MEASURE

For the people of Hewlett-Packard
September-October 1985

Toxics: HP's battle to keep the environment clean

HP mavericks buck the system

How does your HP garden grow?

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MEASURE

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Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems used in industry, business, engineering, science, medicine and education. HP employs more than 84,000 people worldwide.

H_2O and the HP way

Formula for a clean environment

TIM HOLT

Carol Franklin, environmental specialist at HP's Stanford Park Division, checks a tank used to store a cleaning solvent. The tank stands in a concrete vault so any leak would be visible.

Almost casually, your neighbor mentions that he had seen your company's name listed in a report of chemical spills in California's Silicon Valley. "I always had the impression that electronics was a clean industry," he adds. "What's going on?"

How do you answer that? And headlines such as:

- *Toxic spill threat to well water*
- *Environmental Protection Agency lists violations*
- *Dump declared health hazard*

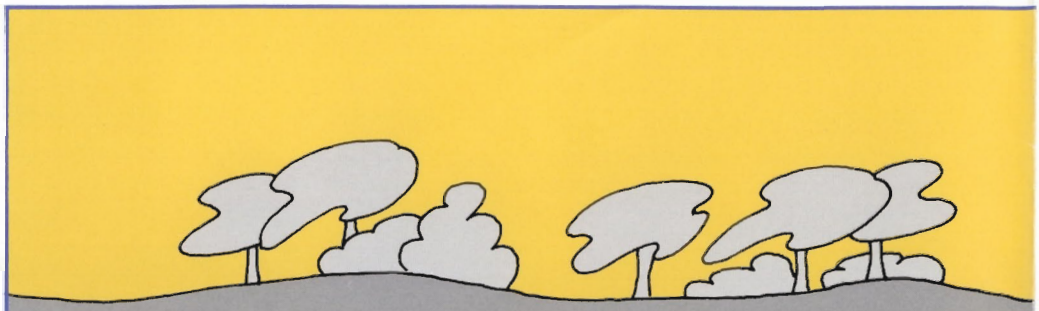
This is just a sampling of the current notoriety that has arisen over industry's efforts to clean up the environment worldwide. The electronics sector, long regarded as "clean," is now regularly cited as a source of a number of environmental problems, most of them relating to possible groundwater contamination by spilled solvents and other chemicals used in manufacturing, as well as the issue of handling and disposing of hazardous wastes.

The groundwater contamination issue first emerged

in Silicon Valley, California, during November 1981. A storage tank at the South San Jose plant of Fairchild Camera and Instrument was found to have leaked almost 60,000 gallons of an organic solvent, trichloroethane, some of which migrated to a well serving a nearby residential neighborhood.

Six years earlier the nation first heard of Love Canal—as a New York community discovered the long-term effects of having been used as a dumping ground for industrial wastes.

Since Love Canal, the focus of environmentalists has shifted from conspicuous forms of pollution—like dirty rivers and belching smokestacks—to toxics. Toxics has become a catchall term used to describe any substance that may pose a potential hazard to human health or the environment when it is improperly handled or disposed of.



What to do about spills and tank leaks?

Early this year the San Francisco Bay Region Water Quality Control Board issued an evaluation of Silicon Valley's groundwater contamination sites discovered since 1981. Of 46 sites listed in San Jose, Santa Clara and Sunnyvale, 40 were linked to electronic firms. In most cases, contamination by solvents was said to result from leaks in single-wall tanks.

Very soon after the 1981 Fairchild leak was unearthed, HP set about replacing all of its waste-solvent and chemical storage tanks with double-walled systems—tanks in concrete vaults. All sites suspected of leaks or spills have been or are being investigated to determine levels and extent of any contamination. The company also is addressing the need for vaults around gasoline, diesel and fuel tanks.

HP played a key role in forming an Industry Clean Water Task Force to work with regulatory agencies, environmental groups and elected officials to coordinate Silicon Valley clean-up efforts. HP's chief operating officer, Dean Morton, recruited executives of other electronics firms for the task force. Larry Holbrook, Corporate EHS manager, sits on the group's board of directors.

The fundamental question surrounding the current controversy is "How clean is clean?"

Ever since the 1981 Fairchild leak, various agencies have compiled lists of spill sites, both nationally and regionally, with Silicon Valley in the fore. Included are spills of both major and minor potential consequences. HP is among the scores of firms listed, the company having discovered spills or leaks at eight sites in the Bay Area.

The company is also caught up in the equally controversial issue of hazardous waste. All of HP's divisions generate wastes, especially those with printed-circuit and integrated-circuit facilities. Various cleaning solvents and acids for treating metals are used and must be disposed of safely in one way or another. In all, HP currently generates some 11,000 metric tons of waste materials annually in the U.S.

The issue here arises from the many unresolved controversies at national, state and local levels over the transport, disposal and treatment of wastes—a 280-million-ton problem for the U.S. each year.

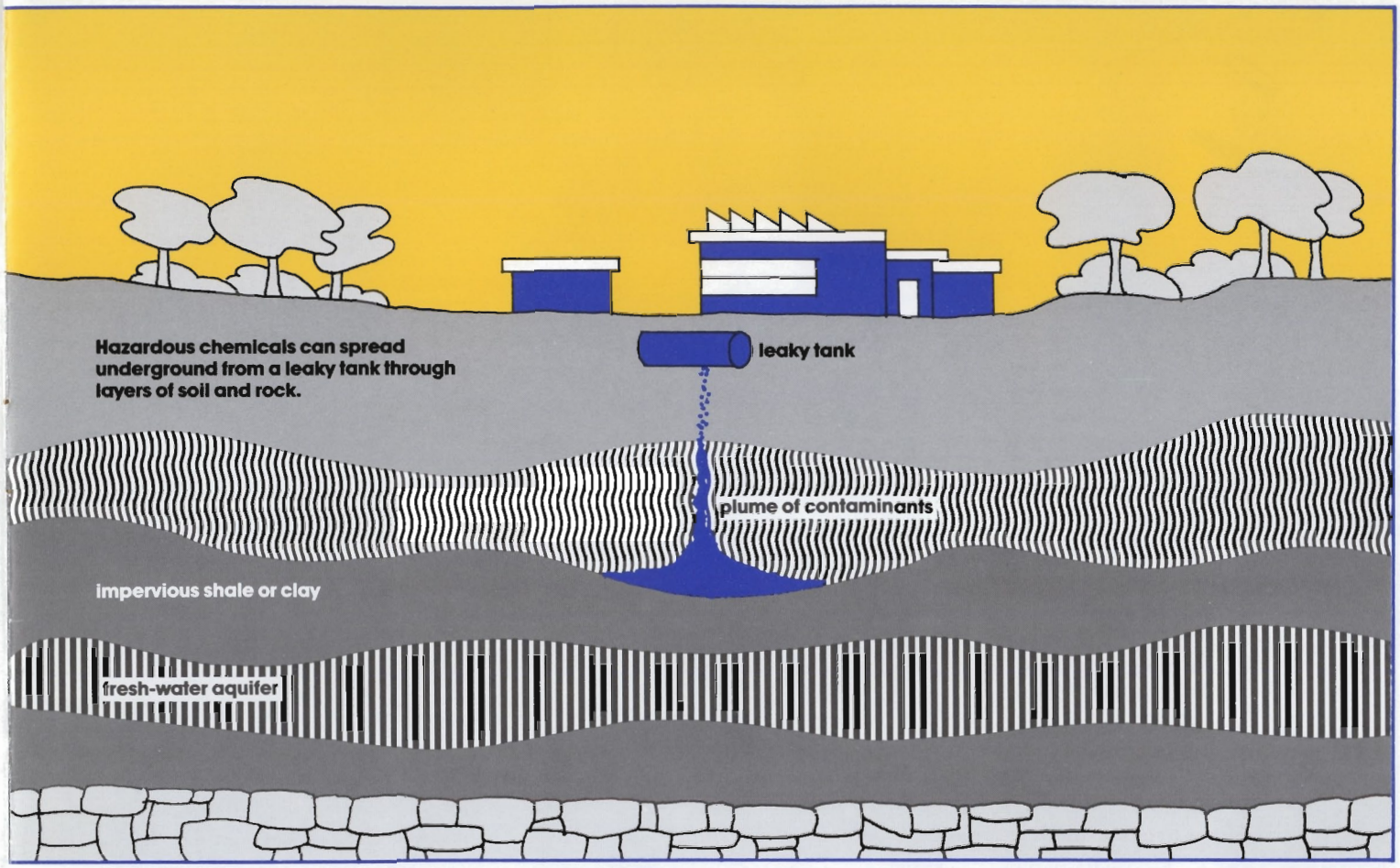
In the midst of these disputes—all involving air, earth and water—what is HP doing to protect the environment, employees and the public? And to correct problems of the past?

The answer, quite simply, is everything the company can. But given the complexity of the problems (exemplified by such things as the volumes of EPA regulations or the nearly 300 environmental bills introduced in the California legislature during the past year), the task is huge and never-ending.

Nevertheless, HP has sound reasons for confidence in its environmental programs. Providing the core of that confidence is a decentralized organization that operates on the basis of clearly stated corporate objectives, shares best practices and is responsive to corporate audits and top-management concerns. In short, the management of environmental risk is a top-to-bottom company-wide effort that eventually involves just about every employee to some degree.

Each HP division has basic wall-to-wall responsibility for its own environmental, health and safety (EHS) programs and a staff of EHS professionals to make sure the program works. Specific to the environmental program, staffers provide training in spill prevention and emergency response, operate or maintain and monitor critical processes, respond to regulatory matters, and establish systems for handling hazardous wastes including transport, disposal, recycling or reducing the volume of the generated wastes.

Cliff Bast, environmental manager in the Corporate EHS department, recently summarized what HP divisions are doing with their waste materials. "Many have started recycling large amounts of waste, substantially reducing the problems of taking them to landfills. Wherever possible, they've also replaced materials such as trichloroethylene (TCE) with less hazardous chemicals for wafer cleaning. Cyanide is neutralized. Metals are removed from water treatment processes in sludge



form, dried and compressed for disposal or refining. Almost 80 percent of waste solvent material is being recycled today, and an even higher figure applies to waste oils."

