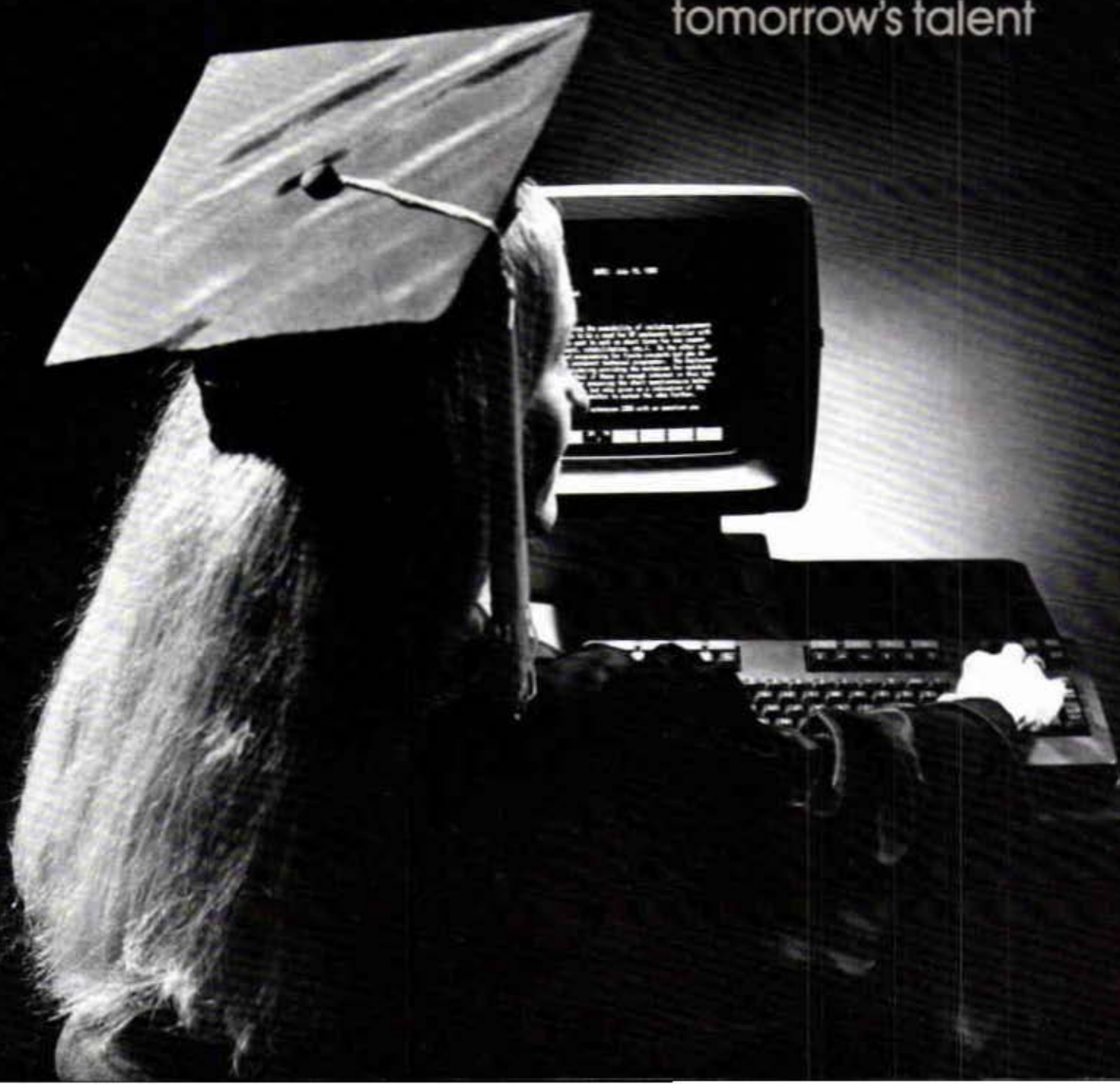


MEASURE

For the people of Hewlett-Packard

September-October 1983

Preparing
tomorrow's talent



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MEASURE

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

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

ON THE COVER

Part of HP's success through the years can be traced to the steady stream of talented engineering and computer science graduates that come to the company straight from the campus. Staff writer Lane Webster looks at a number of innovative programs designed to continue that important flow. Cover photo by Jim Karageorge.

UPFRONT

HP marks 10 years in logic analysis at Colorado Springs

We live today in a digital world: computers route our telephone calls, microprocessors help tune in our favorite radio stations and terminals crop up on our desks and workstations like mushrooms on a damp forest floor.

Not all that long ago it was different. We lived in an analog world then. When your television set blew a tube, you just prayed that it wasn't the picture tube. The others were easy enough to test on that strange-looking machine at the local hardware store.

The Big Switch certainly didn't happen overnight. But as the vacuum tube gave way to integrated circuits, the need for appropriate test and measurement equipment grew. So did a new market for Hewlett-Packard.

No longer could the trusty oscilloscope give electronics engineers a clear picture of what was happening inside their projects. The digital world demanded a new tool: the logic analyzer. But capturing "word flow" (all the 0s and 1s of the binary world) within an operating system was still considered more difficult than viewing waveforms on an oscilloscope.

Since HP's Colorado Springs Division was home to the company's experts on 'scopes, they logically got the nod to start work on the new project. Their first effort (admittedly an intermediate step) was a digital waveform display conditioner. This tool won enough acclaim at other HP divisions (as well as IBM operations in San Jose, California, and Poughkeepsie, New York) to start a logic section within the Colorado Springs Division.

By July 1973 there were 53 people working in the section. And the first product—the 1601A parallel-mode logic state analyzer—made its debut.

The new machine was a plug-in unit that sat below the host division's 180/182 mainframe oscilloscopes. Its introduction was considered newsworthy enough to rate a cover story in the trade publication EDN.

One of the first big customers for the product was Raytheon. The company

bought 17 units and used them to develop a then-sophisticated worldwide airline terminal network.

Through the years a number of evolutionary products followed (1600S, 1607A, 1611A, 1610A, 1615A, 1640A and the 1610B). In 1979 the operation hit the market with the HP 64000 logic development system. And in May of 1982 Logic Systems gained full divisional status within HP.

In a single decade, the logic section of 53 people had exploded to a division of 680 and had made a lasting mark in a relatively young market. **M**



The 1s and 0s on the 7-inch screen of the 1601A give designers a glimpse at the inner workings of integrated circuits and answer such sticky questions as "Where did the program branch to?" and "Which loop are we stuck in?" The 1601A entered the market 10 years ago.



HP'S NEW STRENGTH IN LATIN AMERICA

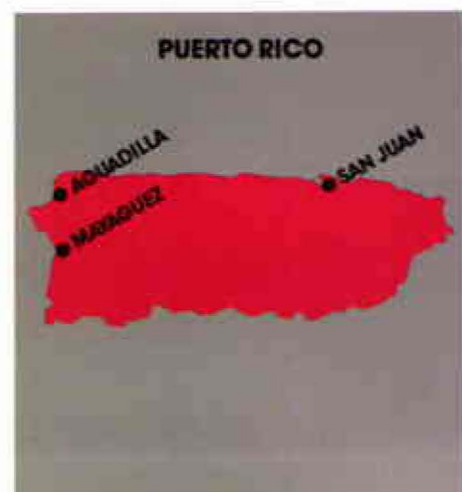
HP entered the Latin American manufacturing arena in 1975 with a new factory in Campinas, Brazil, to assemble medical instruments and handheld calculators.

Within the last three years the company has opened two more facilities in Latin America: Aguadilla, Puerto Rico, and Guadalajara, Mexico. Though both belong to HP's fast-growing Computer Groups, Aguadilla specializes in high-volume production of computer terminals while Guadalajara assembles a limited line of HP business computers and peripherals. The product lines are as different as the reasons why HP established the two operations.

On the next four pages *Measure* examines HP's newest Latin American manufacturing plants.



Milagros Gonzalez assembles keyboards for HP's lineup of 262X terminals in Aguadilla.



En la Isla (out on the island) means anywhere beyond San Juan's metropolitan area, including mountain villages.

When Christopher Columbus set foot in Puerto Rico in 1493 during his second voyage to America, he probably never envisioned the Caribbean island as an international trading area. But today, Hewlett-Packard turns out thousands of computer terminals each year just miles from the spot where the Italian-born explorer landed.

The transformation of the Puerto Rican economy from agriculture to manufacturing is by no means complete (half the island's net income comes from manufacturing, while agriculture and tourism are responsible for most of the other half). Trucks heaped with sugar cane still crawl along narrow, two-lane roads en route to mills that produce sugar for the island's most famous product: rum.

But, starting in 1942, the island launched a program of economic development. Puerto Rico, a self-governed commonwealth of the U.S., has managed to attract 400 of the top 1,000 U.S. firms to the tropical island, and has increased the standard of living to one of the highest in all of Latin America. In the last 15 years Puerto Rico has earned a reputation for the production of pharmaceutical, computer, electronic and other high-tech products.

Unlike their mainland counterparts, certain manufacturing operations in Puerto Rico pay no federal taxes other than social security and customs. Under certain conditions, corporate income tax rates set by the Puerto Rican government are lower than mainland rates—an attractive proposition for companies that are looking for new manufacturing sites.

It's safe to say that tax incentives were a primary reason HP came to Puerto Rico," says Ray Cookingham, the operation's general manager. "But there are lots of other important reasons: the availability and quality of the local work force, the nearby University of Puerto Rico's engineering school and the successes of other computer manufacturers already on the island."

The full benefits of the tax incentives are only realized if an operation is at least as productive as those operating in other locations. "We've been success-

ful meeting or exceeding many HP standards for productivity and quality," says Ray. "HP has established a solid base which can continue to provide jobs for Puerto Ricans. This fulfills the objective of the tax incentives: providing employment through investment by private enterprise."

