

For the people of Hewlett-Packard

July-August 1988

MEASURE



Poised for action:
HP and the Olympics



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On the cover: Kelly McCormick of the USA won the silver medal in springboard diving at the 1984 Olympics in Los Angeles. Cover photo by Ronald C. Modra earlier appeared in *Sports Illustrated* magazine. See pages 13-18 and 24 for insight on HP's role in the Olympics.

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The way we talk to each other has changed. It's changed a lot. How far have we come and where do we go from here?

Talk, talk, talk

If you could creep back in time 40,000 to 100,000 years, give or take a millennium or two, you might be able to watch the birth of language among the *homo sapiens* who inhabited the earth. A shorter trip would take you back to watch the creation of what was probably the first type of writing—cuneiform, a mix of pictures and ideographs—around 4000 B.C.

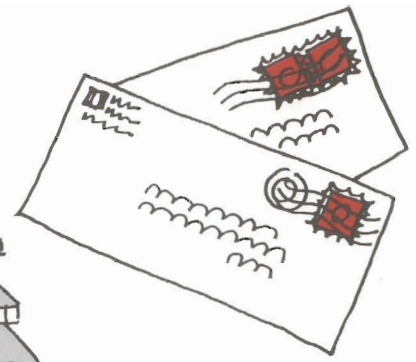
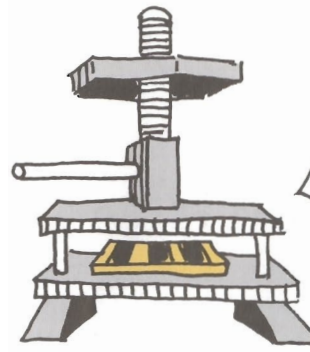
As you move in time toward the present, you could watch Moses reveal the 10 Commandments etched in stone, and then stop in the 15th Century to see the good monks put out of the Bible-copying business by the Gutenberg press.

In the late 1800s, a mere anthropological wink of an eye later, you could stop to hear the grumbling about the newfangled telephone—much too limited and complicated to be of any use at all to anyone, anywhere.

And you don't have to know your quantum theory from your quarks to comprehend the changes in communication compressed into this century in the hands of technology. Since the beginning, we've sought and found new ways to manipulate, compress, dress up, improve, speed up, preserve and perfect the art of communication. It gets better and better.

Nearly every HP employee has access to a personal computer or terminal that lets him or her send electronic messages to the far corners of the world or to the cubicle next door. Engineers and other employees share knowledge with each other through computer teleconferencing systems. Many people now use Voice Mail, which is sort of like having voice-oriented electronic mail in your telephone.

In a way, the many electronic tools HP employees use to



communicate with each other—most commonly HP DeskManager, UNIX* Mail, Confer II* and Voice Mail—are a microcosm of the best that's available today. They'll never undermine the importance of traditional coffee talks and open-door discussions, of course. And a few diehards here and there may still complain that it's all too complicated, but they're a dying breed with some 70,000 registered HP Desk users in 33 countries, 7,000 registered users of UNIX Mail, 3,000 registered users of Confer and 26 sites set up with Voice Mail.

If you bat that same anthropological eye over the last 10 years at HP, the advances that have come one on top of another—and continue even as we speak—set the mind reeling. In 1978, a handful of HP employees could send Comgrams, one of the company's first internal messaging systems. Since these messages were printed out at the receiving entity and delivered through the mailroom, they could take from two days to kingdom-come to be received. HP Desk pilot projects started in 1982. In 1983, the average delivery time for Desk messages was one day. The average delivery time today is seven hours. By 1993, HP office systems experts predict delivery anywhere in the world will take minutes.

That's the ticket in today's breakneck world of fast food, one-hour photo stops, one-hour vision centers, 15-minute lube-and-oil changes, and automatic teller machines, says Luis Hurtado-Sanchez, manager of Corporate's Integrated Office Systems (IOS) group. There's no time to stand around tapping your foot when you've got work to do, urgent messages to send, sales to close and deadlines to meet.

Luis and his group are part of a large network of office-automation "champions" within the company who are responsible for introducing new systems, hand-holding during learning curves and constantly searching for productive new solutions to solve business problems.

In the future, these experts will be evaluating and implementing more changes all the time, including moves from HP 3000 computers to PC environments, HP NewWave environments and ways to integrate interactive voice, image and text at office workstations.

But an important part of launching new technologies, says Luis, is making sure the ones in place are working as they should. "HP Desk is all of six years old, yet so many people already take it for granted. HP has made a huge investment in our electronic communication systems. The key is now dealing efficiently with what we have in place."

IOS manages HP Desk, UNIX Mail, Confer and Voice Mail. No small task when you consider it costs the company \$45 million a year to operate the internal HP Desk network, and that Confer costs half a million dollars a year to operate. Luis says HP made the investment because electronic communication systems can be a competitive advantage for HP. "We live in an

increasingly competitive and uncertain world," says Luis. "Internal and external customers want and need better products faster and a better response to problems faster. In a systems-type world, we need to be able to react, to shorten the time it takes to diagnose a problem and to be able to deal with organizational complexity."

The challenge for the future is managing a more intensive use of these facilities and teaching employees to do more complex tasks. The technologies are converging, says Luis. "Five years ago, you couldn't integrate text and graphics. Soon, you'll be integrating voice, image and data. But it's a fitful process with many stops and starts. It helps to look at where you've been as you go forward."