Waste-water handling can be illustrated by what happens at the Fountain Grove site in Santa Rosa, California:

Each day an average of 250,000 gallons of water are piped in from the city's supply for the Microwave Technology and Network Measurements divisions headquartered there. This water is run through a deionizing treatment that removes any organics or salts that could affect the quality of integrated circuit or printed circuit manufacturing. Most of the processes use the water in familiar ways—to wash, rinse or cool things. The way the water is used dictates how it will be treated—to neutralize acid content, destroy caustics, filter metallic dust, or adjust the chemical balance of rinse water.

Water treatment is highly automated and instrumented "to give us precise and timely data during the entire process," explains Santa Rosa EHS manager Bob Brown. It's also hooked directly into the Facility Monitoring System, based on an HP 1000 computer, to sound an alarm if the data deviates from established standards.

The management of environmental risk is a top-to-bottom companywide effort.

Experts are now debating what standards should be followed for clean-up efforts when these substances are detected at extremely low levels (see box on page six). The fundamental question surrounding the current controversy is "How clean is clean?"

More than half (about 150,000 gallons) of Santa Rosa's daily water supply is available for further use after treatment. Even though it is cleaner than city standards and could be used for drinking, some of it will be used when needed to irrigate the many trees, plants and lawns of the Santa Rosa site. The balance of the treated water is discharged into the city sewer system.

As do all HP divisions, the Santa Rosa site undergoes periodic audits of its environmental program by the Corporate EHS organization. All of the responsibilities of the Santa Rosa program are evaluated during a two- to three-day visit by a corporate team. That team develops a lengthy audit report consisting of general observations, an evaluation of whether each responsibility "Meets" or "Does Not Meet" standards, and specific comments on each of the 11 sections of the evaluation.

"The audits are a powerful tool—the most effective of any that we have," says Larry Holbrook, Corporate EHS manager. "If something doesn't meet HP standards, it's up to the division to fix it. But we will return in six months for a second look to see what has been done about it."

The audits, under development since 1972, gain much of their impact from the fact that copies of the reports are sent to group managers, Chief Operat-

ing Officer Dean Morton, Corporate Manufacturing Vice President Hal Edmondson, as well as the local general manager and EHS manager. The history of this process makes it clear that all of HP's top managers are highly responsive to the issues involved. Any discrepancies attract immediate attention. Calls and queries from Dean and other executive vice presidents are not uncommon, especially when the issues involve public and employee safety.

Another important chapter in the Corporate EHS strategy is the selection of regional representatives to coordinate and share information, particularly about local environmental conditions, requirements and legislation. Presently there are four such coordinators in the U.S. representing California, Colorado, the Northwest and the Eastern states. Europe, Malaysia and Singapore also have EHS specialists.

Sharing of best practices, in fact, is another primary tool and takes the form of a newsletter by Corporate Insurance (appropriately called *Preventive Measures*), quarterly meetings of regional coordinators, meetings of regional EHS staff people and a monthly information memo from Corporate EHS.

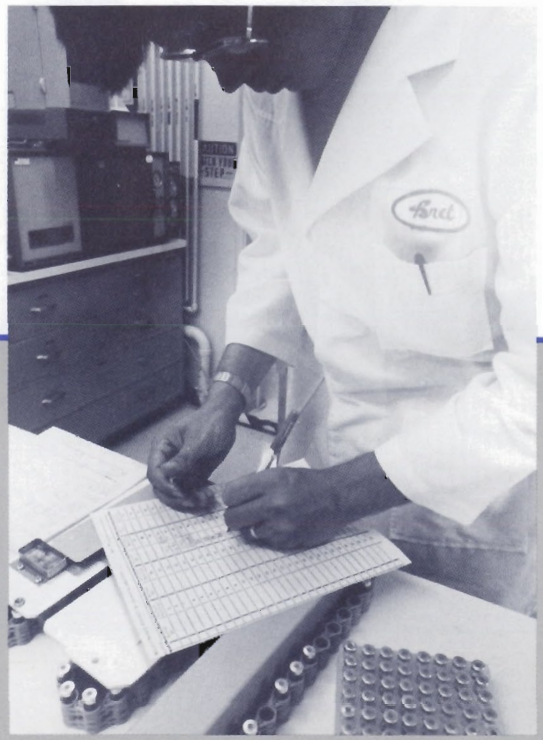
HP's legal, government affairs and public relations staffs also participate in environmental matters. This ranges from providing support and counsel to divisions involved in local issues to monitoring and responding to national issues of importance to the company.

In managing these matters, it is not a cliché to claim that—once again—Hewlett-Packard is guided by its corporate objectives. Problems of some kind—"transients" — have occurred in the past and will probably continue to occur and call for greater efforts. But a corporate code that emphasizes a strong concern for the environment of employees and their fellow citizens gives HP a fundamental strategy for protecting and improving that environment.

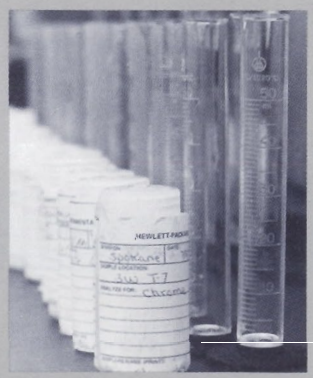
Though hardly headline material, that's the kind of impression you would like to leave with your neighbor. **M**

—*Gordon Brown*

Gordon Brown is a Los Altos, California, freelance writer who served as *Measure*'s editor from 1968 to 1982.



BRAD WHITWORTH



Bret Banks prepares samples of waste water from Spokane Division for testing.

Testing the water

Samples of discharged water from up to 40 HP manufacturing locations are tested and reported each month by the Corporate Environmental Lab in Palo Alto, California. Any deviation from established standards that's found requires a written explanation to lab manager Jim Allen. The lab performs a wide range of environmental and industrial hygiene tests, and is a state-of-the-art showplace for highly automated HP analytical systems.

Ironically, it's HP's own increasingly sensitive analytical equipment that makes it possible to detect chemicals in the environment in minute quantities. Contaminants in groundwater, for example, can now be detected at levels below one part per billion. That's the equivalent of one drop of water in an Olympic-size swimming pool.

Because the lab contains the best HP analytical equipment available, Jim and his staff occasionally find themselves supporting various R&D projects and hosting customers.

INDISPENSABLE

While most of us view our cars simply as transportation—a practical way to get from Point A to Point B—consider for a moment the HP sales rep.

"Some of my customers are a couple of hours away," says Steve Nicol of the Fresno, California, sales office. "I need to have a car that is reliable and that lets me arrive cool and unruffled when I make a sales call."

Steve and his sales colleagues across the U.S. collectively logged 187 million miles on their way to and from customers' sites in 1984.

The company's fleet of about 8,000 vehicles in the U.S. isn't hard to spot on the highway, once you know what to look for. Since signing an agreement with the Ford Motor Company in 1983, HP's been taking delivery of thousands of almost identical Fords and Mercurys each fall.

It's Mike Talbert's job to make sure the company gets the most car for its driving dollar. Mike is manager of fleet operations in Palo Alto. "While it may seem more expensive to buy new cars each year, we've learned that just the opposite is true. After evaluating all the costs of providing cars for our sales and service people—everything from purchase price to holding time to repair charges—we've found that it's actually less expensive for us to turn over the entire fleet every 12 months," he says.

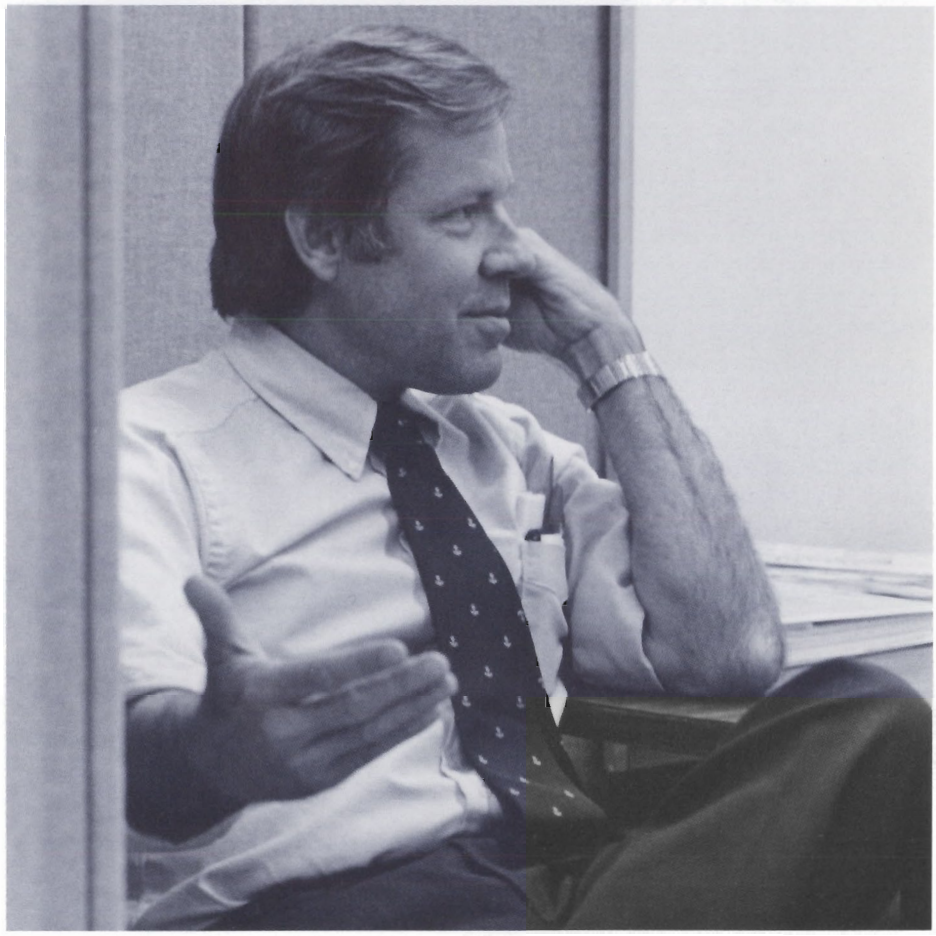
HP's fleet provides a critical link between the sales force and the customer. Says Mark Stahl, a sales rep in HP's Brisbane, California, office, "It's a great comfort to know that HP's taking care of my basic transportation needs. That lets me concentrate on the most important part of my job: selling." **M**

—Brad Whitworth

Sales rep Phil Richardson uses his Ford LTD Brougham to call on customers in the San Francisco Bay Area.