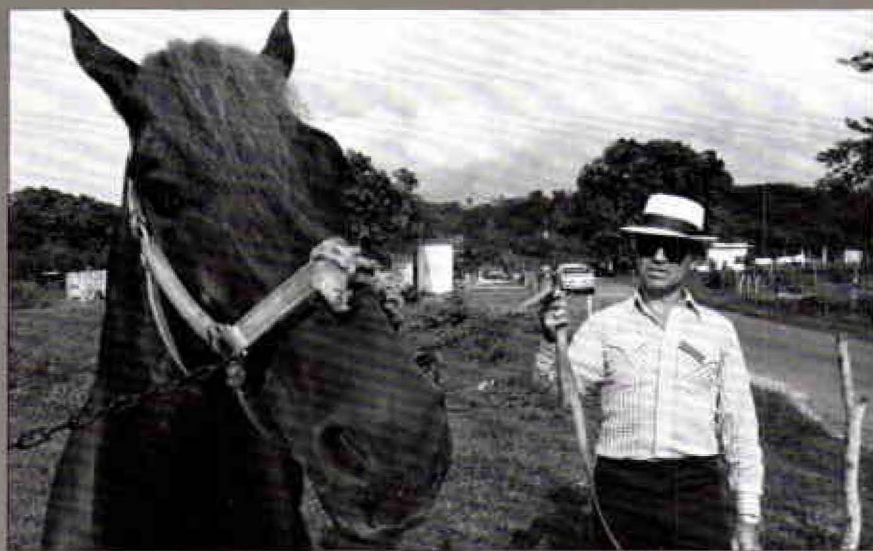
HP started its operation early in 1980 in a leased industrial building which had previously housed both a computer assembler and a pantyhose manufacturer. Only a handful of people helped ship the first 2621A terminal in April of that year. By the end of this fiscal year, HP will have 400 people on its payroll. Plans are being drawn for the operation's first permanent facility, to be built on 70 acres of land a few miles from the current leased building.

HP's Puerto Rican operation has used a repetitive manufacturing process from the start. One production line is used to manufacture more than one product. Materials flow from the stock room, through production and then to shipping for customer delivery. There are no side trips back to the stock room, minimizing idle periods known as "work in process."

 With this process, we've been able to decrease inventory and to improve the efficiency of our operation," says Harry Heflin, the operation's former production manager. "In fact, we've cut the availability time in half since we opened up shop."

One of the keys to these successes has been a package of computer programs which supports high-volume, repetitive manufacturing. Puerto Rico was one of the first HP manufacturing facilities to use Materials Management/3000 to help control inventory. That product is now sold to HP customers worldwide. The information systems staff at HP-PR has finished work on a production-tracking and a cost-accounting system that work with MM/3000 and may be the forerunners of future HP products.

Because the operation is 1,100 miles from the U.S. mainland, air transport is the only way to ship products and raw materials quickly. HP relies upon a special air freight service run by the company that makes Wrangler jeans.



SMOOTH RIDING IN PUERTO RICO

"When I was small, I used to watch cowboy movies. I decided that when I grew up, I wanted a horse and a German shepherd dog, just like Roy Rogers."

Today Angel Santiago, an associate buyer at HP's plant in Aguadilla, Puerto Rico, has his horse. Every day after work he can be found riding and grooming his two Paso Fino ("fine walk" in Spanish) horses, a breed native to the island. The Paso Fino has been described as the smoothest riding horse in the world.

"The horse's unusual gait is performed at five different speeds. But

at each speed, three of the horse's hooves are on the ground at any given time," explains Angel. Since the horse lifts the hooves a mere six inches off the ground, the rider sits nearly motionless in the saddle.

"The only way you move is forward," says Angel.

For the last 20 years he's shown his horses in competition all over the island and has a home full of trophies to show for his successes. The next 20 years look promising, too. Angel Jr. has already won trophies in Paso Fino shows.

The blue-jeans planes use the runways of a deactivated U.S. Air Force base just minutes from the HP plant. An HP truck meets the plane to speed up the process. The cost for this special service is less than half that charged by traditional air cargo companies flying in and out of the international airport in San Juan, according to HP's Mike Martinez, traffic manager.

Another local resource for the HP operation is the University of Puerto Rico's campus in Mayaguez. About 30 HP employees are graduates of the engineering school, including Lucy Crespo,

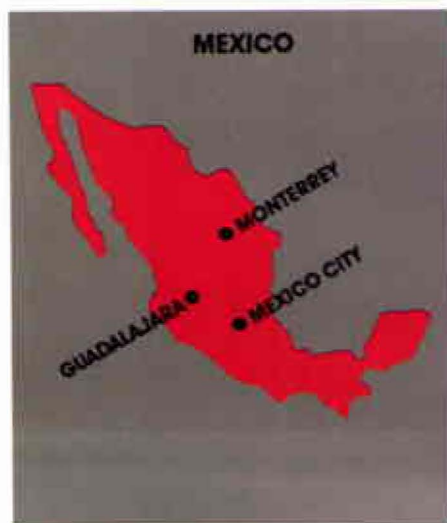
production section manager.

"We have a very good group of people for such a young organization," says the Aguadilla native. "With new employees, a new building and new products coming our way, the future sure looks bright." **M**



BRIAN ANTONIO/COPIA

HP's Juanita Rodriguez de Martoski poses for a sales brochure with the computer manufactured at HP's Guadalajara operation.



Every shipment from HP's Mexican operation carries this label of origin.

The reason we established a computer manufacturing facility in Guadalajara was to survive in the Mexican marketplace," says Jose "Pepe" Grapa, manager of HP's year-old plant in the country's second largest city. "The government decided to develop a computer industry of its own in the country, and its first step was to establish import restrictions."

Manuel Diaz, general manager of HP's Mexican sales organization headquartered in Mexico City, describes the situation more directly. "If we didn't have Guadalajara, we'd be out of business."

Before 1981 the government based computer imports on sales for prior years. Today such imports are tied to present and future manufacturing plans. In short, if you don't manufacture in Mexico, don't expect to sell in Mexico.

"With the plant in Guadalajara we can offer customers better delivery on an HP computer—built in Mexico to Mexican standards and running Mexican software," says Manuel. Meanwhile, many of HP's competitors have been slow to establish their own manufacturing facilities, and some have announced plans to leave the market.

The Mexican market looked promising to everyone in the late 1970s as rising world oil prices fueled the country's economy.

The discovery of huge oil reserves in 1976 had transformed the country from an underdeveloped tourist spot to a major world oil power. But after several years of boom, Mexico's 72 million citizens are now facing their worst economic crisis since World War II.

There's a staggering \$80 billion foreign debt, inflation running at nearly 100 percent, 10 to 15 percent unemployment and 40 percent underemployment (willing workers who accept marginal, unskilled, part-time work).

HP's operation in Guadalajara certainly can't solve all the country's problems singlehandedly. But the computer products it manufactures are being used by Mexican industries to bolster declining productivity. Some of the operation's products are exported to other

Latin American countries and Canada. And HP's commitment to local hiring means a small dent is being made in the unemployment problem (more than 5,000 people submitted applications for the operation's first 36 openings).

A converted electric-motor plant in southwestern Guadalajara has been HP's home for the past year. (The company purchased 104 acres of farm land in June to build a permanent facility in the future.)

Inside the 40,000-square-foot start-up facility, HP 3000 computers (models 40 and 44) go through final assembly and test. Starting in September, HP's Greeley, Colorado, operation is transferring a line of floppy disc drives to Guadalajara.

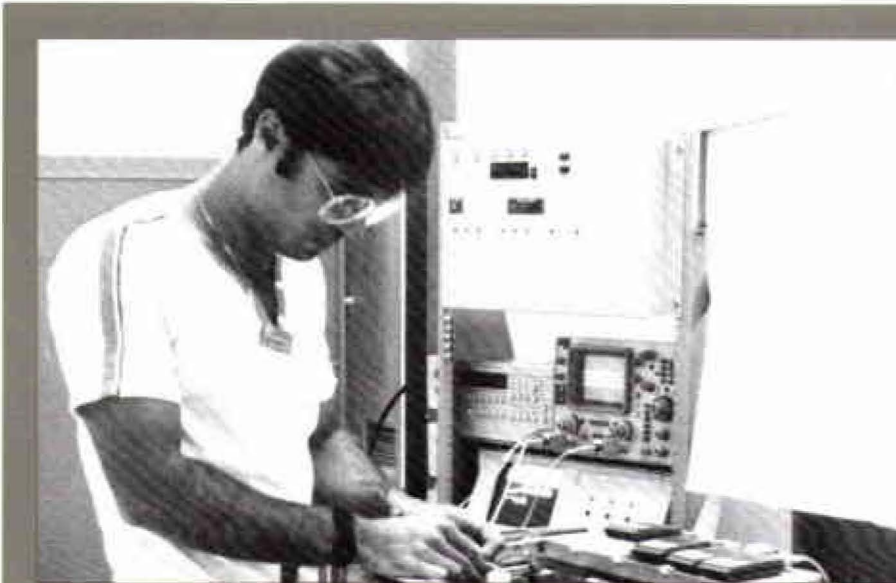


Although the polished linoleum floors and open offices resemble typical HP manufacturing facilities everywhere in the world, there is an important difference. "Because we're a relatively new operation, we get to use many of the newest manufacturing techniques. That should make our productivity one of the highest in the company," says Pepe. "It's one of the advantages of starting from scratch."

An example is the operation's commitment to low-inventory production lines with materials being delivered just in time. The operation is also looking at a number of Mexican companies as possible lower-cost sources for such items as power supplies, wiring and cables, and sheet metal for computer cabinetry.

Pepe is pleased with the people who have helped the year-old operation get off the ground. "We were looking for people who not only knew the jobs, but who also had flexibility, leadership and initiative—people who could grow with the operation. Our software center shipped its first product just 10 weeks after we hired our first person in that area. Our production engineering people have made two significant suggestions on the HP 3000 that have reduced costs and improved quality—and that was during their first three months with HP."

HP is working with the three local universities to increase the supply of engineers who'll be able to make such



STAR OF THE START-UP

The next time you see Ruben Kleiman, a production engineer at HP's new Guadalajara Computer Operation, he will be trying to kill a Nazi doctor with high explosives.

Ruben's native Guadalajara was the filming location for "The Evil that Men Do," a movie thriller starring Charles Bronson. Ruben was picked to play the part of an Israeli commander. (After receiving his engineering degree in his hometown, Ruben spent several years in Israel where he earned his master's degree in computer science. He speaks fluent Hebrew.)