What are these powerful systems? Which ones are right for you? A quick overview might help decide.

HP DeskManager

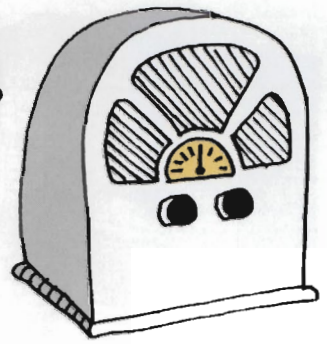
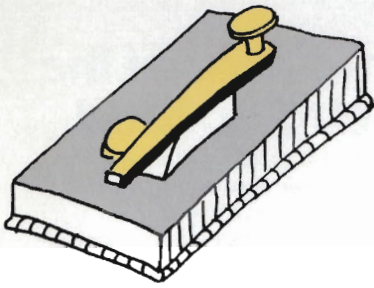
HP DeskManager gives employees access to electronic mail, word processing, filing and calendar/diary functions all in one package. Increasingly, HP employees can sit down at a personal computer anywhere from Penang to Palo Alto to do word processing, graphics, spreadsheets and database applications and then link in to the HP 3000, which runs HP DeskManager, to read their electronic mail, upload memos or reports they've created and send messages.

Its 70,000 registered users make it the seventh largest public network in the United States. In any given month, 24 billion characters (a mere 6 million pages) are sent out over the company's internal HP Desk network. An employee uses HP Desk at a cost of \$58 per month. The cost of sending appropriate electronic mail messages on HP Desk is less than on public electronic mail networks, FAX and Express Mail. Overall, delivery time is best as well, particularly compared with interoffice mail and the U.S. Postal Service.

ANTHONY ANJO



Confer is the perfect tool for task forces, says IOS Project Manager Steve Thesing.



Luis says it's a huge time-saver for sending a quick note or an electronic spreadsheet to someone instead of trying to tell them the same information over the telephone. And it's usually easier than sending an interoffice memo or playing telephone tag with someone who is hard to reach.

There *are* times when it may be inappropriate to use HP Desk:

- when you are sending a message longer than 10 pages to a distribution list of more than 100 people;
- when the message will be printed on the receiving end. It might be much more efficient to print the message and send paper copies;
- when you're sending Desktop Publishing (DTP) documents. These should be distributed through interoffice mail. Besides the strain they put on the system, DTP documents require the recipient have access to specific types of printers, computers and software. (See "Some rules of the electronic road," page 6, for more suggestions.)

HP Desk has become as important as the telephone to employees who use it, says Luis. In some cases, it's completely changed the way business is conducted. Dick Dolan, editor of the *HP Journal*, now sends out all manuscripts for editing over the system, eliminating multiple copies being tied up in the interoffice mail. The Eastern Sales Region uses HP Desk and Lotus 1-2-3* to do targeting, saving hours of work and thousands of dollars each time. Formerly, stacks of reports were printed, collated and distributed, while now they stay in electronic form and are copied into HP Desk.

Confer

Think of Confer as a computer teleconference that removes the walls of space and time that plague many of HP's geographically dispersed work groups. IOS Project Manager Steve Thesing says Confer puts to rest time-zone problems that make it difficult for colleagues in California and France, for example, to

reach each other by phone during working hours.

While HP Desk is the "backbone" of the company's electronic communication tools, Steve says, it is most useful in distributing information—not discussing it. Confer is the perfect tool for task forces, committees and other groups that find it difficult to meet. A bonus is an electronic record of the contributions of each participant in the conference—unlike a transitory telephone conference call.

Confer users access the system in Palo Alto via X.25 data-communications links, either HP Net (HP's private X.25 network) or with a modem through GTE-Telenet (a public X.25 network) that will even get you on the system from Deadhorse, Alaska. Recently, HP began providing Confer access via Internet, a private wide-area

network used by 5,500 R&D workstations. Steve says the learning curve on Confer is steeper than on HP Desk, but IOS is working to establish a worldwide network of Confer contacts for each entity to conduct training and be an information source. Seventy percent of all HP entities already have such a contact. IOS also has printed a "Confer First-Time User Guide" to give employees the most useful commands.

Steve says people can choose to participate in about 75 to 80 different conferences that are going on all the time, though some are private and available only by invitation. The topics include wide-ranging personnel issues to more high-tech discussions among HP engineers.

One of the real success stories with Confer has been its use by personnel people to introduce the new Non-



"HP has made a huge investment in our electronic communication systems," notes Luis Hurtado-Sanchez, manager of Corporate's Integrated Office Systems.



Exempt Pay System (NEPS) program. Besides allowing people to keep up-to-date with what their counterparts are doing, Confer is being used as a U.S.-wide bulletin board as well. Debbie Carlson in Corporate Compensation says that she previously had to compile information to send out to all NEPS contacts, a process that took two to six weeks to complete. Now, NEPS contacts have all the information they need about job postings within 24 hours. Steve Thesing says the NEPS conference is the fourth most active on the system and a good example of how the general business community at HP is starting to use Confer.