PHOTO BY TIM HOLT

Extra ORDINARY PEOPLE



COLE JOHNSON

Chuck House is known as "the father of logic analysis" at HP in Colorado Springs. He's also remembered because Dave Packard gave him a medal for "extraordinary contempt."

Although company co-founder Dave Packard killed Chuck House's R&D project on a new display monitor, Chuck took a calculated risk 18 years ago and built it anyway. It brought the company $35 million in sales and earned Chuck the reputation of a corporate maverick.

In a company that stresses teamwork, is there room for such behavior? Chuck, now director of Corporate Engineering, and Nick Copping think there is.

When Nick joined HP in 1980 as a systems engineer, his first assignment was to attend 13 weeks of instruction. He went for four weeks, then cut class so he could talk directly to the engineers who make HP products.

It took Nick less than a month to realize he'd have to buck the system if he were going to succeed at what he felt HP hired him to do: Figure out what technical customers need—and then make sure they get it.

Nick is one of a handful of HP people who treads the fine line between skeptic and renegade. Chuck House, regarded by many as the champion of R&D engineers, is another.

"It's not an easy course to take because you run up against people who say, 'You can't do it that way; it's always been done this way,'" says Chuck. That tack doesn't work with him; it only prods him to push ahead. By his own estimate he's been "saved" from being fired by HP at least a couple of times during his 23 years with the company.

Hewlett-Packard is putting an increasingly higher value on teamwork, particularly as the company grows into more and more systems solutions. But despite the growing emphasis on coordination and team play, there'll always be a spot for the maverick—just as a large symphony orchestra needs soloists. Fortunately Hewlett-Packard is big enough to allow such people the space to flex their intellectual muscles.

As recently as this June—in the throes of HP's current lean financial period—Chuck wrote an article that suggested R&D engineers get out and visit customers as well as their own counterparts at other divisions.

He took some heat when he said HP management would find the time and money to fund such trips. "If not," he continued, "and you think they're wrong, vote your conscience and show positive results by doing it anyway and they'll come around."

Some say this borders on insurrection. But few disagree that Chuck's fervor grows out of a genuine desire to help the company improve. (The article, in HP's *R&D Network* publication, starts out, "I'm worried about HP.")

"I sometimes feel I'm paid to give voice to alternative opinions. I think it's just wonderful that HP is willing to pay me to do this." ***—Chuck House***

That pretty much sums up Chuck's whole career with HP. His first entanglement with corporate red tape was chronicled in *Time* magazine earlier this year. Working on oscilloscope technology at Colorado Springs Division in 1966, Chuck was advised to drop a display monitor he was developing because it didn't meet government specifications.

Instead, he embarked on a vacation to California—stopping along the way to show potential customers the prototype. He wanted to find out what they wanted the product to do and what its limitations were.

"Being a 'labbie,'" he recalls, "I didn't know not to sell a machine we hadn't even committed to make—and at a firm price." (Turns out HP sold more than 17,000 display monitors, the HP 1300A, bringing about $35 million into the company.)

But the project still had a way to go when Chuck returned from his holiday sales trip. Dave Packard himself ordered it discontinued. Instead, Chuck and Dar Howard, then R&D and now manufacturing manager at Colorado Springs, rushed the monitor into production. And the rest, as they say, is history.

Dave finally "rewarded" Chuck for his diligence in 1982 when he gave him a medal for "extraordinary contempt and defiance beyond the normal call of engineering duty."

So how does a company like HP distinguish between insubordination and intrapreneurship? To Chuck's mind the difference lies in the intent.

"I wasn't defiant or obstreperous. I really just wanted success for HP," he says. "It never occurred to me that it might cost me my job."

By contrast, Nick's HP life has been much less controversial. But he and Chuck are linked philosophically by the common belief that if HP is to survive, it must put customers' needs first.

Nick was an HP customer before he was an employee. As a physicist at Jet Propulsion Laboratory in Pasadena, California, he used the HP 1000 technical computer.

"The computers were wonderful and the support people were great, but no one at HP was product oriented," he says. "They couldn't provide me with the software and information I needed."

It's not surprising, then, that one of Nick's first tasks at HP was organizing a technical advisory group to focus on similarities in *customer needs* rather than *products*.

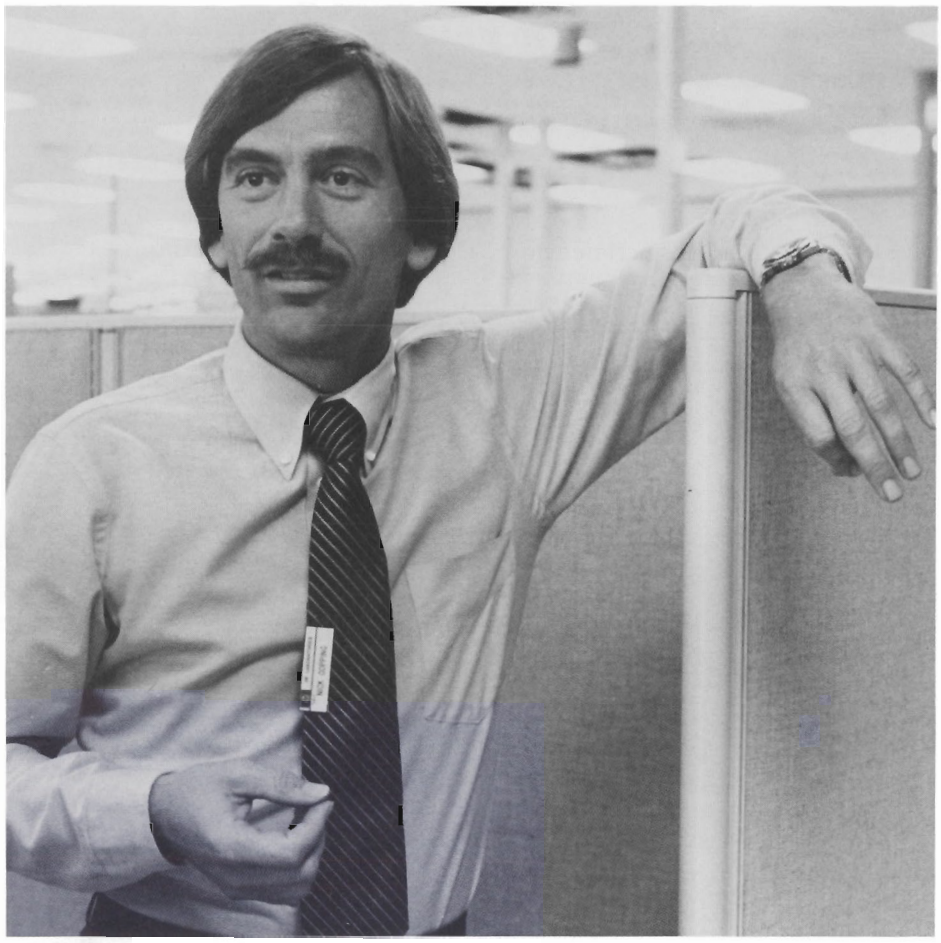
He credits Bruce Campbell, his supervisor in the Information Technology Group, as being both his mentor and proponent of bringing customers into the technical design phase of a project.

"Frankly, I won't work on a project unless that's the premise," he adds.

Nick is part of the Spectrum team and is excited about the new computer family's potential. "The raw material is better than anything I've ever seen," he says. "Now we have to make sure we manage the process of bringing it to the customer—that's the key."

If you review Nick's five years with HP, you may wonder how he's crammed so much into them. After working as a Neely region systems specialist, he took a special assignment to coordinate HP's exhibit at the California Museum of Science and Industry in Los Angeles (see November-December 1984 *Measure*). He moved to Northern California

Extra ORDINARY PEOPLE



JOANNE ENGELHARDT

Nick Copping was an HP computer customer before becoming an employee with the Neely Sales Region. He cut his first class to talk to design engineers.

to work on a customer quality project for HP Labs before joining the Spectrum project in Cupertino, California.

He's also chairing an HP-UX support group made up of divisions that are building computers using that operating system. "We get together and discuss strategies," he says. "One result is HP-UX curriculum training for our customers and SEs."

The challenge Nick likes best is tackling a brand-new problem. "After something is running well, I like to leave it to the experts. I'll monitor the progress every once and a while and make a few suggestions."

It's not always such easy sledding for corporate mavericks. Chuck House spent years in Colorado Springs playing the devil's advocate and designing state-of-the-art logic analyzer projects (for which he's now credited with being the "father of logic analysis").

Chuck readily acknowledges that his irrepressible, breezy style rubs some people the wrong way, but his mind is on a higher calling.

"I sometimes feel I'm paid to give voice to alternative opinions—a counterpoint to other views," he says. "I think it's just wonderful that HP is willing to pay me to do this."

In 1982 an engineering task force advocated the creation of the position of corporate engineering director. Chuck also thought it was an idea whose time had come and set out to prove he was the right person for the job.

Chuck's former boss, Dar Howard, remembers that Chuck "always had a few choice words to say about corporate folk...and now 'he' is 'they.'"

"I see myself as a catalyst for effectiveness in quality engineering," Chuck says. "I've never felt I had to take the popular point of view."

His most pressing concern today, he concedes, is helping HP figure out how to position itself "in the coming order of things."

Over the years, both Chuck and Nick have been tempted to test their intrapreneurial skills either at some start-up firm or by starting their own businesses. Yet they've chosen to stay at HP.

Is that a testimonial to HP? Maybe.

"It matters a lot to me whom I work for," explains Nick. "It's not so important where I work so long as I'm working with people I respect. Most of my ideas come from working with good people."