Ruben's received lots of good-natured kidding about his stardom

from co-workers at HP where he's responsible for developing test systems for the computers manufactured in Guadalajara. "The movie was fun to do, but I'm a computer scientist at heart," he says.

Ruben thinks his hometown is a good place to be a computer scientist. He sees Guadalajara becoming the country's computer manufacturing center. "This city doesn't have the heavy industry like Monterrey or Mexico City," says Ruben. "In addition to established companies like HP, IBM and Burroughs, others like Sperry, Univac and Basic Four are moving here."

contributions in the future. "It's going to take a cultural change to make engineering a more sought-after field in Mexico," says Wade Clowes, production manager for HP in Guadalajara.

"Engineering is perceived as a stepping stone into a management career, not as a place to stay and contribute. While Mexico has excellent universities, there's been more emphasis on audio and analog studies than on digital in schools. It may take some time to develop a lot of high-quality digital engineers who are primarily interested in

engineering careers."

Time seems to be an ally of HP in Mexico. The sales organization got its start in the country in 1966 with sales of a couple hundred thousand dollars. That figure today is about 100 times larger. "Our growth has come in cycles," explains Pepe, "but the long-term trend is solid. The additional business we've generated since the start-up of Guadalajara has paid for the land, the building and all our equipment. Not bad for our first year." **M**

Preparing tomorrow's talent: HP teams up with education



During his frequent recruiting trips to Iowa State University, HP's Wayne Grove (left) helped interest Ph.D. candidate Tom Turner in HP's new program for developing electrical engineering and computer science professors.

The main value of electronic devices is not found in the silicon, plastic, sheet metal or other materials that go into them. Nor is it in the capital and operating expenses of the machines used to manufacture them. It's found instead in the way human minds design and build new products by applying knowledge accumulated through years of learning.

Where does that learning occur? On the job, in part. But far more of it comes in school. In an era of rapidly changing technology, no one can specialize in technical disciplines without first learning how to learn by mastering the fundamentals of communication, math, science and engineering in school. The 60 members of the Fort Collins team that configured the "brains" for the HP 9000 computer had 1,000 years of education among them.

The most important factors in sustaining the electronics industry's growth are products of the educational system: new recruits and new research. Neither can be produced without considerable investments in facilities, equipment and quality teachers.

The trouble is that technology is changing so fast that most schools and universities can't keep pace. Left to their own resources, they experience extremely slow growth in funding for new equipment and teacher salaries, if not outright cutbacks in both. Discouraged professors and schoolteachers are abandoning education for better-paying jobs in industry.

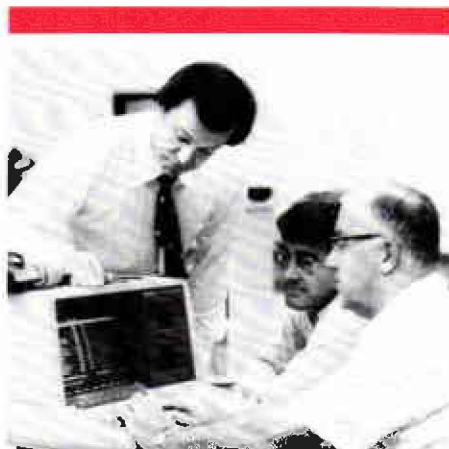
Under these conditions, universities must reduce the basic research so important for technological development. They must either limit the number of students they educate, or lower the quality of education. Primary and secondary schools, unable to prepare students in technical areas, eliminate the choice of a technical career before students even know what one is.

Combine these trends with the growing need for technically competent people in industries like electronics and the crisis comes into focus. The U.S. is not the only nation that confronts this situation. Many European, Asian and Latin American countries also recognize that their domestic markets, competitiveness in world markets and na-

tional defense all greatly depend on the technological capacity they achieve through their educational institutions.

"The reason we're involved in giving to education is the urgent need for achievement in math, science and engineering," says Emery Rogers, executive director of the Hewlett-Packard Company Foundation and chairman of the Grants Review Board. Helped by tax incentives designed to encourage industry giving, HP in 1983 will contribute to education equipment and cash worth \$23 million—double the amount last year and six times the amount three years ago. Contributions to education account for 80 percent of HP's total philanthropy.

Still, the giving total is small compared to the vast needs of a U.S. educational system that must revamp its processes to prepare people for an information-based—instead of an industrial—society. One company can only do so much. That's why HP's educational relations programs are designed to pioneer new forms of educational support. None provides total answers to given problems, but each



Logic Systems Division's Frank Urban shows an electrical engineering professor how to use an HP logic development system that HP will donate for his teaching and research.

is meant to stimulate similar giving by others in industry.

HP uses this approach in one of the crisis areas of education: engineering faculty development. More than 2,000 vacancies currently exist on U.S. engineering faculties. This shortage threatens both the quality and the supply of new research and new recruits that the

electronics industry needs to continue its growth.

Using a model that HP developed with the American Electronics Association (AEA), the company has committed \$6 million over five years to develop 54 new professors at 22 universities. HP selected the schools based upon their quality, the number of Ph.D. graduates in electrical engineering and computer science and the school's on-going relationship with the company. Half of the cash support for each Ph.D. student is provided as a grant. The remainder is furnished as a loan which is canceled as the recipient completes three years of electrical engineering or computer science teaching at an accredited university. HP's program includes a \$50,000 equipment "dowry" to the university department that first hires the new professor.

"Instead of solely recruiting top engineers and scientists with doctoral degrees, HP is trying to keep some of the best of them on campus to teach the next generation of engineers," says Jack Groat, manager of educational relations and faculty programs adminis-

LOOKING HIGH AND LOW

Every fall and spring, more than 1,000 HP recruiters crisscross the United States in search of the most capable college graduates available. On each trip, many recruiters spend a full work week at a single school. One day is for travel, two for meeting with faculty, and two for conducting interviews—up to 12 per day.

"Interviewing is exhausting, but it's a kind of art form," says Wayne Grove, product assurance manager for the Personal Office Computer Division and campus manager for Iowa State University.

He places interviews in three categories. First are the "high-end" interviews. These are the "redhots or superstars," highly recommended by professors and highly sought after by every company coming on campus. "With these you don't bother assessing their capabilities; you just try to find out what criteria

they will use to make their decision."

Then there are the "low-end" interviews which usually turn into counseling sessions. "Many of them just don't have a window into our world in industry so I try to leave them better off than they were before they interviewed," he explains. These can be the most satisfying, he says. In one case, the student went out with tears in his eyes saying that no one had ever taken time to tell him about other jobs to seek.

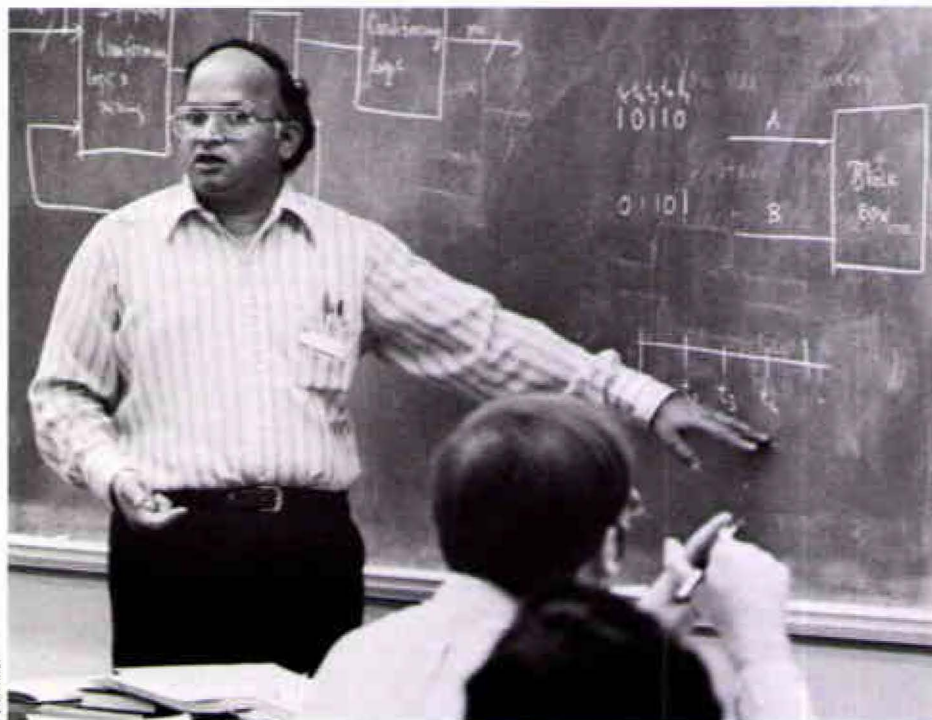
The "mid-range" interviews are the toughest. "These are the sparring matches where you try to determine which ventures are worth pursuing," says Wayne. Sometimes he asks students about their favorite class projects and requests that they draw a sketch of a device during the interview.

Interviews of all kinds will be fewer next year. Recently the corporate employment staff sent out the word

that the recruiting program must become more efficient. Last year HP recruited at 246 schools, but hired no one from 145 of them. Nearly 80 percent of the new hires came from only 114 schools. The ratio of interviews to hires has climbed from 12-to-one in 1981 to 32-to-one in 1983. The second key performance measure, the ratio of plant visits to new hires, has also climbed—about 33 percent. The cost per recruit has risen from \$955 in 1981 to \$2,700 in 1983. Plans call for watching results at campuses and perhaps discontinuing some less successful recruiting programs.

Lest it be feared that the interview ratios reflect poorly on HP, the rate of acceptances from hiring offers is a hefty 71 percent, one of the best in industry. Says corporate employment manager Debra Engel: "We're still very popular and attractive, just not as efficient as we'd like."

Preparing tomorrow's talent



Megha Shyam, an HP R&D engineer, teaches the fundamentals of very large scale integrated circuit design to both students and professors at Oregon State University. Megha has arranged to process his students' experimental wafers at the Corvallis IC facility.

trator. HP's initial commitment has helped motivate 25 other companies to support 35 Ph.D. students at 23 universities through the AEA's educational foundation.

Working this summer at HP Labs were two of the Ph.D. students in HP's program. Jim Hull of the University of Wisconsin and Tom Turner of Iowa State University. "I was strongly inclined to teach if I could make the financing work," says Tom, who spent six years as an engineer in the aerospace industry. "HP's program made the financing work."