Another success story is the 600 to 800 mechanical engineers and industrial designers worldwide who communicate with each other through Confer. The conference's main goal is to unite previously isolated computer-aided design experts in the company so they can collaborate and share best practices. In addition, R&D and marketing people are able to use these conferences to get early feedback on new mechanical engineering computer-aided design products from expert users.

Other popular conferences on Confer include MICROS (a forum on personal computers), FORUM (a general Confer discussion about company policies), 3RD PARTY (a discussion of third-party software tools) and MOTMOR (a lively discussion of motivation and morale).

Confer currently costs \$10 per month for each user. To join, employees should contact the Confer Support Line at Telnet 857-2351.

UNIX Mail/UNIX Notes

UNIX Mail is the standard for electronic mail in HP's R&D community, says IOS Project Leader Seth Munter. UNIX Notes is an informal discussion system based on UNIX Mail. UNIX Notes, like Confer, is a computer teleconferencing system, but it's different in two key ways. Confer is a centralized system and UNIX Notes is decentralized, mean-

ing that when you post an entry, everyone gets a copy of it. Also, Confer is limited to HP employees, while some UNIX Notes conferences are circulated outside the company and include outside participants.

The effectiveness of UNIX Mail will improve in the future by increased connectivity between HP Desk and UNIX Mail, says Seth, and by the development of global directories that include all users in both networks, making it possible for any workstation user to communicate easily and quickly with others throughout HP.

Use of UNIX Notes saves travel time and cuts down on telephone expenses by allowing a forum for engineers to discuss everything from standards development to printed-circuit-board design, Seth says.

John Diamant, Software Development Environments engineer in Fort Collins, Colorado, says his organization has used UNIX Notes to handle much of its standards efforts in the past. "And my current project has used e-mail (electronic mail) among three divisions in HP to coordinate design and review groups for various parts of our system. I can't quote you a number on how much money we save because of e-mail, but I can tell you that cooperative distributed design and development work between geographically dispersed divisions would be almost impossible without it."

Gary Fritz, another engineer in Software Development Environments at Fort Collins, reports similar devotion to the system, noting his work with ZYX, a small Swedish software company. With an eight-hour time difference and language barriers, Gary says UNIX Notes is "the only practical means to exchange small pieces of source code and the only way to maintain a complete record of past conversations. I could not possibly do a decent job of managing this relationship without e-mail. Last month, 221 messages (360 kilobytes, almost none of which was source code) went over the wire

Some rules of the electronic road

People get funny when it comes to their electronic communication tools. Once the learning curve straightens out, they get as possessive as a toddler with a new Gobot, or a high school senior with his prom date. Just try and take it away. But IOS Manager Luis Hurtado-Sanchez suggests it doesn't hurt to review occasionally a few rules of the road.

- **Be selective about what you send out over the system.** Think about the recipient of your message. Ask yourself, "Do they need the information I'm sending? Do they want it? Does it make more economic sense to print it and mail it?" Electronic mail makes delivery easier and faster, but the single biggest complaint concerns electronic "junk mail"—as big a nuisance as printed junk mail.
- **Use passwords.** Change your password at appropriate intervals

between me and Stockholm. Take away my e-mail and I wouldn't be able to do the job."

Voice Mail

The new kid on the electronic communication block is Voice Mail, and it will be on its way to you soon if you don't have it already.

Voice Mail, which operates like a voice-oriented version of HP Desk, is particularly sensitive to abuses which are not the fault of the technology, but of human error and mismanagement, says Luis Hurtado-Sanchez. "Voice Mail is a highly visible tool, and improper use of it reflects on the mailbox owner as well as all of HP." HP chose to implement this technology to improve communication and productivity, and early statistics are promising, says Luis, with as much as a 48 percent reduction in telephone tag with its use.

Voice Mail gives callers an opportunity to leave a detailed message when you're not available to answer your phone. The system gives the caller 24-hour availability, eliminating time-zone barriers; the chance to leave complicated, technical or confidential messages; and better service by allowing a

and don't give it out indiscriminately. Lots of potentially valuable and confidential information is sent out over electronic communications systems, and passwords help protect it. HP Desk passwords are required by HP's Internal Audit.

- **Know the limitations and strengths of the system you use.** Misuse of HP Desk, for example, could congest the network and delay such things as orders and payroll. Request the appropriate training for your system to learn the features that will make it work for you.
- **Use the system that fits your needs.** Do a little comparison shopping to see which tools will help you do your job best. Voice Mail, for example, is best used for short messages (less than two minutes). Longer messages may work better on electronic mail. Take classes, do a little extra reading and expand your intellectual curiosity about the available systems.

- **Notify people when you're going to be away from the office.** This is especially important on HP Desk and with Voice Mail. You can set up your electronic mailboxes so senders are automatically informed that you are away from the office, when you'll be back and whom they can contact in the meantime.
- **Review your distribution lists regularly.** Are you sending a four-page newsletter to someone who changed jobs six months ago and has no use for your pearls of wisdom? Yes, we know it's great literature, but have you surveyed your audience lately to see if people are still interested in being on your distribution list?
- **Follow local guidelines and standards.** Each entity has guidelines tailored to its needs and limitations. Learn which hours are busiest on HP Desk (typically early morning, right after lunch and mid-afternoon), and find out how the length of your message can

affect the system. Don't stress the resources you have.