"I see places within HP for people like me," he adds. "In some ways HP is like a large bear just awakened from a deep sleep. The bear's kind of grumpy and you want him to tap dance, *now*.

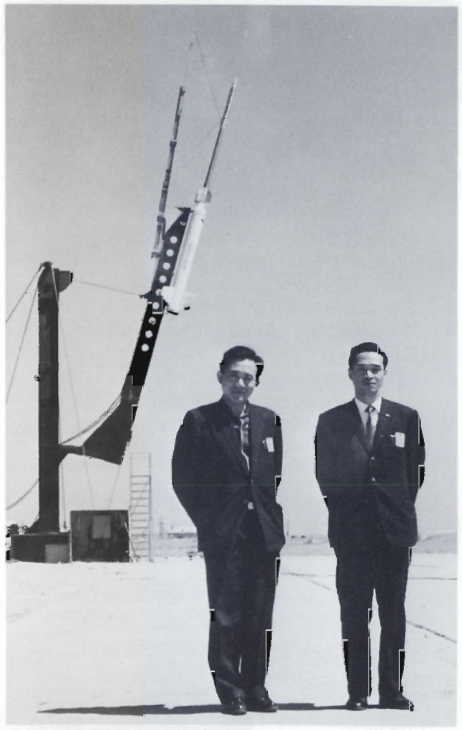
"It's quite a challenge, but it's not impossible. It's all in how you do it." **M**

—Joanne Engelhardt

"It's not so important where I work so long as I'm working with people I respect. Most of my ideas come from working with good people."
—Nick Copping

HP ARCHIVES

Examining YHP's rocket work in 1965 are Karl Schwarz, George Newman (then YHP directors), Shozo Yokogawa (then YHP president), Toshio Muraoka (at Shozo's right).



NASA

Toshio Muraoka (right) at Wallops Island observes 1962 U.S.-Japan rocket flight.

Nosy rocket discovers outer space secrets

In the 1960s researchers at Yokogawa-Hewlett-Packard (YHP) in Japan were working on a rocket program to study the ionosphere—the electrically charged outer fringe of the Earth's atmosphere. Their efforts helped open up today's long-range communications on Earth via satellite.

The project began in 1958 at Yokogawa Electric Works (YEW) in Tokyo when a young engineer named Toshio Muraoka was asked to get involved in Japan's exploration of space. Physicists at the government's Radio Research Lab had devised a radio-frequency resonance probe that was a new concept—it should be possible to measure the ionosphere's electron density, electron temperature and ion density accurately with a single, faster instrument.

That's where Toshio came in, working at YEW on a government contract to design the actual measurement instrumentation. An electrode in the form of a gold-covered sphere was attached to a two-foot arm that would flip out from the side of the rocket as it entered the ionosphere, 60 miles out in space. Elements of the ionosphere were measured and data sent back to Earth by telemetry. (See page 22 about how HP gear is being used to perform similar tests aboard the space shuttle today.) Tests of the probe in flights on Kappa sounding rockets were successful.

Then U.S. scientists at the National Aeronautics and Space Administration (NASA) became interested. The Japanese experiment became part of the first joint effort by the U.S. and Japan to explore space. Probes developed independently in each country were mounted on the same Nike-Cajun rocket for comparison.

Toshio was invited to NASA's Wallops Island Station in Virginia to witness the rocket's firing on April 30, 1962—the first in a series of three launchings. More trips to the U.S. followed, with one side visit to call on Bill Hewlett, president of a California company considering a joint venture in Japan.

When YHP was formed jointly by YEW and Hewlett-Packard in 1963, Toshio joined the new firm. He brought along the rocketry project, on which work continued at YHP for several years. Toshio himself became R&D manager, then head of all sales activity, and is now executive vice president of YHP.

He's continued to follow Japan's rocketry activity, centered at Tanegashima, an island south of Kiushu. Things have moved a long way from those early experiments testing the ionosphere—Japan has launched a series of satellites to expand its global communications capacity.

"HP equipment is widely used by the National Space Development Agency (NASDA)—Japan's equivalent of NASA—and its prime contractors in the satellite program," Toshio says. "The satellite-tracking network, for instance, is based on 22 HP 1000 computers."

Today more than 300 HP instruments are installed at Tanegashima. Once a year YHP sends in a demo bus loaded with calibration equipment to keep all that HP gear in working order—top-flight working order, that is. **M**

—Betty Gerard

HP's hands-on gardens

"Working in the soil is the same the whole world over," says New Jersey Division's Kim Comazzi. "Touching the ground, watching things change and grow daily, sharing food with friends.... When I started my first garden at HP it made me feel like I was home in Korea."

That was a decade ago, when Kim was one of the original people to accept her division's offer of land and water for employee gardens. This year she's sharing eight plots with her mother Chuhui Kim and sister Kumsun Rienhardt, who both work for the division. Tucked among the New Jersey tomatoes ("the best—like a natural salt") are such sentimental specialties as Korean chives and wild sesame seed.

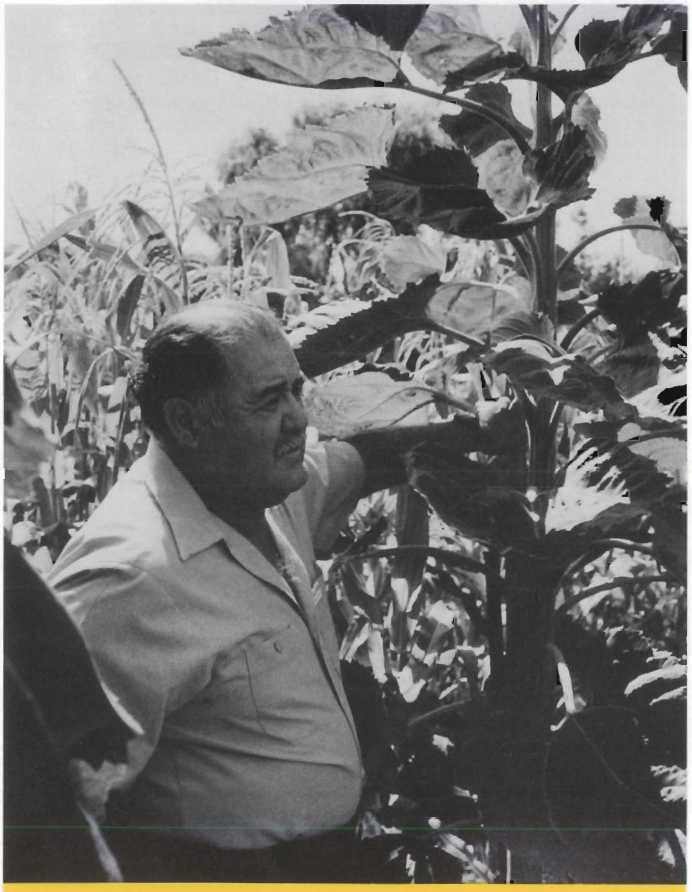
The feeling is the same at other HP divisions where folks have garden plots. (That includes several California sites and the Vancouver, Washington, division.) Perhaps it's remembering the days of growing up on a farm. Or reproducing foods from one's past that are too exotic or too dear to buy in local markets. Always the hours in the garden are rewarding in more ways than the harvest alone. **M**

—Betty Gerard

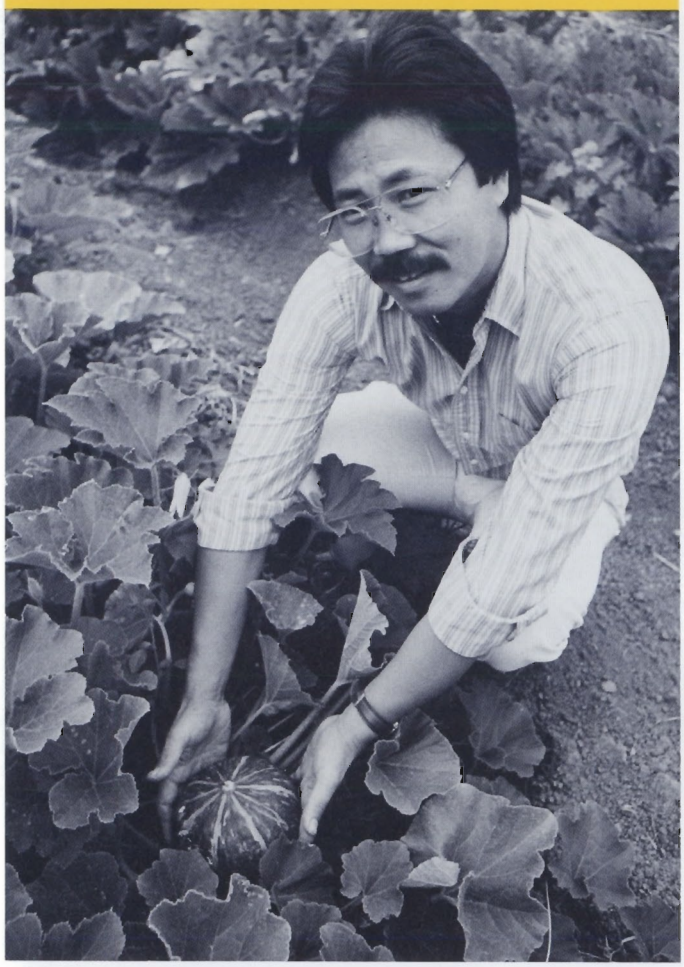
PHOTOS BY TIM HOLT

For Chuck Sheldon, president of Santa Clara Division's Garden Club with 60 active members, gardening goes back to growing up in Rochester, New York. "Even as a kid I had a little garden of my own," he says. Because he believes there's no corn like New York sweet corn ("those tender kernels really pop"), Chuck has his dad send seed each year. Back in 1972, two employees proposed to management the idea of a garden on the site. Just like the transplanted Eastern corn, the project has thrived.