The faculty development program meshes with another educational partnership program: continuing education. Without leaving the workplace, engineers can take courses via microwave links or mailed videotapes. Over a three-year period, they can earn master's degrees in electrical engineering or computer science. These programs keep engineers abreast of the latest scientific research produced by university faculty which can be applied to invent

new products in industry.

The idea of continuing education was initiated at Stanford University in the 1950s by Frederick Terman, the professor who encouraged Bill Hewlett and Dave Packard to go into business. Today, the revenue from Stanford's cooperative program with industry keeps four additional professors on the engineering school faculty. Helped by HP's backing, continuing education programs are in place at Chico State University, the University of California at Davis and at Berkeley, the University of Idaho, Washington State University and Colorado State University.

This fall about 500 HP engineers are taking continuing education courses in the U.S. Going to school and working full-time is no easy balancing act. "Earning one of these degrees is a lot of hard work," says Terry Gildea, manager of technical training.

Terry is now working on a proposed national technological university. HP has provided \$50,000 to get the effort off the ground. The program would en-

able engineers at remote locations to earn fully accredited degrees by taking live and videotaped courses via satellite from a number of universities.

Linked to both the continuing education and faculty development programs, HP's equipment-giving program continues to be the primary focus for educational support to universities and schools.

"We give equipment because it's something we do well," says Emery Rogers. "It's much easier to put a check in the mail, but we can provide much more value and establish closer relationships by giving equipment."

Both the Logic Systems Division and the Computer Groups (with HP Labs) regularly sponsor programs that bring professors to divisions for symposia on the HP 64000 logic development system or the HP9836A workstation, respectively. After the seminars, the professors outline proposals for using HP equipment for teaching or research. If a proposal is accepted, the school receives equipment worth more than \$100,000.

In no way are philanthropic research partnerships expected to produce immediate innovations of direct commercial value to HP. Says Jane Evans, manager of computer systems grants: "Our goal is to put equipment in the hands of knowledgeable people who are working on the same set of problems that we and other companies are. We expect the results of the university's research to be available to everybody."

In the less common cases when equipment gifts are made for direct, collaborative research with university departments, they are not classed as philanthropy and are funded instead with HP operating funds.

At one time the only place to find an HP product on campus was in a science or engineering lab. But now, as computer applications have expanded, HP computer contributions have appeared in other areas. For example, more than 500 students and faculty at Purdue University's Krannert Graduate School of Management use an HP 3000 in courses on management and finance.

Such grants meet HP's primary objective in educational giving: to provide capital equipment for teaching and re-

search, not necessarily to induce sales. The company has no interest in the practice—common in some circles—of giving one isolated piece of equipment so that schools must purchase related equipment to get the system up and running. “We don’t give an automobile, if they’ll buy the engine,” notes Jane Evans. “We bend over backwards to give a complete working system.”

Supplying a single university with the right equipment takes many HP volunteers, including field engineers, systems engineers, customer engineers, support teams, campus managers, recruiters, R&D engineers, alumni and senior management. For this reason, volunteers in the Pacific Northwest and Colorado have organized equipment contributions committees to prepare a regional package of requests. They then approach corporate groups and departments for equipment.

“We purposely keep our giving program decentralized to enable employees to take initiative and pride in assisting schools they care about,” says Rogers. The most decentralized education support program of all is the employee gift

program. Employees contribute 25 percent of the list price of an HP product that they donate to a school (from kindergarten through college) and HP contributes the rest. (The company will also match employee’s cash donations to universities dollar for dollar.)

In the coming year, more emphasis will be placed on division educational relations programs. One of the broadest programs is run by personnel manager Dave Prindiville at the Roseville, California site. Roseville Networks Division general manager Al Seely commissioned Dave to find ways to help local schools. He first contacted administrators and teachers from schools and invited them to a forum to identify key areas where HP might contribute. Then he found six HP engineers who agreed to serve as “campus managers” for nearby schools. Working with them, he arranged donations of HP 86 personal computers to high schools and HP 85s to junior high schools.

Prindiville also hired a local teacher to develop a computer literacy curriculum, produced an audio-visual presentation on technical careers and orga-

nized a site tour program for groups of teachers and students. “One thing we found is that you can get pulled into education programs full-time,” says Dave.

While not advocating the establishment of a full-time position, Jack Grout sees the need for an education “champion” at each site. “Someone should have the responsibility to plan and oversee educational outreach to make site programs meet specific division objectives and use employee time and education dollars as effectively as possible,” says Jack.

A knowledge-intensive industry cannot afford to let its main supplier, the educational system, languish with low productivity. HP educational programs for faculty development, continuing education, equipment giving, research partnerships and outreach to local schools provide a continuum of support for schools and universities. The task is large. But the payoff comes when people enter the workforce with the knowledge and determination to design and apply electronic products to a wide range of activities that advance human welfare. **M**

OUT OF THE CLOSET

In late 1982 in Washington, D.C., U.S. senators held hearings, deliberated and finally discarded a bill to provide tax incentives to electronics companies for computer equipment contributions to high schools.

The California legislature had no such hesitation. It passed a law in September 1982 that allowed a credit against state corporate income tax of up to 25 percent of the fair-market value of computers donated to elementary and secondary schools.

One California-based personal computer company broke out of the blocks with a plan to give a single computer to every California elementary and secondary school, all 10,000 of them. HP, an equipment giver to education for more than 20 years, took a measured approach.

“We had seen individual computers we’d granted lie around in school

closets before,” says Jerry Fisher, public affairs manager for the Portable Computer Division. “When teachers would hear we were coming to visit their classes, they’d bring out the machines and dust them off, but we knew they really weren’t using them for curriculum development.”

This time around, HP decided to equip entire classrooms at 14 selected high schools.

Each school received 10 HP 86 personal computer systems worth a total of \$51,000. In addition to 10 computers and 10 monitors and printers, HP gave each school two graphics plotters, 12 disc drives and a selection of educational software. Total value of the grants: \$714,000.

Schools were selected on one of three criteria: proximity to an HP facility in California; a significant number of minority students; or an existing computer curriculum.

HP assigned representatives to each school to insure smooth installation and to provide teachers with technical and training skills.

These advisers adopted the attitude that teachers are the experts in building foundational skills and that computers are simply there to assist this effort. “A computer to a teacher is like a microwave oven to a chef; they’re just tools to be used by people,” says Gary Gubitz, corporate training specialist. HP helped the teachers get started, but let them take the lead in developing curriculum guides and writing software for classes in math, computer science, economics, business and language.

HP’s pilot program in California will run through the next school year. Depending on its results and any future legislation passed by Congress or state legislatures, the program may expand to secondary schools in more communities.

Our success as a business is ultimately connected to how well we satisfy customers:

DON'T BE A MISSING LINK

An HP employee recently phoned a contractor to get some work done at home. He wasn't in, but a message machine took the information and promised a quick call back. Days later, with no response forthcoming, the employee tried again. Same result. At this point the employee's attitude became fixed: "Forget it! Forever! I'll find someone else."

Breakdowns in responding to the needs of customers can be damaging and even disastrous to a business organization. It goes far beyond unanswered phone calls; almost every aspect of a company's operations is a potential link to its customers and an influence on their attitudes, for good or bad.

The scenes shown on the next few pages may seem to be unrelated to one another, except for their HP background. Yet all of them have a common focus in the foreground: satisfying customers.

Some of them represent special efforts designed to remind people of certain attitudes that are fundamental to good HP relations with customers (see John Young's message, page 23). Others deal with some specific programs that represent the continuing kinds of adjustments we are making as a company in response to the changing needs of our customers and to appeal to new customers in new markets.



To field phone calls that operators can't answer, HP sales offices have set up various systems of response. Here staff engineer Mark Stahl takes his turn at phone duty in the Brisbane, California office. If Mark can't answer the question he makes sure the caller will soon hear from someone in HP who can. Four other staff engineers rotate the duty. The Houston, Texas, office has taken a different tack, setting up order coordinator Anabel Askey to take such calls full time, taking good advantage of her solid HP experience and knowledge.



Now open or planned in dozens of sales offices in key markets, personal computer centers offer demonstrations and discussions to prospective customers on a wide range of HP personal computers, peripherals and software. Computer dealers, who refer many of their customers for demos, are enthusiastic. Appointments are advisable; call toll free. Shown here is the the Brisbane center, south of San Francisco, California, which opened in April.



Products that address international as well as U.S. markets right from the start are one farsighted way of satisfying worldwide customers. Loveland's HP 3065 board-test system meets the criteria. It got a solid launching in June, complete with literature in a number of languages that appeals to the business as well as technical interests of customers.



HP medical divisions learned long ago to look well beyond the next bench when developing new products. At Waltham Division, a panel of professional nurses meets each month to provide user insights that have strongly influenced design concepts and instruction materials. A clinical internship program with Boston University Medical Center gives HP engineers close exposure to products in a working environment.



MAX WELF

Because a downed computer has some of the same consequences as a fire, the HP computer service organization in Pinewood (U.K.) developed a new central dispatching system for field repairs—and dubbed it “Fireman.” Sure enough, it has spread like wildfire to other parts of the HP world, including this office in Atlanta, Georgia. When customers call, dispatchers have on-the-spot access to installation data and “beep” the local HP customer engineer to set up the repair assignment.