- **Earn a Good Housekeeper Seal of Approval.** Tell the truth. Are there 324 messages in your In Tray right now? Manage your use of the system's resources and keep costs down by deleting old messages and keeping your In Tray, Filing Cabinet and Work Area clean.
- **Consider the confidentiality of your communications.** Is the message you're sending company-confidential? If it is, label it as such. Company-private information—that which would cause irreparable harm to HP if it was leaked prematurely—should never be sent on electronic mail.
- **Don't misuse the system.** A Voice Mail or HP Desk invitation to a department birthday party may be OK. Use of the systems for harassment or personal gain is not OK. People get fired for such abuses. Funny holiday greetings that freeze terminals are frowned upon as well. —Jean Burke Hoppe

faster flow of information and speeding decision-making.

Voice Mail gives subscribers a number of HP Desklike features, including the ability to:

- store, forward and retrieve voice messages;
- scan messages waiting in your mailbox before listening to each one;
- create and send messages to multiple subscribers using system or personal group distribution lists;
- replay and edit voice messages you create;
- use delivery options, such as urgent, private, future delivery or confirm delivery;
- be notified of new voice messages at remote locations by setting up an outcall notification schedule.

Telephone etiquette is already a problem for some people, and Luis cautions that Voice Mail can exacerbate those problems. A few examples of Voice-Mail abuse include discourteous greetings, failure to return calls, hiding behind the system to avoid answering your phone and threatening, obscene or harassing messages.

Two early recipients of Voice Mail

were quite logically the response centers in Santa Clara, California, and Atlanta, Georgia. Kelly Thompson, telecommunications coordinator at the Santa Clara Response Center (SCRC), says they're still battling a certain reluctance on the part of customers to talk to a machine.

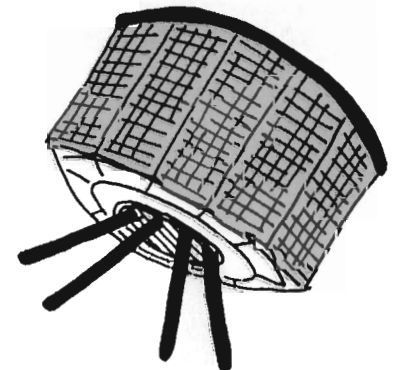
So they're urging customers to "Tell it to ALICE." ALICE (Automatic Logging of Information between Customers and Engineers) is a new application the Santa Clara Response Center has implemented to give callers the option of going into a Voice-Mail system where they can leave a five-minute description of the problem they're having. The result, Kelly says, is that engineers can get to the problem faster because they can start working on it even if they can't immediately return the customer's call.

Another innovative Voice-Mail application the response centers offer is for French-speaking customers from Canada who call after hours or on holidays. Callers from the Montreal area receive a bilingual greeting and a choice of an English- or French-speaking Voice-Mail system. The call will then be relayed to the on-duty CE in Montreal who translates and handles the problem.

These electronic communication tools are only a part of the many new products becoming available to help employees do a better job today and tomorrow. "But there's no magic in any of these systems," says Luis. "If they're not properly used, they can make problems or situations worse. If they're used right, life gets better and better."

—Jean Burke Hoppe

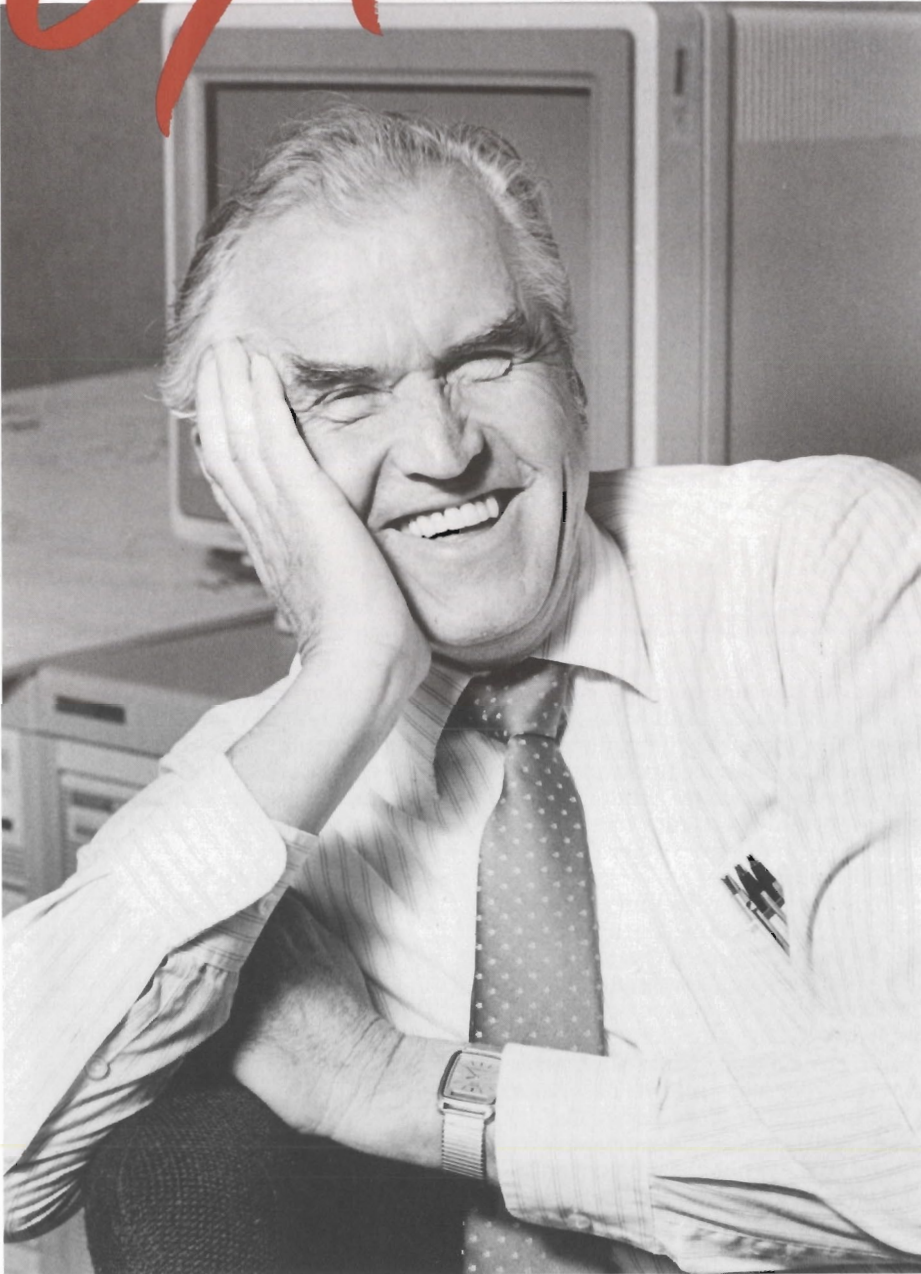
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Extra