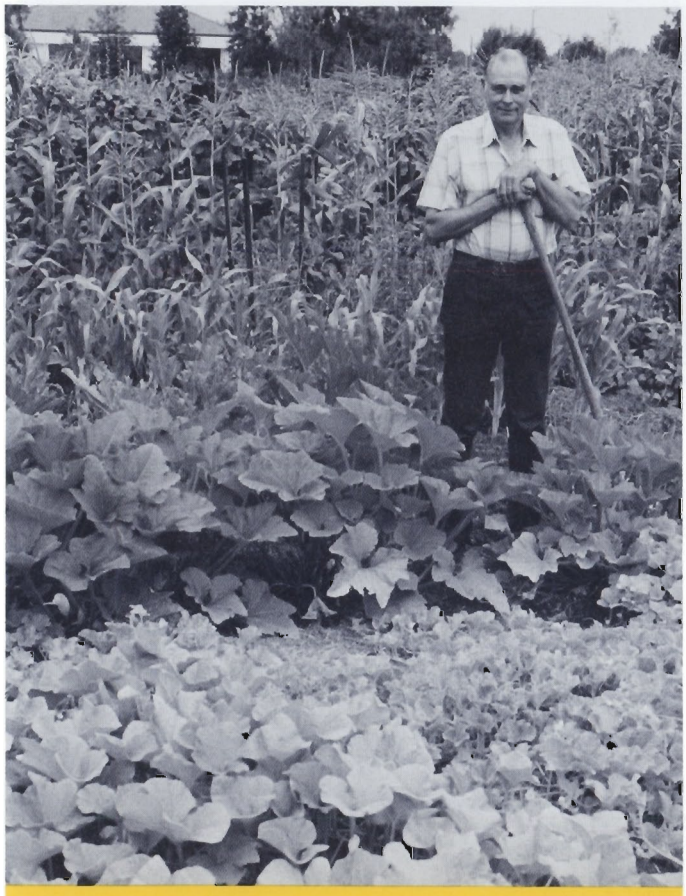
Watering a patch of taro roots, Louis Cardoso tends his summer crops at the 120-plot HP garden on the Cupertino site. In winter he'll grow fava beans because gardening for him is a year-round pleasure. "I love to be outdoors," he says, remembering a childhood growing up by the sea in Portugal's Azores islands. As the eldest of nine children in a farm family, he was digging weeds out from around the corn by the time he was eight. After leaving home at 19, there was no chance to work the land until he joined the Cupertino Garden Club 10 years ago. As a former farm boy, he knows that farming is hard work for a living. "But I enjoy it on a part-time basis," he says. "What I do, I learned from my father."



The sunflowers that tower above José Barrientos' garden in Santa Clara come from Texas, where as a teenager he worked on his uncle's ranch. So does his favorite hot pepper, the *miricielo* (which means "looking at the sun"). And there are other memories in his garden. Each year José brings back from his family farm in the state of Guanajuato, Mexico, the seed for particularly good white corn and a yellow watermelon that grows as large as 70 pounds. He has always worked on farms, including a period in Gilroy, California, before coming to HP 13 years ago. "Every kind of plant needs experience," he says, and he spends many hours weeding to let plants grow their best. "I like it, I tell you. I pass most of my time here."



Now that Mits Tokugawa has been gardening at HP's Cupertino site for five or six years, he's making some changes. "I'm trying slowly to go to an Oriental garden," he says. "It's fun to grow something you grew up with." As a matter of fact, he was too young to help garden when he was a youngster in Japan but he can remember eating the family's own produce. This year he's put in such Japanese plants as *kabocha* (Hokkaido pumpkin, shown at left), *gobo* (root), *kuri* (cucumber), and *daikon* (a long radish). For his wife Rose, who is Chinese, he's growing Chinese long beans, bitter and winter melons, snow peas, *gai lon* (broccoli) and will soon put in *bok choy* (chard). An hourglass-shaped gourd will be dried and painted.



By the time Willadene Rathje heard about the Cupertino Garden Club in May 1980, all that was available was a corner plot piled high with gravel from construction of the parcourse. She and her husband Bob planted corn, then turned it back into the soil as the first compost. Since then they've built up the soil with fertilizer and organic matter, established raised beds, and constructed a number of cold frames for seedlings. In their showcase plots they're trying ideas such as the French intensive system and two types of drip-system watering. "My family has always gardened," says Willadene, whose father, now retired, walks through the area twice a day to keep an eye on things. "For us it's a hobby, therapeutic. I just can't imagine not gardening." She now works for HP in nearby Sunnyvale.

One of the four "gold plots" in the Cupertino garden belongs to Art Petersen, who retired in January after 30 years with HP. In honor of their status, the retirees are excused from the Garden Club's modest annual fee for rototilling. "I got a late start this spring," says Art, who grew up on a farm. "After I was home for a while I thought, 'Why not have a garden?' I asked Bruce Parmenter, who assigns the plots, if he wouldn't like to have some vegetables rather than weeds in an empty space." Art's garden is now a rich sweep of corn, string beans, tomatoes, bell peppers, eggplant, strawberries, onions, cucumbers, melons, squash and pumpkins for his grandchildren for Halloween. He comes every day to pick, so the zucchini won't get away from him.

Since the beginning, there's been an Aveni section in the Santa Clara garden. First it was sister Sandy (Madison), then brothers Vince and Tony. Then powerful assistance was added in the persons of father Joseph (at left with granddaughter Enza) and mother Vincenza. The senior Avenis, originally from Sicily, have helped out in the garden since Joseph retired as a cabinetmaker three years ago. The showpiece this year was a tall trellis laden with three types of pole beans. Seed for one of them, the *moi* bean, is brought from Italy each year. The ripened bean is allowed to go to seed, cooked with a little tomato and onion, seasoned with oil and salt and cooked with spaghetti. Delicious! say the Avenis.

PHOTOS BY TIM HOLT

Because Mau Nong's mother won't cook anything without shallots, half of his Cupertino garden plot is devoted to the small onion beloved by fine chefs. Mau, who came to the U.S. from Vietnam in 1975, agrees that the shallot imparts a special character to cooking. "It's sweeter than an onion when you fry it brown and crispy," he says. "Sometimes you need shallots and you just can't find them in the stores." He grew 30 pounds this year.

When brothers James and Wayne Chin were growing up on their family's flower nursery, they each began gardening at age five. Today the two bachelors cooperate comfortably in gardening at HP's Cupertino site—where each has four plots—and in the small space behind their duplex apartments. They share buying seed and harvesting their considerable crops. "We lump it all together," they explain. The Chins give away to friends and family some 300 to 400 pounds of vegetables each year, including these bitter melons that their parents like to eat.

YOURTURN

Measure readers share their views on matters of importance to employees.

Helping the Contergan kids

Your May-June story on the telecommunications business caught my eye when I read about a "keyboardless executive version" of a workstation made by Santa Barbara Labs.

I'm interested very much in the possibility of getting a module to allow keyboardless input of data for HP 3000 computers. There are many young handicapped girls and boys in Germany—now unemployed—called the "Contergan Children." They are missing arms and elbows and, if they have fingers, they are often crippled.

The West German government's labor board will pay 80 percent of the wages when these handicapped people join the workforce. It seems to me this new workstation would open up possibilities for these people to work in the computer business and the communication world.

Please forward this message to the appropriate HP people who can tell me more about the direction of keyboardless computer communication.

NORBERT GRUND
Böblingen, West Germany

Your application for computer voice input is indeed poignant. We've asked product manager Tom Hill to contact you directly about the equipment mentioned in the article. HP also has a project underway to send voice messages in the same way that it now sends such keyboard-entered data as HPDESK messages. You'll probably hear from other HP people who can update you on the current state of technology of various keyboardless ways of working with the computer and when future HP products may have this capability. (Norbert's HPDESK stop is HPB200/40.)—Ed.

Covering South Africa

The black man on the cover is Afro-American, not African. This may not matter to you, but I look at a story that is about South Africa and see an American portraying something that he isn't. Would you use a Chinese person to represent a story on Japan? Those of us who feel we have a distinct culture, heritage and look certainly don't think we all look alike.

SALLY SMITH-COTTER
Palo Alto

Neither the black man nor the white man on the front cover are African, nor are they HP employees. Both are professional models from the San Francisco Bay Area whom we'd asked to symbolize the condition of separateness between blacks and whites in South Africa.—Ed.

As a free-lance journalist I visited South Africa in 1979. What I saw there convinced me that South Africa is a modern version of a slave state. No amount of charity can justify HP's investment in this country.

HP's taxes paid to the South African government are used to support a police force and military establishment which literally enforces poverty and suffering. Furthermore, HP's ability to operate successfully in the South African business environment is dependent on these security forces doing their job well. HP should get out. Need more be said?

MEGAN ADAMS
Cupertino

John Young's message in the July-August issue was very interesting. I was especially pleased to read of HP's plans to carry on in South Africa.

All too often people protest an undesirable situation by pulling out. But this is the coward's approach; it's easier to withdraw in protest than to remain and fight for change. With HP's attitude and commitment to people, its demonstrated human rights, it can't help but be a positive influence in South Africa.

DON BRAUN
Loveland

Yesterday on the 6 o'clock news I sat and watched a South African police officer ram his truck into a crowd of innocent people. During tonight's news I watched armed South African soldiers charge into a group of unarmed students who were protesting apartheid.

Then I picked up *Measure*. Inside were pictures of smiling and obviously happy black South Africans. The article painted a rather rosy picture of conditions in that country.

What is a person to believe? Dan Rather? Or the white-washed portrait presented in *Measure?*

DEBORAH SANDERSON
Cupertino

HP currently believes that constructive engagement is the best policy in South Africa. The problem is that we are really only helping a small number of our employees in South Africa while there are 30 million blacks living there.

What has constructive engagement really done for the blacks? Not much. Races can now intermarry yet they still cannot live in the same neighborhoods. In fact, the only significant concession which the South African government has granted is the right for blacks to form labor unions, which incidentally are now in favor of divestment.

We must consider more than just profits. The HP way should mean more than helping only HP employees. It should also take into account how we are affecting the people where we do business. That is why we should pull out of South Africa if apartheid has not significantly changed within two years.

MICHAEL SMITH
Palo Alto

This is a warm thank you from South Africa for the time, editorial space and thought you gave us. I sincerely hope your article will create a greater awareness of the situation here. I'd be glad to correspond with any HP person who'd like to learn more from someone in HP South Africa.

