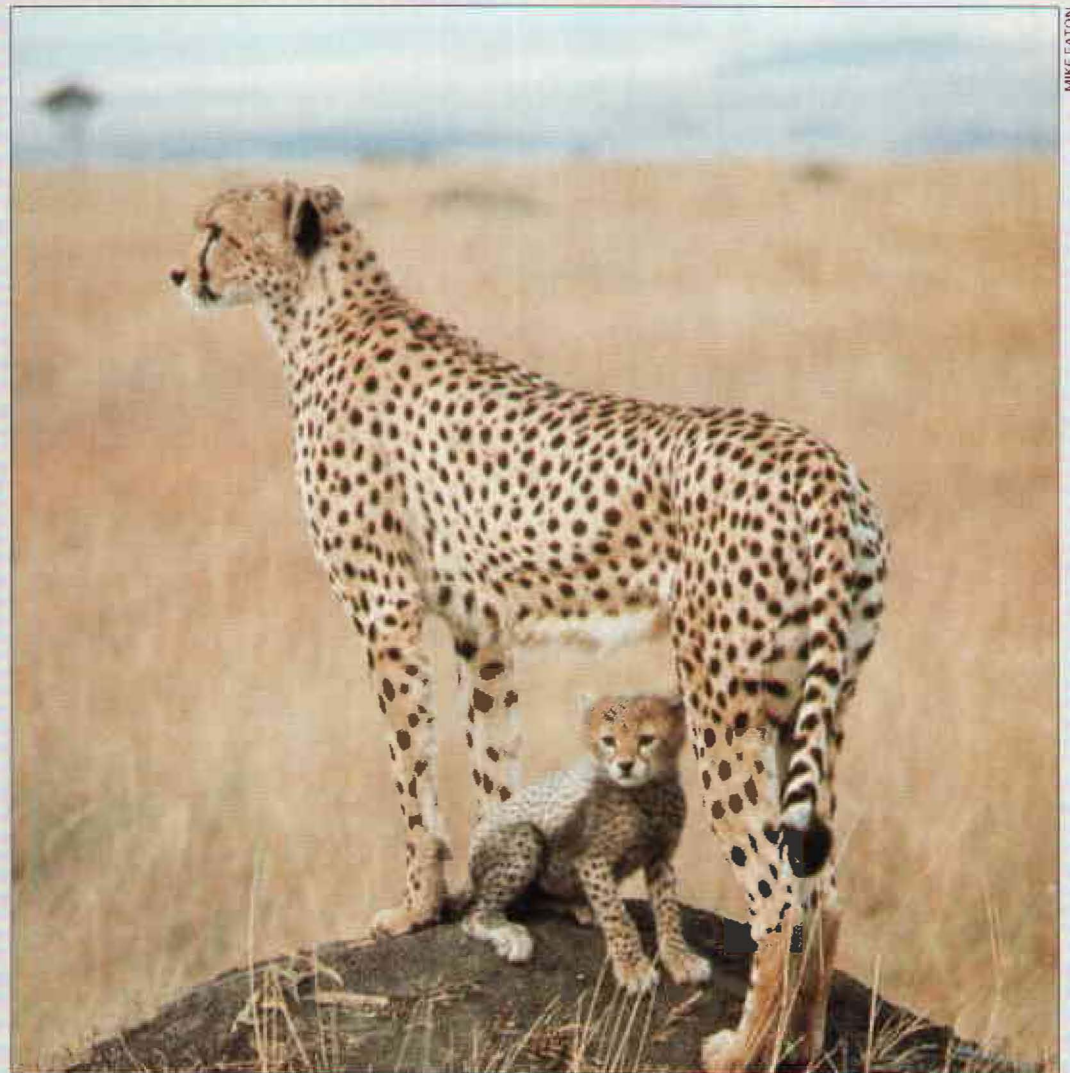
Someone to watch over me

KENYA, East Africa—"In August 1993, I was on a photo safari through the major parks in Kenya and Tanzania with my wife, Pam, and daughters Lindsey and Kelsey," says Mike Eaton, a software-coordination manager at the Software Services and Technology Division's activity in Fort Collins, Colorado.

"I took the photo during an early morning game drive in the Masa Mara game reserve in Kenya. We were in a Land Rover about 30 feet from the cheetah and her cub.

"We stayed with the cheetah for nearly 30 minutes as she casually walked across the plains, occasionally stopping on the collapsed termite mounds to scan the horizon and—luckily for me—to pose for photos.

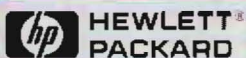
"The dark coloring on the lower half of the cub is not a shadow; it's camouflage to help the cheetah hide from other predators.



"By the way, I got separated from my camera gear and film on the way to Africa and had to rent a camera in Nairobi. It was well-worn and had tape on

the body to ensure that the back stayed closed. I had to wait until I got home and had the film developed before I knew if the photos would turn out."

MOVED LATELY? CHANGE OF ADDRESS SHOULD BE REPORTED TO YOUR PERSONNEL DEPARTMENT.



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