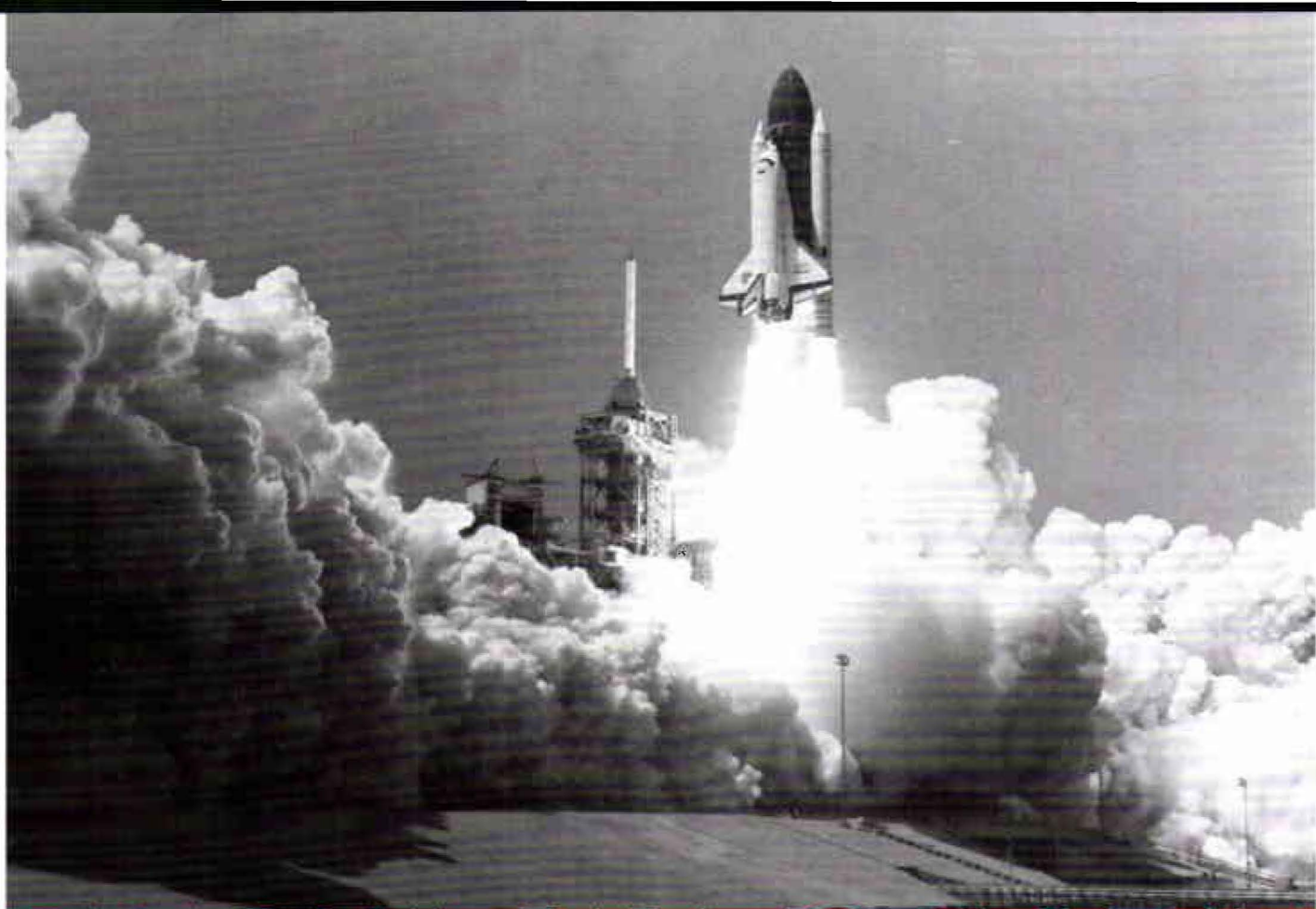


ANICOTT ABEL/CAUSIS

Staying close to customers was one of the points made by Tom Peters in his book *In Search of Excellence*, a best seller that studies the styles of successful companies, including HP. Here he makes the point again during a videotaping that will be part of an HP training program on satisfying our customers. The first module of “Satisfying our customers” was released by Corporate Training in August. **M**

THE CASE OF THE MISSING INSTRUMENTS

Taking “ownership” of a customer’s problem when called is the essence of many of HP’s customer-satisfaction programs. It sometimes goes beyond the routine as several people in Southern Sales Region discovered recently. Memphis (Tennessee) police called the local HP office to ask about the value of some HP instruments to be auctioned—owner unknown. Instrument field engineer Jerry Nutt went on the detective trail, obtained serial numbers, got the Lake Stevens Instruments Division to divulge the original buyer’s name, then had the Richardson, Texas, office contact the customer. Result: Shortly before the missing equipment (\$14,000 value) was to be sold, the customer firm proved its ownership and claimed its gear.



THRUST INTO SPACE

The HP 41C handheld computers aboard the space shuttle flights are the best known HP products in the program, but hundreds of others are involved... from pre-launch to landing.

For Hewlett-Packard people watching the drama of the space shuttle aloft, it's been a thrill to know that HP 41C handheld computers have been on board each of the eight flights since 1981.

Less well known, however, are the major roles played by hundreds of other HP products of all types behind the scenes in the U.S. space program run by the National Aeronautics and Space Administration (NASA).

Take the mechanical arm that's stored in the shuttle's cargo bay until its 50-foot reach is needed for a special task in space. On the second Challenger flight this past June, astronauts Sally Ride and John Fabian maneuvered the arm by remote control to release a satellite into space, then repeatedly grab and retrieve it. They proved that the gangling boom with its wrist assembly and grasping mechanism could be used in the future for recovery of satellites that need repair.

The smoothness of the arm's operation was not just good luck, however. In a room above the Mission Control Center at Lyndon B. Johnson Space Center in Houston, Texas, every possible movement of the arm is calculated in advance by NASA's Remote Manipulator System (RMS) simulation. Originally designed for an HP 9825, then upgraded to the 9835 and 9845, the simulation program now runs on an HP 9000 while continuing to use the same BASIC language. Attached to the controller is an HP 1350A graphics translator with three HP 1311B cathode ray tube displays that show a three-dimensional model of the shuttle viewed simultaneously from the front, the side and above.

The RMS simulation envisions the exact placement of the payload in the bay and helps determine the order in which to get items in and out of the bay with proper clearance. It can "look" into

the bay from the vantage point of any of the closed-circuit TV camera locations in the four corners or two others on the arm's wrist and elbow.

Explains NASA's Dave Homan, who designed the simulation software, "It has the same control algorithms as the shuttle's on-board computer. By using special function keys we can imitate the shuttle's hand controller for translational movement (up and down, forward and back, right and left) and rotational movement (pitch, yaw, and roll)." The preliminary calculations in Houston are critical since the on-board system has no allowance for collision.

(An HP 9835-based RMS simulation is kept downstairs in Mission Control as a backup tool to rework procedures in real-time during flight if necessary.)

To calculate control of the shuttle itself, another simulation in the same room employs an HP 9825 desktop, HP graphics translator and two CRTs with

a TRW software package. It has been used before each flight to simulate the position and velocity of the shuttle and its distance from such targets as satellites or astronauts floating in space.

These days NASA aerospace engineer Eric Mitchell is simulating a docking exercise that will be done on flight 13. Using a backpack maneuvering unit, the astronauts will fly to a satellite and lock onto it with a docking probe so the shuttle can move in.

"We're playing with lives here," Eric says. "If you want to roll in or move to the right, the system shows how you have to do it. The astronauts rely on this system. It may be small but it packs a wallop."

It's not unusual for one of the astronauts to drop by to watch the simulation systems in operation. Both are under the wing of the Mission Planning Analysis Division, which has responsibility for developing flight trajectories, guidance and power consumption from launch to landing.

With the current increased emphasis on the U.S. space program, NASA is now sending up a flight a month and MPA Division Chief Ron Berry is beginning to crank up for double that number soon.

"We'd designed our computer capability on the assumption that flights would become less and less complex and we could phase out highly skilled engineers," he says. "Instead, the flights are staying complex and we continue to need engineers and complex planning tools." Between 20 million and 100 million numbers are generated for each flight.

His division has ordered seven HP 9000s to experiment with transferring mainframe computer programs to distributed desktops on engineers' desks to increase productivity. HP's Houston South office is supporting conversion of the software.

The NASA division is also exploring the idea of putting navigational software on the shuttle that would eliminate its dependence on Mission Control during descent. Communications satellites are now going into orbit and the tacans (navigation sensors) already on board the shuttle appear capable of receiving strong signals. An HP 9000 will



Dr. Norman Thagard tries on the space suit which the astronauts use for activity outside their vehicle. An HP LED display on the chest pack gives readings on the suit.

take raw data from telemetry during and after flight and assess how well the tacans work.

In addition to Johnson, three other NASA installations manage aspects of the space shuttle program: the launch vehicle at the Marshall Space Flight Center in Huntsville, Alabama; tracking and communications systems at Goddard Space Flight Center in Greenbelt, Maryland; and launch facilities at Kennedy Space Center in Florida.

All of HP's computational equipment is widely used throughout NASA for both business and technical applications—sometimes in dramatic situations. In 1979, the HP 1000 system at Johnson was pressed into service on one-hour's notice to predict exactly where parts of a disintegrating Skylab would hit in the Australian desert.

In the firing room at Kennedy are two HP 1000s which monitor and store information from a sophisticated broadband bus that supports all types of communications at the launch facility. HP's technical computers serve as a diagnostic tool if problems develop, since the various computers hooked on the band must operate without interruption during flight.

An HP 1000 computer-aided drafting system has just been installed by a NASA contractor in Houston for custom design of test equipment and

small mechanical, electrical and architectural pieces that fly on the shuttle. One of the first projects for which it will be used is packaging for a Swiss-designed experiment to incubate various cultures.

At Goddard, 13 HP 1000 systems work together in a high-speed data network that makes certain the shuttle maintains communications contact with ground stations at all times.