IRMA LIGHTFOOT
Senior Personnel Rep
Johannesburg, South Africa

The *Measure* article was welcome for its discussion of HP's community efforts, especially its work to improve the quality of black education. It's meaningful for me to be able to read about South African HP people like Mandla Manvuso. However, more than half the article was given over to proselytizing for HP's political views on South Africa—views already outdated by events.

The article says nothing about which products HP sells to which customers in South Africa. When a small minority tracks and controls a large majority, that minority's information needs are enormous. It is not an overstatement to say that apartheid must rapidly computerize to survive. HP could genuinely aid a peaceful resolution in South Africa by re-examining its product line there and withholding sensitive merchandise.

CLAY RAMSAY
Cupertino

HP's sales in South Africa are now and have been in compliance with U.S. government regulations, including President Reagan's recent Executive order. The regulations restrict the sale of certain goods to the South African military, police, prison system, or any other agency whose primary job is to enforce apartheid.

We sell no computers to these agencies and we are not aware of any case where HP equipment is being used for repressive purposes. Further, we require third parties (OEMs and dealers) that sell and service HP equipment to agree that they, too, will abide by U.S. government restrictions.

MARK RYAN
Senior Attorney, Export Licensing
Palo Alto

The British breakdown

Shirley Gilbert's article "Beyond Demographics" in your May-June issue prompted me to look around, and attempt to classify the British, based on our division in Pinewood. Here goes:

Survivor: Aged 25-65. Has progressed through cynicism to stoicism to serenity—often by visiting other companies and finding that, despite what he thought, HP is better to work for. Watches "Dynasty" and makes no excuses for it.

Cheerleader: Usually (but not always) female. Bubbling, infectious enthusiasm. Watches "Dynasty" to study the clothes.

Age-fearer: Usually male. Approaching middle-age. Very jovial. Long-haired, bearded, and usually bespectacled. Claims that Joan Collins is his grandmother.

Youngish manager: Early- to mid-30s; takes life very seriously. Jumps up and down on occasion. Watches "Dynasty" because his girlfriend does. Believes me when I tell him that Joan Collins is my grandmother.

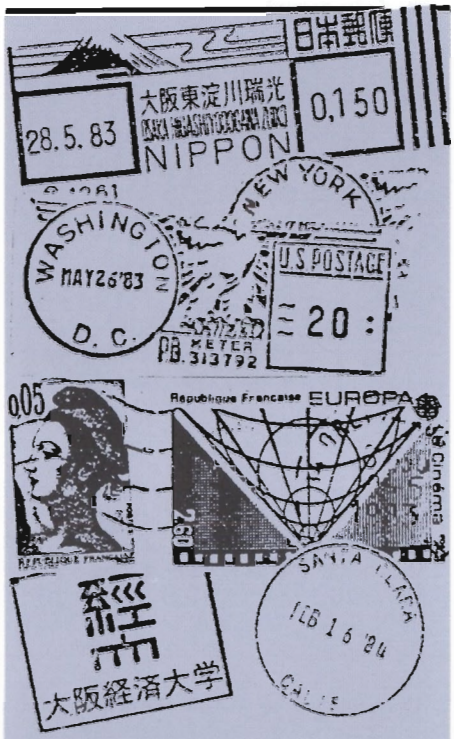
Higher manager: Either sex, but very macho. Watches all soaps to model him or herself on the most fashionable villain. Chooses a very fast company car and complains of its lack of performance.

Young boffin: Engrossed in his/her work; works 10 a.m. till 10 p.m.; has been seen at work at 3 a.m. Thinks that Joan Collins is a drink.

The all-rounder: Mass of long, usually greying, hair. Makes awful jokes; claims that madness is the purest form of intellect. Wishes to be known by a name such as Clickety-Click. Member of "The Prisoner" and "Doctor Who" fan clubs. Watches "Dynasty" to find out why his favourite chat-show host (who calls it "Dysentery") finds it so funny.

This list is by no means complete, and I should be pleased to hear of other people's observations.

DAFYDD PRICE JONES
Office Productivity Division
Pinewood, UK



Write on!

What public issues affect HP people and their jobs? Do you disagree with something you've read in *Measure*?

Send us your thoughts. We want to share your opinions and comments with more than 84,000 other employees.

If your letter is selected for publication, you'll receive a *Measure* T-shirt. (Be sure to send us a return mailing address and indicate your T-shirt size—unisex small, medium, large or extra-large.)

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

LETTER FROM JOHN YOUNG

HP's president explains the heightened emphasis on quality in the company.

As all of you know, Dean Morton, HP's chief operating officer, has been busy formulating and communicating plans to contain costs during the current business slowdown. I know we've all appreciated his efforts, but I'd like to tell you about another change Dean has made. Besides, it concerns one of my favorite subjects—quality at HP.

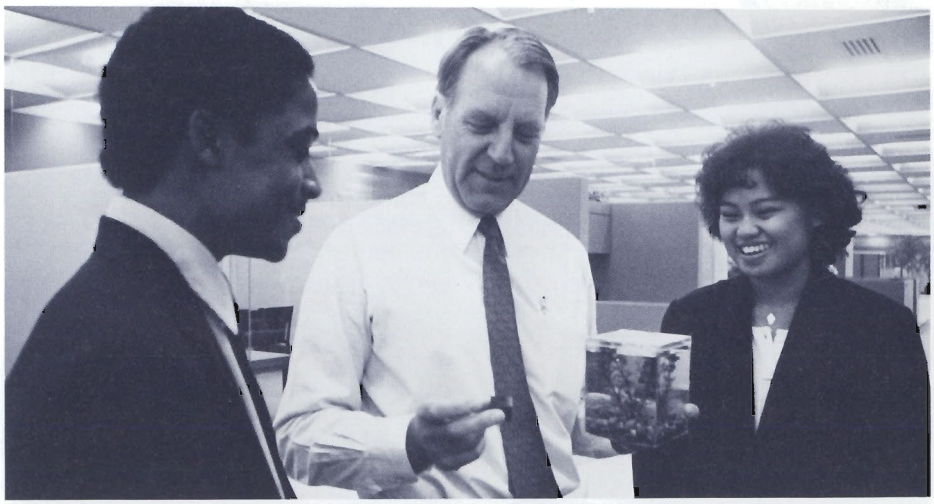
In June, the corporate quality department began reporting directly to Dean Morton. Before that, this functional activity reported to Corporate Manufacturing, an arrangement that reflected the fact that our quality efforts in the past had focused on products.

In 1980 I announced a "stretch" objective of cutting our field failure rates by 90 percent over the decade of the '80s, and the progress we've made toward that goal has created a rippling of benefits felt throughout the company. "Doing it right the first time" has had a broad impact on business effectiveness.

At the same time we've been making great strides in hardware quality, we've become more aware that the value we provide customers is even broader. Satisfying customers (and quality should be defined from the customer point of view) requires effective delivery of hardware, software, marketing, sales, service, training and support.

Thus, quality directly affects all functions within the company. That's why it became clear the corporate quality department should report directly to our chief operating officer. We're seeking continuous improvement in all our products, services, and processes—a fundamental change in the way we view our activities and the expectations we set for them.

Total quality control (TQC) is not only a self-discipline for spurring ongoing, organizationwide renewal; it's also a process that facilitates the teamwork so essential to a decentralized company like HP. *Who's the customer? What does he or she want from us? What are our processes for responding to those wants? How do we define success for our activity? How do we measure the effectiveness of our efforts?* The TQC process forces a group to address those questions systematically. The result is a common purpose shared by all members of the activity.



BETTY GERARD

David Bowman and Stephanie Aflague give John an aquarium made and sold by their HP- sponsored Junior Achievement company that took top national honors this year.

That common understanding—of our customers, of the value we provide them, of the measures of our effectiveness—is most easily achieved in an individual work group or division. But for a company in the systems business like HP, the pursuit of quality leads to a much broader perspective. The chain of events that leads to customer satisfaction starts with marketing and design decisions, runs through all of manufacturing and field sales, and culminates in after-sales support. Thus, the quality of our own internal teamwork and relationships becomes paramount.

That means we continually have to improve the ability of different HP divisions and business units to work together effectively. In a decentralized company like HP, it's a challenge of interesting proportions. Our new group and field sales organization has helped with its focus on the markets we serve. A task force under the leadership of Bill Terry is developing a performance measurement system for our business units that reflects the interdependence of different HP entities and encourages actions that lead to overall HP success.

Appropriate organization and business performance measures can contribute much to our ability to work together on quality. But in the end, our success depends on the aggregate actions of HP employees worldwide. In the months ahead you'll be hearing of new performance criteria in individual employee evaluations—a heightened emphasis on quality, teamwork, initiative, flexibility, and responsiveness to both internal and external customers. These changes reflect the fact that the corporate quality department can only facilitate a companywide commitment to quality and teamwork.

But getting results and meaningfully differentiating our company's efforts from others in the competitive race depends on actions from each of us. I urge your continuing attention to this fundamental area of corporate performance.

Extra MEASURE

DIETER BAUMANN

A team effort

During the European Basketball Championship in Germany, HP's Böblingen General Systems Division had its players in action. But they weren't shooting free throws or collecting rebounds. They were counting and analyzing them on an HP 3000 Series 37 computer.

For weeks the HP team had been putting together the hardware, software and people needed to track the passes, rebounds, fouls, free throws, field goals and shooting percentages for every individual and every team. "It was the quality of the product and the service that helped us pick HP," says Kurt Siebenhaar, technical director of the championship's organizing committee.

Fifty courtside terminals fed game statistics to the international sports journalists covering the matches. HP's data and logo also appeared across the bottom of the screens of television viewers across the continent and as far away as Israel and the Soviet Union.

HP's computer finished the games in a winning style: The organizers asked the company to expand its service for next year's world championship in Spain and again for the European championship in Greece in 1987.

PASTTENSE

OK, everybody, say 'cheese'

If you wanted a photo that showed every HP product made today, you'd need to rent a small arena to hold the more than 10,000 items.