ORDINARY PEOPLE

RENEE LYNN



Zvonko Fazarinc's family cooked on a wood stove on a farm in rural Yugoslavia; today he's an HP authority on using computer graphics to explain the fundamentals of science.

What makes a man of vision?

Zvonko Fazarinc, just completing a pioneering role as HP's senior science adviser for Europe, would modestly disclaim the term "visionary." But the description keeps cropping up from people who have worked with him at HP Labs or on his special campus assignments for the company.

Right now Zvonko's formidable energies are focused on fostering the use of computer simulation to teach basic concepts in physics.

Since January 1987, he's criss-crossed Europe to show university audiences how computer graphics can bring to life the fundamental concepts on which engineering is based and thereby shorten the learning curve for students. He's presented demonstrations in 13 countries. To interested academicians, he gives HP-developed special software, running on HP equipment, that will relieve the drudgery of creating such teaching simulations.

In his module on thermodynamics, for instance, balls representing molecules bound around in one window on the screen. In another window appears a histogram that graphs velocities in two directions. Starting with random velocities and positions, one can adjust window walls to reduce volume and thereby increase pressure and temperature. The interaction of particles under varying forces can be viewed and the ideal gas can be derived. The complex algorithms which run the modeling are unseen.

"I tell professors how computer modeling has given me insight in physics into things I thought I understood," Zvonko says. "You start thinking much more intensely about what you mean. You can't afford to leave any mystery for the computer. And as it feeds your thoughts back to you in a different form, you see if they're correct."

He believes that by distilling physics into a few concepts on which nature's behavior rests and by making them intuitive, everything else also will become intuitive. "It is possible to teach all complex phenomena in physics to a person without background and achieve instantaneous understanding," he declares.

His enthusiasm for using computer

graphics to help students understand complex phenomena intuitively is contagious. Six leading European universities have agreed to develop and share such teaching tools as part of a COLOS (Conceptual Learning of Science) project Zvonko has organized.

HP France is providing HP 9000 Model 360 workstation systems and software that includes the friendly program for designing educational software. It doesn't require expertise in programming.

Participants will work on simulations of concepts underlying the understanding of natural science (such as relativity and quantum mechanics), electricity and electronics, among others. These will add substantially to the 10 modules Zvonko brought with him to Europe from California.

Says Lorenzo Coslovi of HP Italy, who has arranged a number of visits for Zvonko to Italian universities, "His dream is to have thousands of authors contributing to and continuously improving a single 'book' of training technology.

"It would be the platform on which a new culture will grow. And the seed for that culture has been Zvonko."

Visionary thinking and a flair for teaching came naturally to young Zvonko Fazarinc, growing up in the Slovenian part of Yugoslavia. "I always jumped at the opportunity to teach if someone asked me a question—even if it wasn't something I knew much about," he says.

Daughter Bojana, Analytical Group marcom manager, remembers the family farm in rural Yugoslavia where they lived during most of the nine years her father was a researcher at the Communications Institute in Ljubljana. He spent many hours trying to install his love of math in Bojana and her brother Darko as they did their homework.

"It was still a world where you used sleighs in the winter and cooked on a wood stove," she says. "But I can remember my father saying, 'Someday you'll be taught by television and won't go to school—you'll learn at home.'"

Zvonko debunks having any special sense of the future in those days. "I saw my first transistor in Yugoslavia," he says, "and when I touched it with a sol-

"A man for all seasons: he's delved into a variety of things and done them all very well."

dering iron, I accidentally burned it up. 'This is too sensitive—it's never going to amount to anything,' I said, and I ignored it.

"When I was accepted for doctoral work at Stanford University in 1960, I was two years behind and made up for it by designing everything I did with transistors."