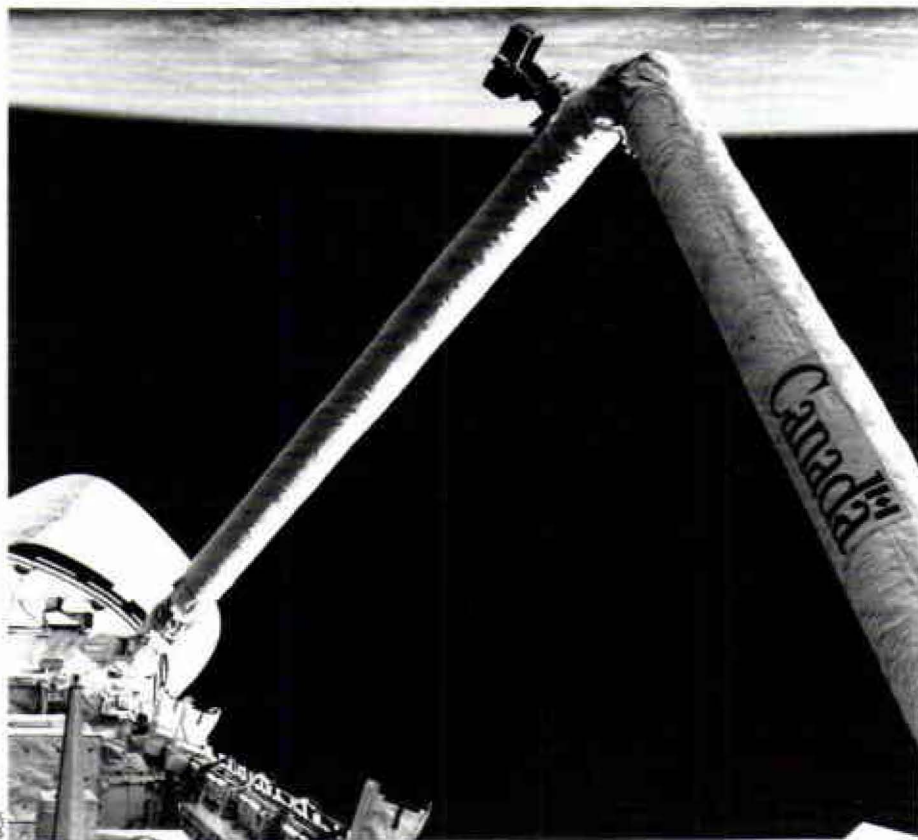
HP's instrument sales force has been selling to the space program since the 1950s before NASA was formally created. NASA and its contractors use instruments from virtually every HP division to develop, test and support the sophisticated electronic equipment used in all NASA programs.

Some of those instrument applications are particularly close to the excitement of shuttle flight:

Desktop-controlled data acquisition systems at Marshall measure the various strains that space boosters must endure when ignited for launch. The costly boosters are recovered and refurbished for use again.

In the final stage of countdown before flight, four HP spectrum analyzers are used at Kennedy to measure all the frequencies and levels of the radios aboard the shuttle.

HP oscilloscopes, logic analyzers, microprocessor development systems,



During flight, the remote manipulator system's arm reaches over to grab a payload (left) for deployment into space. View is from cabin's aft window, looking into wide-open bay.

data analyzers, voltmeters, frequency counters and other general test equipment are used to maintain and support systems in Mission Control—the nerve center during flights.

There are HP cesium frequency standards and microwave synthesizers in 12 tracking stations around the world to provide precise time and frequency information for the correlation of data during flight.

Other HP instruments are used in the exacting pre-launch testing. At Johnson, HP's data logging systems and dynamic signal analyzers serve in structural analysis conducted at the vibration and acoustic test facility. High-power SCR power supplies from HP provide the power for a full-sized mockup of the shuttle used for simulation and testing of the electrical systems. (During actual flight the shuttle must depend on expensive batteries.) Marshall uses an HP data acquisition system to test the cooling system for a space telescope which will fly on Spacelab II in 1985.

Hewlett-Packard's other product groups are also represented:

- An HP 12-digit red LED display is used in the chest pack built into the upper portion of the space suit. It gives readings on oxygen pressure and levels, battery voltage, water temperature and gas pressure in the suit and is part of a

warning system that includes audible alarms. (Before flight, an HP 3054DL data acquisition system tests the suit's batteries and an HP waveform recorder checks out its electrical systems.)

- HP's analytical equipment has been used for years by Johnson's Cruise Systems Division to check the toxicity of gases given out by plastics and other materials under the special conditions encountered in space. Today an HP gas chromatograph does the testing, including routine checks run in the chamber for any Freon 21 refrigerant that might have escaped.

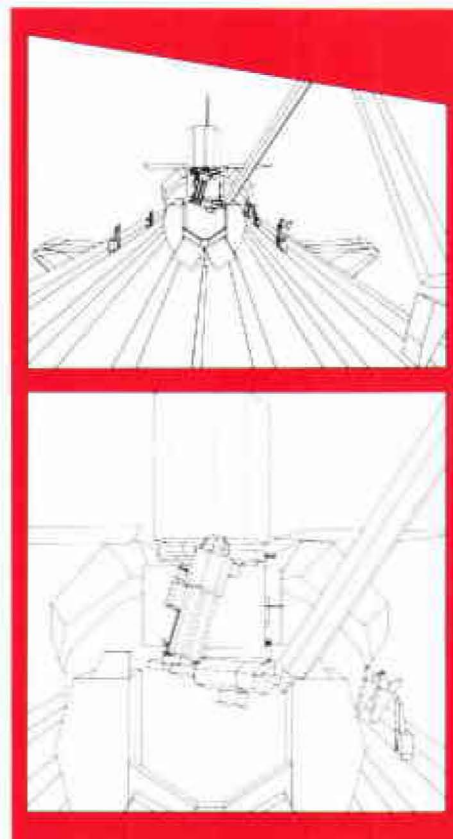
- Spacelab IV, scheduled for 1985, will include two HP 77020 ultrasound instruments. Requiring only minor modifications, HP's off-the-shelf equipment will be used to measure cardiac images of personnel on board. According to Ray Schwarz of the contractor, Management and Technical Services Company in Houston, HP's companywide environmental test standards "typically exceed Spacelab requirements."

As one of HP's long-time customers puts it, "At NASA we tend to push all of our equipment to the edge of its capability. We're always asking our vendors, 'When are you going to develop such-and-such? Why don't you have it now?'" For all of Hewlett-Packard's product groups, that's been a challenge to deliver the goods. **M**



BETTY GERARD

Before flight, every move of the great arm is simulated at the Johnson Space Center using HP equipment. Here Air Force 1st Lt. Gail Ramsey enters data on an HP 9000 attached to plotter and graphics translator with three cathode ray displays. She sees the arm's motion from three viewpoints.



DAVE HOFMAN / NASA

Two plotted drawings show the same view — looking out the aft window—in different scale. Here an astronaut stands in a cherry-picker device that the RMS will manipulate on a future flight.

CLOSEUP

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



A WINNING STYLE

Despite the fact that Corrine Dressler turned in one of the best HP performances at the 1983 Corporate Cup National Relays (and helped HP take seventh place in the competition), she calls herself "an inconsistent runner."

"Sometimes I run three miles a week, sometimes 25," says the technical illustrator at Santa Rosa's Network Measurements Division.

This year's championship was staged at Stanford University's stadium in July. HP's 42-person team—including runners from four states—faced stiff competition from the likes of AT&T, IBM, General Electric and Ford.

Glenn McCarthy of NMD, who did much of HP's recruiting and coaching, feels the team did "quite well considering that some of our best runners from other states couldn't get to Palo Alto for the finals."

Corrine was part of the three-woman team (with Janet King of Intercon and Joy Taylor of NMD) which took the highest place for HP. The threesome, running in the women's one-mile relay race, ran a blistering four minutes, 30 seconds to finish second.



AWARDS THAT GROW ON YOU

"Awards come and awards go," says Jim Rogers, Spokane Division sales manager, "most of them into a closet or a desk drawer."

But the awards Jim's division presented in 1983 won't fit in your average closet. One hundred red maple trees have been planted around the division's boundaries to recognize efforts of HP sales people in promoting Spokane products. A bronze plaque at the base of each tree dedicates the living award to a person or a sales district that helped the division reach its 1983 sales goals.

The 156-acre Spokane site is in a valley surrounded by forested mountains. Now the former farmland will have its own forest—"a sales forest that all of us can be proud of," says Jim.



MOLDING HIS OWN FUTURE

A few years ago Rudy Sanchez felt he'd never be able to work again. Rudy was born with Usher's Syndrome and can neither hear nor speak. Despite his disability, he worked for a Colorado painting firm for 10 years—until his vision began to deteriorate. "I really wanted to work, but it had become too dangerous," he now says. He is now legally blind.

Today Rudy is a materials handler at HP's Colorado Springs Division where he makes foam packaging molds for shipping products. His performance is exemplary: He was named "1982 Worker of the Year" by the local Goodwill Industries.

"He is a very meticulous person and a hard worker," says Jerry Sudduth, Rudy's supervisor. "When he runs out of orders, he searches for something to keep himself busy." When Rudy joined HP, the company modified his work place to improve his efficiency and started sign language classes for fellow employees so they would be able to communicate with him.

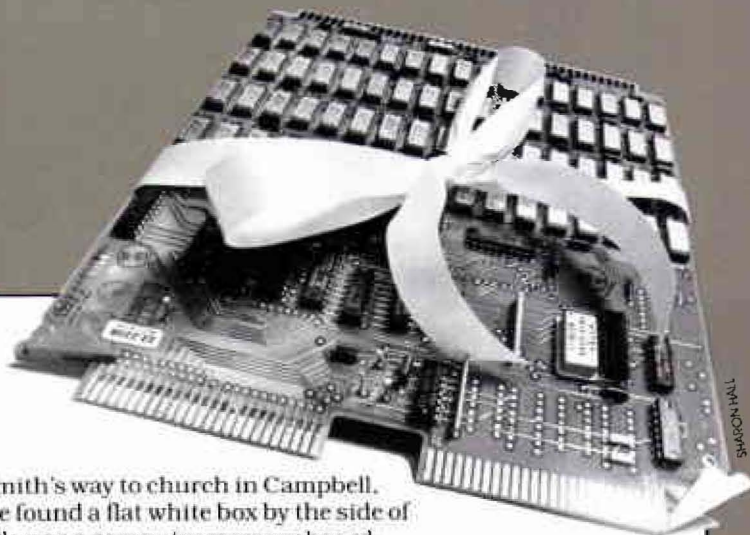
THANKS FOR THE MEMORY

On Shauna Smith's way to church in Campbell, California, she found a flat white box by the side of the road. Inside was a computer memory board.

The high school senior took it to her computer literacy class to add to a display of computer components. But Shauna's teacher recognized that the board, with gold electrical contacts, was a valuable find.

They contacted HP's Ron Gould, manufacturing section manager for Data Systems Division, who identified it as a 512-kilobyte memory board used in the HP 1000 computer. Retail value: more than \$8,000 in 1982 when the board was built.

In return for her honesty, Ron invited Shauna and her class to tour HP, and he gave the high school senior an HP calculator as a reward.