It was a little easier for HP's Dan O'Rourke and cameraman Gerald Karski in 1959. They brought one of each standard HP instrument—204 in total—into a Palo Alto conference room for a group photo.

The array was shot in black and white for that year's annual report, in color and on motion picture film to show to HP customers.

HP ARCHIVES

Extra MEASURE

WILLIAM LEWIS

Building a body-building reputation

"Sometimes when I work out, I look in a mirror and see a warrior—it must be my Viking blood."

Rebecca Gidding, export clerk at HP Roseville's Office Systems Division, acted out her fantasy and mailed the finished photos to *Muscle and Fitness* magazine. As a result, the 28-year-old body-builder will soon be featured in the national publication.

"I stumbled into weight lifting eight years ago when I found that running and using fitness machines just weren't enough," says Rebecca. "I tried power lifting—lifting as much weight as I could—but switched to body building when my manager said, 'Some people are born to be plow horses and some to be racehorses. You're a racehorse.'"

Rebecca says she wants to be strong "but look as feminine as I can." She spends more than two hours a day working out and expects to enter body-building competitions.

"I haven't put any limits on myself," she muses. "Who knows—maybe someday I could be Miss Olympia."

BOTTOM LINE

Hewlett-Packard Company reported a 13 percent decrease in net earnings on a 3 percent increase in net revenue for the third quarter (ended July 31) of the 1985 fiscal year.

Net earnings totaled $117 million, or 45 cents per share on approximately 257 million shares of common stock outstanding (compared with net earnings of $134 million, or 52 cents per share during last year's third quarter). Net revenue totaled $1.612 billion (compared with $1.559 billion for the year-ago quarter).

Incoming orders for the quarter were $1.478 billion, down from $1.685 billion last third quarter.

On July 18 HP announced new expense-reduction measures. Most U.S. employees will take two days off without pay each month from August through October. (Those in U.S. sales regions will take off one day or have an equivalent pay cut.) International operations are exploring similar actions.

NEW DECKS

New organizational groupings announced:

An Office Systems progam headed by **Bob Frankenberg** as general manager has been formed within the Information Systems Group. Among the program's three entities is a new Office Systems Division (formerly Computer Systems–Roseville).

The Design Systems Group has created three business units for better strategic collaboration. Each is made up of existing divisions and operations. Unit GMs are **Bill Kay**, workstation/technical computing; and **Larry Potter**, electronic CAE/CAD. The third unit will focus on tools and solutions for the mechanical engineer.

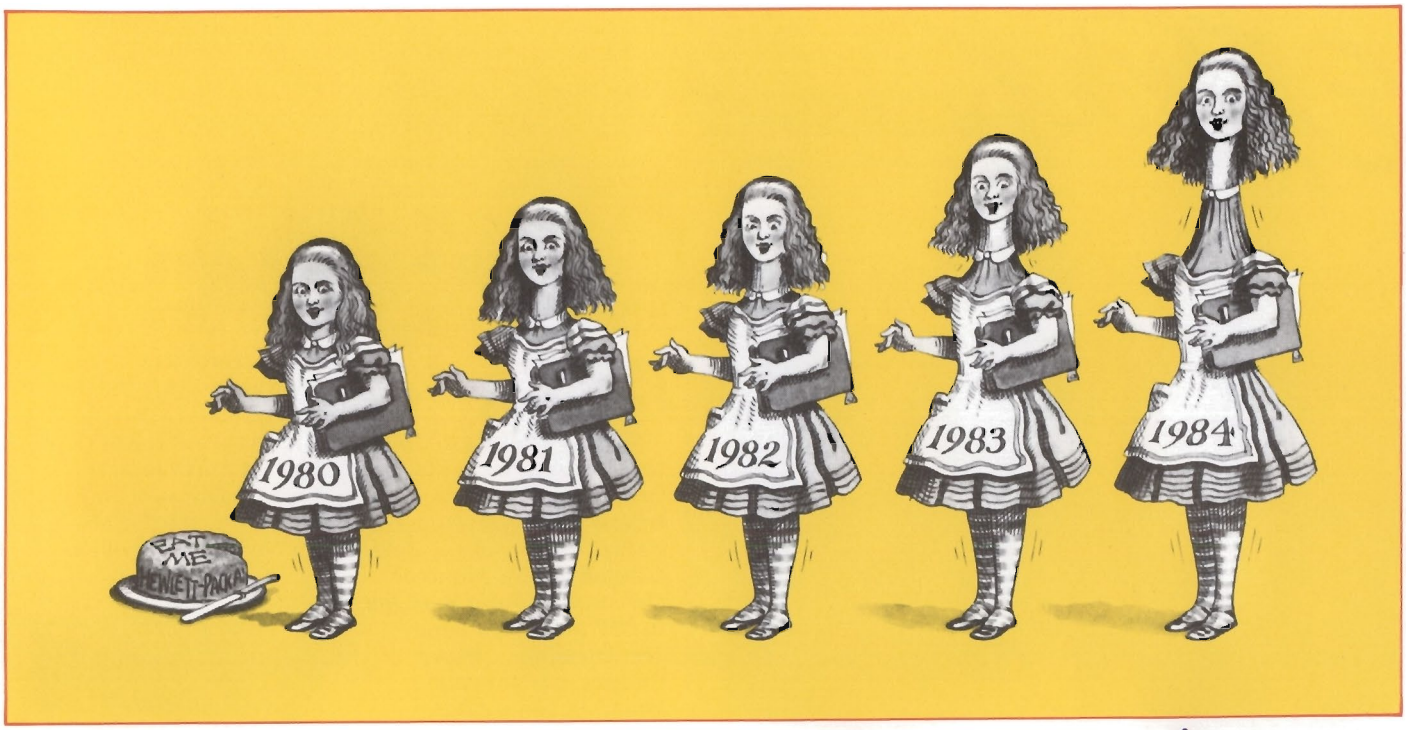
In the Marketing and International sector, a Support Materials organization (GM, **Tom Ashburn**) has been formed within Worldwide Customer Support. It includes four existing support activities.

CHART CHANGES

New entities: a Printed Circuit Division made up of p.c. fab facilities worldwide (GM, **John Fischer**), reporting to Corporate Manufacturing ....Corvallis Workstation Operation (operations manager, **Chung Tung**), Design Systems Group.

New in the Analytical Products Group: a Laboratory Data Systems organization folding in the former Lab Automation Systems Operation (**Karl Schwarz** adds new managerial hat) and an Automated Chemical Systems Operation (operations manager, **Jim Serum**).

Changes in HP Labs: **Jay Richards** directs Systems Performance Center (formerly Distributed Systems Center); **Ira Goldstein**, Distributed Computing Center (formerly Application Technology Center).



This report really grows on you

Annual reports have always been conservative publications at best, reflecting the solid and stable image of their respective corporations. And what's true for the U.S. goes double for the U.K.

But don't tell that to the imaginative group of young Britains who designed last year's HP Ltd. annual report. The result is a book that shows Hewlett-Packard in the U.K. as a creative company, committed to Britain and on the leading edge of high technology.

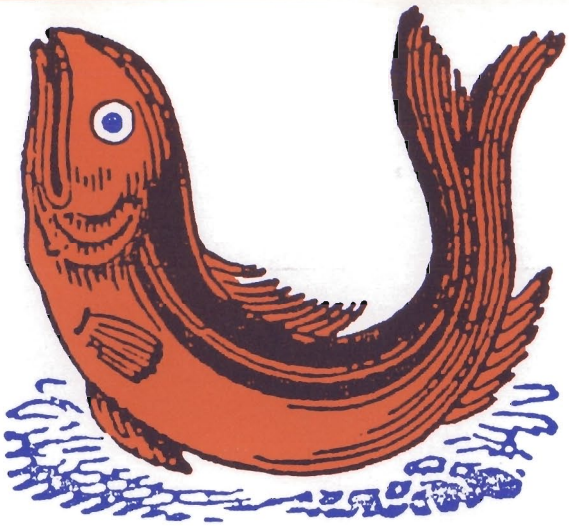
Alice, of *Adventures in Wonderland* fame, shows up in the report as HP's symbol of employment growth in the U.K. Just as in Wonderland, Alice's neck grows longer—to reflect the increase in employment over the last five years.

Even more dramatic is the stark, almost surrealistic black-and-white work of noted English photographer Brian Griffin. Brian's photographic routine was unconventional—spending up to three hours observing a person or location without taking a single photo. His cover photo shows the inside of a car with a window rolled down. Raindrops dot the windshield. Outside, a person wearing an HP badge and pointing is partially visible.

"That was the photographer's idea," says Roger Wilson, HP's U.K. corporate communications director. "Brian felt it summed up all he had photographed in the previous three weeks.

"We had specific objectives in mind in this report, and we feel it succeeded in attracting attention to Hewlett-Packard's U.K. operations across a wide spectrum of audiences; customers, employees, government officials and other influential people."

The report will be in the 1985 Mead Annual Report Show which selected two dozen winners out of nearly 1,000 entries. The prestigious annual report show—which recognizes overall design and communication of a company's accomplishments—will be seen throughout the U.S. and Canada.



There's something fishy going on

The next fish you eat may taste better than ever, thanks to an HP computer and data logger used in studies at the Technical University of Nova Scotia.

The university's Canadian Institute of Fisheries Technology is studying the way the eating quality of frozen fish can deteriorate on its way from ocean to store. Most of the $1.4 billion worth of fish that Canada exports to the U.S. travels by refrigerated truck through several climates. During a typical trip, the fish changes hands five times and sits in refrigerated warehouses that are kept at slightly different temperatures.

The HP gear helps researchers perform temperature-time studies automatically. Boxes of frozen fish are placed in cold rooms. The HP 85 computer monitors room temperature, adjusting it to simulate changing transport and storage conditions.

The institute is also designing and building a computerized control system for the canning industry.

Extra MEASURE

NASA

Flying high

In the space shuttle's cargo bay, an HP 5501A laser transducer is helping scientists study changes in the Earth's upper atmosphere.