It was a valuable lesson.

"I learned not to make a fast judgment on a new technology," Zvonko says. While his own field of concentration was radio astronomy, he paid attention to many new thrusts in science. When computer-aided design began to come in, he went to the first seminars to find out about it.

He's an enthusiastic follower of the newest in consumer electronics, too, from compact discs to stereos. The cabin that he designed and built in Monterey, California, has an elaborate electrical control system that includes a panic button to turn on lights, alarms and sprinklers in one dramatic burst.

Barney Oliver, research director when Zvonko joined the company in 1964 with a newly won doctorate in electrical engineering, calls him "a man for all seasons."

"He's delved into a variety of things and done them all very well," Barney says. "He's a generalist—tackling one field after another with enthusiasm and insight. Now he's awakened the universities of Europe to HP's accomplishments in the area of computers."

After working on instrument research projects for the first few years in HP Labs, Zvonko was asked in 1966 to look into a problem involving a step-recovery diode. Instead of routine analysis, he used an HP 2116 computer to simulate the electronic circuit. It was a technique that was still new.

"I became convinced this was a tool to solve problems that people themselves—with all their intellectual skills—can't do," Zvonko says.

His work had a ripple effect. Ken Van

Bree of HP Labs remembers. "The first thing I did as a summer student was to write a program, SIMULATE ZVONKO. Zvonko had written a computer simulation program for the analysis of non-linear circuits, but he was the only one who could do it. My job was to capture his knowledge."

Other members of the technical staff began to use the new tool extensively. In 1969 Zvonko wrote a detailed 100-page instruction manual on how to tap the power of a computer to solve circuit problems. It was the precursor to the SPICE program which the University of California at Berkeley makes available as an industry standard.

Along the way, Zvonko was project leader for the HP 1980 oscilloscope system, a hybrid between an instrument and a computer which won a "product of the year" award from *Electronic Products* magazine.

In 1978, Zvonko became director of a newly formed Electronic Instruments Lab involved in a wide range of areas: instrumentation, integrated circuits, ultrahigh-speed digital/analog interfaces, signal processing, distributed systems, software design tools and communication protocols.

His managerial style is warmly remembered as caring and technically challenging by those who worked for him. "He had a good vision into the future and encouraged us to look into very futuristic ideas," says Bob Piety of HP Labs. "He'd say, 'Why don't you see if you can. . . and we'd dig in, often working nights and weekends. He was a true scientist and a fun person to work for.'"

Zvonko's lab was located in a building separate from the rest of HP Labs. He installed the company's first electronic mail system to track progress on projects.

"That wasn't so popular," Bob admits, "but we really liked the card-reader system we put together to provide access to the building at odd hours if you wanted to come back to work. Zvonko had faith in us that no equipment would disappear without a guard system. It paid off."

Still in operation is "Zvonko's ditch," an underground trench which connects all HP's Palo Alto, California, sites with a private transmission network.

ExtraORDINARY PEOPLE

Zvonko persuaded management to install it for an R&D test bed in 1984. Today it carries video, voice and data, with one more conduit that was intended for fiber, never installed. "Zvonko was a little ahead of his time in thinking fiber was the way to go," says Bill Taylor, Corporate Telecommunications manager. "Even though things didn't turn out exactly the way he saw them, the installation is very useful."

One project that moved outside HP was a global positioning system which could measure satellite signals with great accuracy to calculate location. It was started in 1976 by Ralph Eschenbach, with strong support from Zvonko. When it didn't fit the company's evolving marketing direction, the rights were sold in 1980 to Trimble Navigation, which now has 12 products based on it. Ralph is Trimble's vice president of engineering and Zvonko serves on the board of directors.

In 1985 Stanford University opened its Center for Integrated Systems (CIS), a joint effort with industry and government. HP was among the sponsoring companies that agreed to lend a senior manager to the center. Zvonko thought "a microsecond" before accepting the Stanford assignment. He'd retained strong ties to the university, frequently teaching a course on semiconductor devices. (Last year Stanford appointed him a consulting professor of electrical engineering.)

With a free hand to develop his own projects at CIS, Zvonko "just sat down and started writing programs" to bring a new dimension into teaching physics. Using a powerful HP 9000 Model 200 and writing in C language, he developed a program to show visually the principles behind heterojunctions (electronic junctions made of more than one material). That first effort took two and a half months to do—but a second module, on the function of transmission lines, was finished in two days.

The secret of the speedup was what experts know as inheritance in programming environment.

Zvonko is quick to credit Charles Young of HP Labs with giving him the starting base into "object-oriented programming with foundation classes." (In programming, a class is a program that makes it possible to reuse code and save time spent in rewriting. It provides a powerful base for the design of teaching tools without spending excessive time on overhead.) This June, Charles spent three days in Kiel, West Germany, training COLOS participants how to use his foundation classes.

Another contributor was John Maneatis, then an undergraduate in physics at the University of California at Berkeley, who spent the summer of 1986 at CIS helping Zvonko write teaching modules. John, who worked this summer at HP Labs, believes

there's almost no limit in science and engineering for simulation programs of this kind.