CLASS ON WHEELS

For Sonoma County (California) students and teachers, computer class rolls around regularly through a cooperative effort by the county's office of education and Hewlett-Packard.

This van, being taped by a Santa Rosa television station, carries 15 HP-donated personal computers to area schools for instruction in computer awareness and literacy. When the ramp comes down, the cart-mounted computers are wheeled into classrooms. The van driver doubles as the instructor.

During the summer months, the van visited a computer camp geared for minority high school students.

Running an HP sales office smoothly takes a person with nerves of steel and the patience of Job. As the U.S. sales force grows in the 1980s, branch business managers find themselves

IN THE THICK OF THINGS

"My job is that of a generalist. I have to know a little about a lot and lots about a little," says Gary McFarland rather modestly. Gary is branch business manager in HP's St. Louis, Missouri, sales office.

Today Gary may be working with the office's credit specialist and a sales representative to solve a credit problem with a potential customer.

Tomorrow he may be planning next year's office space requirements with the district computer sales manager.

Gary is one of 58 branch business managers (BBMs) throughout HP's four U.S. sales regions. The BBM is the person who keeps the business side of an HP sales office running smoothly. (The discipline managers and their staffs have responsibility for the performance of the sales and support forces.)

Branch business is big business. A large HP branch office staff might fill a building of 100,000 square feet, employ more than 300 people (one-third of them in administrative functions) and sell more than \$100 million worth of HP equipment each year.

The BBM plays an increasingly important role as the company methodically decentralizes many functions performed at sales region headquarters, consolidates some activities done at most branch offices and places an even greater emphasis on customer satisfaction.

"HP's plans for the next three to five years call for very rapid growth in all four U.S. sales regions," says Carl Cottrell, corporate marketing operations manager. "Just as the corporate office in Palo Alto is looking for ways to move some of its activities to the regions, our regions, too, are looking for ways to decentralize their functions."

Improved communication and systems technology has also moved some functions—dispatching support engineers to customer sites, for example—to larger branch offices that can cover a wide geographic territory. "With today's toll-free telephone numbers and call-forwarding features, customers' service requests can be handled speedily and efficiently at a central facility," says Carl. "Interactive computer systems with remote terminals ensure prompt customer-engineer responses to cus-

tomer calls. The added benefit is that most of the paperwork, if not all, can be eliminated. We're beginning to take full advantage of the fact that an office located 500 miles away is now 500 milliseconds away."

Carl sees the branch office playing the pivotal role in a total field administrative strategy. "We want to strengthen the branch office as the tactical operating unit for administration. A strong administrative team is vital to the success of our sales and support effort. Our goal is to provide administrative services with the highest possible degree of skill, professionalism and motivation — all focused on satisfying our customers."

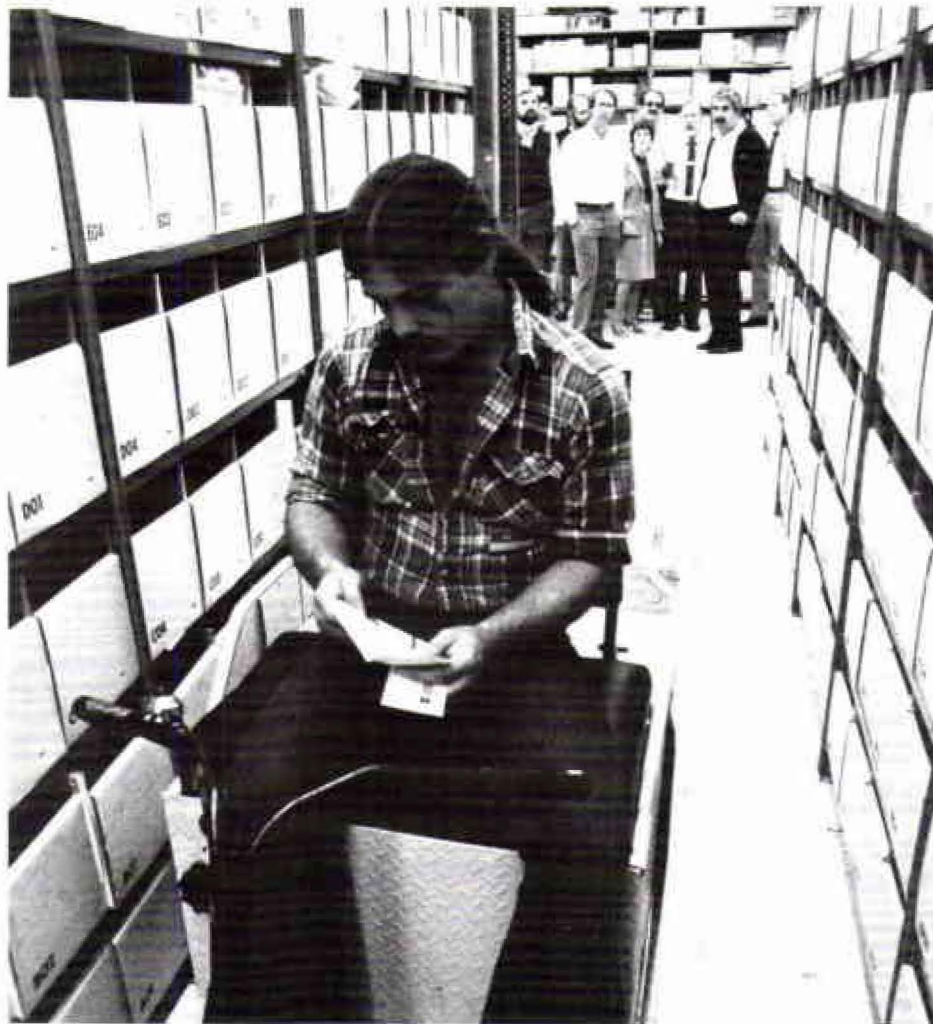
It's the branch business manager's job to make sure all that happens smoothly. When a support person in the office calls in sick, the BBM and his staff people must find a backup person to cover for the vacancy. The need for such flexibility means there's a keen emphasis on finding the the right people in the hiring process and providing adequate training and cross-training.

"Let's face it. If the sales reps can't sell, no one has a job," says Tony Parish, BBM in Atlanta, Georgia. "And if they don't have the people to support them; and a place to do it—desks, telephones and all the rest — they can't be productive."

Everything a BBM does is geared towards improving the efficiency of the branch operation: Are customers' telephone calls being answered promptly? Are people following through on those calls? Are orders being processed as efficiently as they can be? Are customers paying their bills in a timely fashion? In short, is everything being done right the first time?

In addition to office efficiency, the BBM makes sure that HP's standards of control and business conduct are followed. It's a tough job because of the volume of transactions and the inevitable "exception" which requires special attention.

About two-thirds of the people who work on the administrative side of the branch office deal with such issues on a daily basis. They're the pros on quotes, orders, acknowledgements, change orders, invoices, collections,



A group of branch business managers watch Corporate Parts Center's Bill Durbin pull parts off the shelf during their tour of the facility.

support agreements and the detail work that make a branch hum.

"The BBM is the captain of the business ship," says Carl. "It's his or her job to make sure everything happens as it's supposed to."

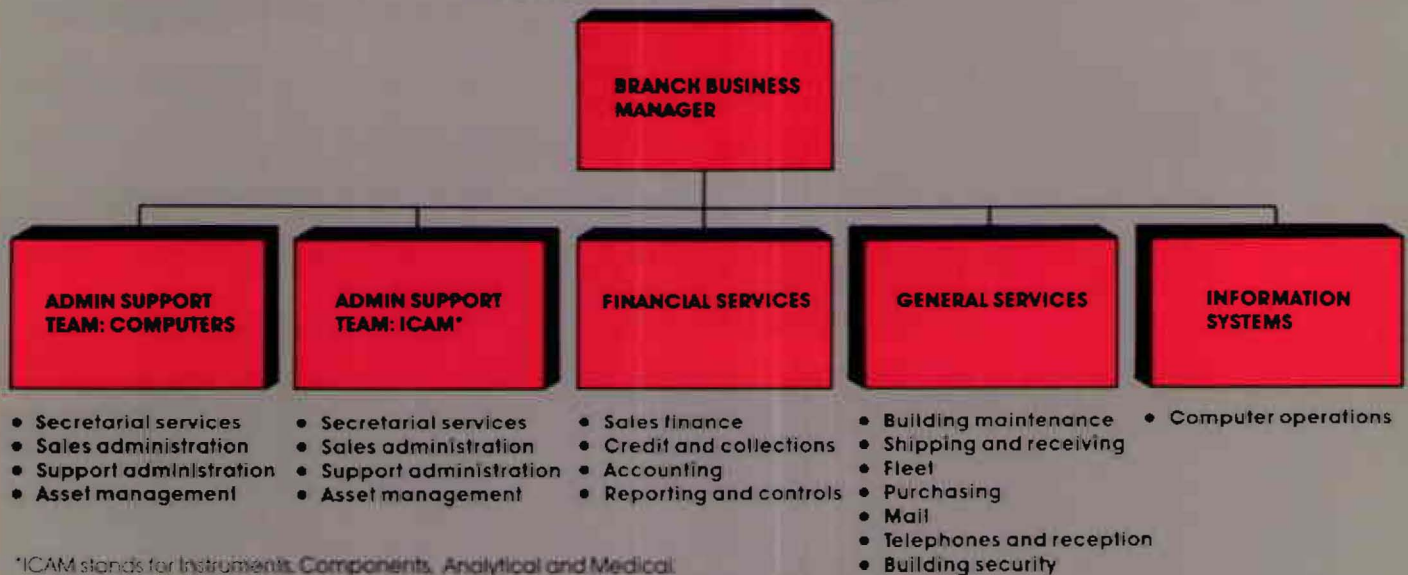
The captains have been gathering in Palo Alto, California. Corporate Training has been staging week-long, field-business management seminars for two years. It's a forum where BBMs can learn more about their role and share experiences with their counterparts from other offices.

The seminars take BBMs through a wide range of subjects: information systems, planning and control, con-

tracts, sales finance, international orders, credit and collections, internal auditing, legal and personnel issues, and marketing directions. Participants tour the nearby Corporate Parts Center, corporate marketing group and an instrument division to learn how their actions in the field affect the people who are usually just a voice at the other end of the phone.