The off-the-shelf HP laser, usually used to measure the minute distances involved in manufacturing items such as integrated circuit wafers and computer disc drive heads, is built into an experiment called ATMOS (Atmospheric Trace Molecule Spectroscopy Experiment). The experiment is run for the National Aeronautics and Space Administration by the Jet Propulsion Lab in Pasadena, California.

The HP laser helps calibrate the on-board optical gear that measures wavelengths of incoming solar radiation. By examining which wavelengths are absorbed by different molecules in the atmosphere, ATMOS will determine the composition of the chemically delicate stratosphere.

The ATMOS package is scheduled to fly on several shuttle missions throughout the coming decade to monitor any shifts in the blend of ozone, oxygen, nitrogen, carbon dioxide and more than 30 other molecules. With the new data, scientists will determine if the atmospheric changes are a result of such actions as the release of industrial chemicals, changes in the amount and nature of agricultural practices, or deforestation of land.

(See a 1962 atmospheric experiment on page 11.)

MORE NEW HATS

Wim Roelandts to GM, Information Networks Group; **Dan Warmenhoven** to GM, Information Networks Division.... **Jeff Langan** to GM, Avondale Division .... **John Scruggs** to GM, Manufacturing Test Division.... **Steve Cooper** to GM, Penang, Malaysia, manufacturing.... **Craig White** to GM, Finance and Remarketing Division.... **Mike Naggiar** to new function of Director of HP Marketing Communications. ... **Jan Thomsen** to country manager, HP Norway.

NEW PRODUCTS

HP announced at the International Joint Conference on Artificial Intelligence in Los Angeles in August that it will bring out later this year an AI software product. It will be based on Common LISP computer language and run on the HP 9000 Series 300, newly expanded with medium- to high-performance workstations.

The Portable Plus, a notebook-sized portable from the Portable Computer Division, has a 25-line by 80-character screen and snap-in, read-only-memory (ROM) cartridges to allow customization.

HP's first color-film recorder, the HP 7510, is a high-resolution vector unit aimed at the growing market for computer-generated 35mm slides—and the only entry in its price range (U.S. $13,900). The user creates a chart on the computer, loads the film and removes a completed slide or print. It was developed at the Colorado Springs Division and will be marketed to OEMs by the San Diego Division.

HP 7510 color film recorder

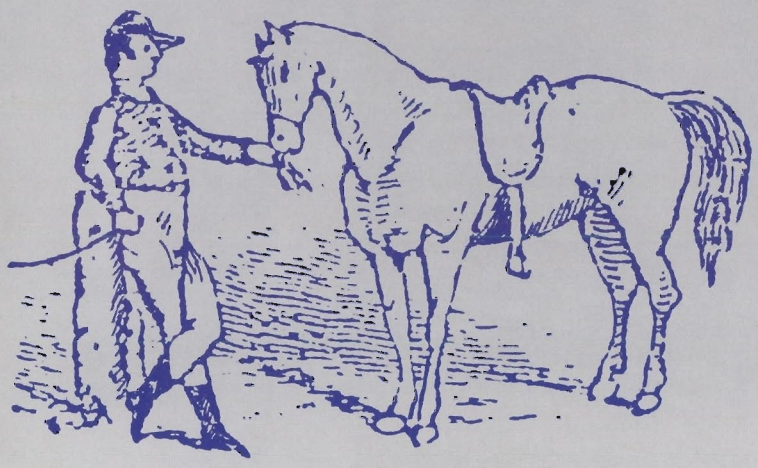
The Colorado Networks Operation now offers Local Area Network products for the entire HP 9000 line. Series 200, 300 and 500 workstations are on the same network and can *communicate.*

The Avondale Division has introduced the new HP 3393A computing integrator to give an analytical lab extensive data-handling capability. From the same division, the HP 7673A automatic sampler with a robotic arm.

HELPING HAND

Dave Packard was named by President Ronald Reagan to head new Blue Ribbon Commission on Defense Management.

HP has made equipment grants of 2,000 units of The Portable personal computer to U.S. universities and health-care programs for innovative uses .... The company is giving more than $500,000 worth of chemical-analysis instrumentation to 50 U.S. schools of higher education.



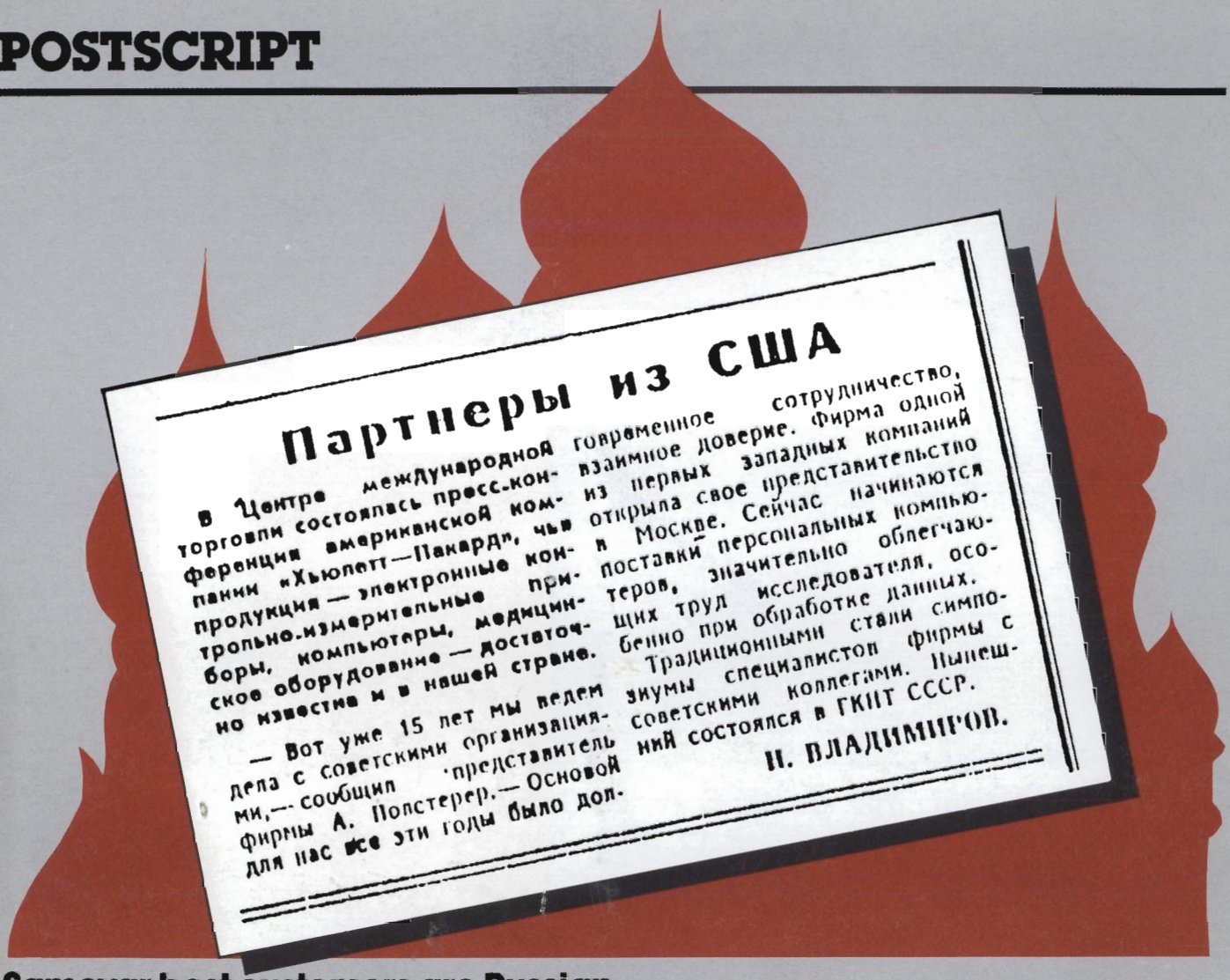
Off to the races

Thoroughbred racehorses will be walking the straight and narrow now, thanks to an HP gas chromatograph and mass spectrometer in the new Jockey Club headquarters being built in South Africa.

A new analytical chemistry lab will test samples of blood drawn from the horses—looking for steroids and other illegal drugs. The club says the new 880,000-rand facility will rate among the best in the world.

Similar HP equipment was used at the 1984 Olympic Games to detect drugs in human athletes' bloodstreams.

POSTSCRIPT



Партнеры из США

В Центре международной торговли состоялась пресс-конференция американской компании «Хьюлетт—Паккард», чья продукция — электронные контрольно-измерительные приборы, компьютеры, медицинское оборудование — достаточно известна и в нашей стране.

— Вот уже 15 лет мы ведем дела с советскими организациями,— сообщил представитель фирмы А. Полстерер.— Основой для нас все эти годы было доп. сотрудничество, взаимное доверие. Фирма одной из первых западных компаний открыла свое представительство в Москве. Сейчас начинаются поставки персональных компьютеров, значительно облегчающих труд исследователя, особенно при обработке данных. Традиционными стали симпозиумы специалистов фирмы с советскими коллегами. Нынешний состоялся в ГКНТ СССР.

Н. ВЛАДИМИРОВ.

Samovar best customers are Russian

While HP's reputation has been well chronicled by writers in the West, you may wonder about HP's image behind the Iron Curtain.

For those not fluent in Russian, this article in *Izvestia*, the Soviet newspaper, proves that HP is a known quantity in the U.S.S.R. This clip describes an HP press conference held in Moscow in conjunction with three days of seminars—all marking the company's 15 years of representation in that city:

In the international trade center, there was recently held a press conference by the American company Hewlett-Packard. The company's product range includes electronic measurement and test systems, computers, medical equipment, all of which are well known in our country.

"For already 15 years we have had business relations with organizations in the U.S.S.R.," reported Mr. A. Polsterer, representative of this company. "Longterm cooperation and reciprocal trust have served as a foundation during all these years. The company was one of the first Western firms to open an office in Moscow. Now we have started selling personal computers as well. Such computers ease the work of researchers tremendously, especially in the area of data processing."

Seminars held by the company's specialists together with their Soviet colleagues are already a tradition.

The seminar took place at the State Committee of Science and Technology of the U.S.S.R.

—N. Vladimirov

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