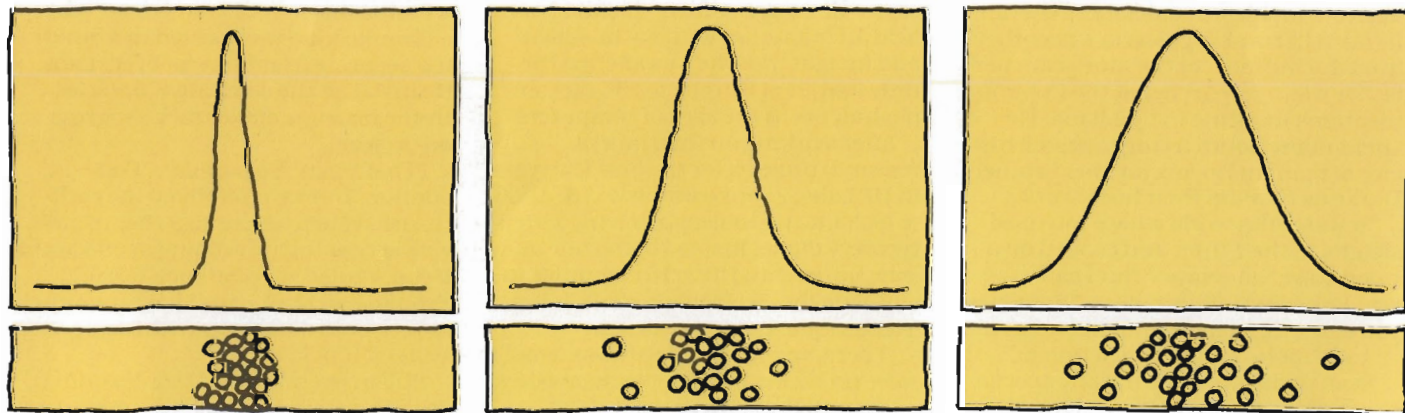
The spinoffs from Zvonko's presence in Europe the past 20 months have actually exceeded the hopes of Senior Vice President Franco Mariotti, who had invited him to pilot the role of senior scientific adviser.

"Meeting faculty people on their own level, Zvonko has improved HP's relationships with universities and established bridges to major schools," Franco says. "What amazes me is that he continues to do his own serious scientific work on the schedule he keeps."

And hauling his own demo cases, Zvonko has left behind a trail of admiring HP field people in his energetic travels across Europe.

Says Jacques Misselis, who accompanied him on 20 visits throughout France, "You can give Zvonko an appointment at the Paris railroad station to meet a top-notch professor or in Corsica for a business school meeting on Sunday. He'll be there, no matter how demanding the trip."

"Zvonko's great qualities are his knowledge, generosity and availability—and he's younger than most of the young people." —Betty Gerard



(Left to right) Molecules in thermal motion move in straight lines until they hit another molecule or the wall. If they move toward the center, they quickly collide, then move away freely from the crowd and eventually spread out uniformly. If not moving initially, they stand still like well-stacked golf balls until the foundation is shaken (the same as heating molecules).

YOUR TURN

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

A better understanding

I wanted to let you know how much I enjoyed reading the article on "Sculpting the modern-day division" (March-April 1988). It not only was most informative, but helped me as a field person better understand the operation and organization of our manufacturing sources.

I know that we have been doing a great deal to keep ourselves competitive with others, and this article gave me some insights as to what we are doing. For instance, I assumed that we would pare our number of divisions down, but that isn't necessarily the case with the different creative combinations you exhibited.

BOB McCOY
Huntsville, Alabama

Hats off to Jim and Debbie

After reading "Charting a new life for Debbie" (March-April 1988), I must say I am quite impressed. As a fitness coordinator in diabetes education and a triathlete, it's "hats off" to the HP engineer Jim Carbone, who shared his specialized computer and athletic talents to help out Debbie Frank.

Thanks for sharing these inspiring role models who together have mastered a "diabetes-oriented" fitness program.

TAMMY KIME
Toledo, Ohio

Tammy works in the endocrine and diabetes care center at Toledo's Mercy Hospital.—Ed.

Winning the war on drugs: the pros and cons of anonymity

Tim Brown's story about his personal war on drugs (March-April 1988) prompts me to relate my experience and share my hope as a parent involved in the same struggle.

A year ago, my 16-year-old daughter asked for help with her drug problem. During years of family counseling and

school conferences, this was a diagnosis that I never contemplated. Now—after two rehab programs, four months of sobriety, about 75 parent support meetings, relapse, a third rehab program and, at last, visible change—I've learned that preaching and counseling by adults doesn't help kids on drugs.

They know they are risking their lives and blighting their futures. They also know that the surest and quickest way to acceptance and admiration by most other kids is to use drugs. Only peer pressure is effective.

The program that worked, STRAIGHT, employs its own graduates and creates a carefully structured climate of peer pressure for sobriety.

DICK DILLMAN
Andover, Massachusetts

HP's exceptionally caring attitude about alcoholism recovery is appreciated. I personally benefited a few years ago when HP "walked an extra mile" down this road with me, for which I am most grateful.

In the story "Winning the war on drugs: a personal fight" (March-April 1988), (Tim Brown) clearly identified himself by full name and photo as an Alcoholics Anonymous member. I apologize that we (in AA) somehow failed to provide both HP and the member a better understanding of our Tradition of Anonymity.