"The tour was great," says Tom Kacprowicz, BBM for HP's branch in Rolling Meadows, Illinois. "For some BBMs, it was the first time to visit a manufacturing facility. It helps to understand some of their problems. You leave with a good idea of what your counterpart at

ROCKVILLE LOOK-ALIKES



HP's larger branch offices have been changing over the past several years. They're organizing themselves along the lines shown in this chart: a model tested first in Rockville, Maryland, and now in place in more than 15 branches.

In pre-Rockville days, a order processing specialist in a sales support area might be entering a computer sale, then an instrument order, then following up on a medical order. Likewise, a parts coordinator in the service support area might have taken care of analytical, instruments and personal computers the same day.

Today (at least in larger offices with a minimum of 50 administrative people) the office is organized along sales lines. The admin support team for computers is separate from the team for ICAM (instruments, components, analytical and medical). As product groups grow, ICAM may split into individual teams, too.

"The team itself looks like the small office organization we started with," says Carl Cottrell, corporate marketing operations manager.

a division goes through to process the orders from all the branch offices."

The learning works both ways during the tour. Division employees hear plenty about the daily pressures on HP people in the branch. Those pressures vary little from region to region.

"All BBMs face the same challenges," says Tom, "but some have more than others. We're all attacking them in different ways. The seminar gives us a chance to hear firsthand how people in other regions are solving some of your daily problems."

The organization of the branch office has changed through the years to keep pace with the BBM's new challenges. The trend for most larger branches is to structure the administrative support teams along sales discipline lines. This concept was pioneered in the Eastern Sales Region branch in Rockville, Maryland.

But even in such larger offices where there can be dozens of admin support, information systems, financial and general services people to handle the myriad of details, the BBM can still be found in the thick of things.

"I'll help move a desk across the office if there's no one else around," says Tony. "I don't mind getting my hands dirty—anything to get the job done and get on with business."

Although paperwork is a large part of that business, chances are good that you won't find Tony sitting at his desk. "Management by wandering around is probably the most important part of my job. It's also helped me keep my weight down."

Planning for growth is one of the most difficult responsibilities for the BBM. "We really plan twice," says Tom. "I work with all of the sales and support people to come up with forecasts for

the following year. But the quota and target-setting processes can change some of those forecasts dramatically."

Customers keep BBMs busy, too. Tony has arranged office tours for HP customers to show them exactly what happens to their purchase orders. They meet the HP people who process their paperwork. "I also explain a bit about HP," he says. "Some customers are so used to buying just one product from HP that they don't know about our other product lines."

There are also times when BBMs are called on to help handle customer complaints—perhaps a shipping foul-up, a collection problem or a mixed-up order.

The working day of a BBM is a continuum of problems—most unforeseen, most unpreventable. The BBM must try to plan for the unplanned.

"Face it," says Gary. "If there weren't any problems, I wouldn't have a job." **M**

JOHN YOUNG

HP's president reflects on the importance of satisfying customers.

In this issue of *Measure* and through all the company's communications channels, you are hearing a lot about the topic of customer satisfaction.

I hear a lot about the topic, too. Customers are not one bit bashful about writing to the president of the company with their compliments—or their complaints.

From my view, it looks like we're doing most things right—most of the time. But there are some things we just don't do as well as we should, and in today's competitive market, we have to do better.

From the letters I receive and from my discussions with HP people, it appears that customer satisfaction has two different aspects to it. The first involves basic common-courtesy issues. The other aspect I'll label as systemic issues, for lack of a better word.

Let me talk about common courtesy first. This really boils down to taking a personal interest in the customer. It means listening to what the customer has to say and doing simple things like returning phone calls or picking up a phone that's ringing off the hook, even if it's not yours. It also means honoring the commitments you've made, even if it requires taking an extra step or two.

Those of you who aren't out in the field probably wonder whether any of these thoughts have anything to do with you. You may not think of yourself as dealing with customers. But you do.

If you're in a division or at the corporate or group level, you should remind yourself who your customers are. Your customers are other HP people, especially people in the field. They're out there representing all of us. We need to help them be successful. That means having empathy for the kinds of time pressures and information needs they may have.

Common courtesy should apply to everyone at HP. We are all each other's customers. We won't be successful outside HP—in the market—unless we function smoothly internally. Remember, there is only one HP.

The second aspect of customer satisfaction involves issues that common courtesy alone can't fix. Sometimes there are broader, organizational issues that prevent us from doing the



U.S. President Ronald Reagan gives HP's chief executive a pair of cuff links at the White House. John Young was in Washington, D.C. to announce the other members of the Commission on Industrial Competitiveness which he will chair.

PHOTOGRAPH BY THE WHITE HOUSE

best job possible.

Maybe the phone system is set up so that calls can go unanswered. Sometimes a new product is launched in a way that really makes things difficult for other HP people along the line. Inadequate documentation and support for a product are an example of another systemic problem that can leave us with some unsatisfied customers. Maybe you can list others.

In other words, sometimes the problem doesn't lie with one person, but with a systemic issue that we need to address. I want to assure you that HP management is tackling some of those issues, and there has been good progress in a number of areas. This issue of *Measure* describes some of the efforts made throughout the company.

Now here is where we need your help: Sometimes, when people see a customer satisfaction problem that is systemic in nature, it's easy to shrug off that problem. It's tempting to say that the responsibility doesn't lie with you personally, but with the way your job or department is structured.

If you see a situation where HP can't be fully responsive to a customer's needs, please don't shrug off the problem. Tell your manager if you think the way your job is structured makes it difficult for HP to serve the customer's needs—or each other's needs, for that matter. If you think we can organize a department or program more effectively, let us know. That's how improvements get made.

Satisfying the customer is the number one reason we're in business. Our

goal is to build long-term relationships with customers. These are key to our growth and the success of our entire organization.

A long-term relationship is like a chain. It is forged out of the linkage of a lot of individual, day-to-day interactions. That means that each of us can make or break that chain for everyone else at HP. I'd like you to keep that goal in mind—creating long-term relationships with customers—as you approach the daily details of your job.

I will certainly appreciate your help in this area. I know I'll continue to hear from customers—and from you—on how well we're doing. I look forward to the day when all I hear are rave reviews.

NEWSCLIPS

Recaps the newsworthy events, changes and achievements within HP.

STOCK SPLIT

The HP board of directors declared a two-for-one split of the company's common stock on July 21, effective on shares outstanding on August 1. It increased the former 126.5 million shares outstanding to approximately 253 million. The board also approved a 20 percent increase of the dividend from 7 1/2 cents per share on the old shares to 4 1/2 cents per share on the split shares.

THIRD-QUARTER FY83

Hewlett-Packard Company reported a 13 percent decline in net earnings on a 6 percent increase in sales for the 1983 fiscal year's third quarter ended July 31. Orders booked during the quarter were at the highest level in HP's history—an increase of 25 percent over the same period a year ago.

Sales totaled \$1.15 billion, compared with \$1.09 billion for the corresponding quarter of FY82. Net earnings amounted to \$91 million, equal to 35 cents per share on approximately 254 million shares of common stock outstanding (compared with net earnings of \$105 million or 42 cents per share on approximately 249 million shares during the same quarter in FY82). Both quarters are restated retroactively to reflect the stock split (above).

Incoming orders for the quarter were \$1.27 billion, up 25 percent over orders during the third quarter of FY82. Domestic orders were \$770 million, up 39 percent, and international orders were \$501 million, up 7 percent from the year-ago quarter.

MILESTONES

HP and Genentech, Inc. on July 22 announced formation of a joint-venture company: HP Genenchem. It will develop instrumentation and computer

systems for research and process control in the bioengineering field. HP will be majority owner and manager of the new venture through its Analytical Products Group. Ivan Crockett is president of the new firm. Its operations will be centered at Genentech's site in South San Francisco. . . . Washington's Governor John Spellman attended groundbreaking ceremonies June 30 for the future permanent facility of the Lake Stevens Instrument Division. . . . Greeley Division moved to its new facility in Greeley, Colorado, in May. . . . HP has exercised an option to purchase 70 acres in Aguadilla, Puerto Rico, as a permanent site for the Puerto Rico Operation. . . . French region headquarters relocated July 18 to a newly constructed facility in Evry.

NEW HATS

Hal Edmondson was elected vice president of manufacturing in May. . . . Don Curtis is the new general manager of the Disc Memory Division. . . . Walt Johnson is the new manager of Fabrication Operations at the Loveland Instrument Division. . . . Larry Langdon becomes manager of Corporate Distribution, adding worldwide responsibility for traffic to his similar role for customs and licensing. He continues to head Corporate tax. . . . In the Medical Products Group, Gil Merme becomes operations manager for the newly created Hospital Information Systems Operation, reporting to Group GM Ben Holmes. John Post is now operations manager for the Medical Systems Operation within the Waltham Division.

COMMISSION

HP President John Young has been named chairman of a newly created President's Commission on Industrial Competitiveness, announced by the

White House on June 28. It will be advisory to President Ronald Reagan through the Cabinet Council on Commerce and Trade and the Department of Commerce, and "review means of increasing the long-term competitiveness of U.S. industries at home and abroad with particular emphasis on high technology."

NEW PRODUCTS

The low-priced (\$1,895 U.S.) HP 7475A graphics plotter from the San Diego Division has a six-pen carousel and plots at high speed. It produces high-quality lines with resolution as fine as 0.001 inch (0.025 mm). . . . From Colorado Springs Division comes the HP 1347A HP-IB display which can scroll through data in several directions, with an extensive memory storing up to 64 separate pictures for rapid display. At the push of a button or a program command, it will produce a hardcopy record. . . . Two new space-saving optocouplers from the Optoelectronics Division (the HCPL-4100 transmitter and HCPL-4200 receiver) are designed specifically for the 20-mA current-loop systems that are used as communications links in computer and industrial-control equipment. The division has also introduced a super-bright 0.3-inch (7.6 mm) seven-segment LED display that requires up to 25 percent less current. . . . YHP Instrument Division's HP 4062A semiconductor parametric test system is used during the manufacture of semiconductor wafers to extract ac and dc parameters from wafer test patterns. The information can also be fed back to stabilize wafer processes and improve IC yields and quality.

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