Our policy is to maintain personal anonymity when sharing our recovery stories at the public levels of press, radio, TV, videotape and film—never revealing last names, photos or any other identifying facts about ourselves or any AA member.

...the exercising of personal anonymity at the public level assures that the integrity of the AA recovery program will not be compromised by becoming identified/linked with the personality of any individual, however exemplary.

(Name withheld by request)
Palo Alto, California

Measure understands and appreciates AA's tradition of anonymity. However, we believe anonymity is a matter

of personal choice and applaud Tim Brown's courageous decision to share his story with Measure readers. Perhaps Tim's story will be the catalyst which prompts other individuals with drug or alcohol problems to seek help.—Ed.

I would like to comment on Tim Brown's courage in writing about his life's experiences. As a parent of a chemically dependent daughter, his story has touched me, and it is comforting to read someone's success story.

This message is for the parents, wife, husband, friend of someone afflicted by alcohol and/or drug addiction. If your lives have become unmanageable and (you) don't know how to cope with the situation, don't despair; seek help for yourself. Contact the Employee Assistance Program and learn about the many support groups that could help you back to sanity. We can win this battle, but we must first start by taking care of ourselves and learning more about this dreadful disease.

I wish Tim continued success, and thank you!

RAE ALMEIDA
Cupertino, California

Please send mail

Do you have comments about something you've read in *Measure*? Send us your thoughts. We want to share them with more than 83,000 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 X-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 USA. Try to limit your letter to 150 words. We reserve the right to edit letters. Please sign your name and give your location. Names will be withheld on request.

Understanding OSF: an open issue



Jacques Stern (left), chairman and CEO of Groupe Bull, discusses the Open Software Foundation with HP's John Doyle during a pause in the May OSF press conference in New York City.

For some of us, a home stereo system is an amalgam of components made by a variety of manufacturers. But when you play a record, disc, tape or the radio, you expect your Garrard turntable, Sony compact-disc player, Marantz tape deck, JVC receiver and Advent speakers to produce beautiful music.

HP and a number of other leading computer companies feel the same way about software environments: you should be able to develop application software that can run on computers of different brands and sizes.

That's the essence of the Open Software Foundation (OSF), a group of major computer companies dedicated to meeting customer needs by developing open/standard software systems.

The companies created OSF because of a shared concern that the UNIX* operating system—which all had begun to embrace as an emerging standard—no longer would be made openly and equally available by its proprietor, AT&T. A closed operating system, OSF companies feared, would give an unfair competitive advantage to AT&T and its business partner, Sun Microsystems.

How important is OSF? John Young calls it "one of the most significant

events ever to occur within the computer industry."

Joining HP in the cooperative venture announced May 18 were U.S.-based IBM, Digital Equipment Corporation and Apollo Computer Inc.; Groupe Bull from France; and Nixdorf Computer AG and Siemens AG, both headquartered in West Germany—a coalition representing more than 40 percent of the computer industry's worldwide revenue, according to *The Wall Street Journal*.

The member companies have pledged a total of more than \$90 million for OSF during the next three years in addition to each company's top technology and engineers. John Doyle, HP executive vice president and head of the Systems Technology Sector, serves as the chairman of the board for the foundation.

The Open Software Foundation is focusing on three key issues:

- Portability—The ability to use application software on computers from various vendors.
- Interoperability—The ability to have various computers from different vendors work together.
- Scalability—The ability to use the same software environment on many classes of computers from personal computers to supercomputers.

The way to achieve an open system, OSF maintains, is to develop one industrywide operating system, rather than several companies each having its

own proprietary system. (*U.S. News & World Report* defines an operating system as "the traffic cop that manages disc drives, memory and screens so they can be used by applications programs such as word processing and spreadsheets.")

OSF's charter and technical vision go beyond a standard operating system. OSF will enable computer purchasers to "mix and match" software and hardware from different vendors. The Application Environment Specification OSF will develop includes standards for the operating system, languages, database management, user interface, graphics libraries and networking standards.

HP's participation in OSF doesn't mean that the company is abandoning its standards strategy. Far from it. HP will continue to develop HP-UX—the company's implementation of AT&T's UNIX operating system—and ultimately HP-UX will make a smooth transition to the OSF-based system which will conform to standards issued by the international standards bodies.

"Membership in the OSF leaves plenty of room for competitive differentiation," explains John Young. "There are still many areas of leadership HP may choose to pursue—price/performance, networking, graphics, quality, support and unique value-added functionality, to name just a few."

More than 1,300 computer hardware and software suppliers, universities, government agencies and organizations around the world have been invited to join OSF. —Jay Coleman

*UNIX is a registered trademark of AT&T in the USA and in other countries.



American Carl Lewis sprints to victory in the 200-meter dash—his third gold medal at the 1984 Olympic Games.

Olympic drug testing: a matter of substance

The soon-to-be-millionaire sprinter hits the tape in full stride, fractions of a second before the other world-class athletes who will fall just short in their quest for an Olympic gold medal.

Hours later the winner stands proudly before a worldwide television audience accepting the precious prize. The flags are raised and the appropriate national anthem is piped into the arena.

It's a scene most of us have seen many times throughout the years.

But a hidden and somewhat unglamorous step after the thunderous applause accompanies an Olympic victory. For it is then that the athletes are whisked away to provide evidence that they did, or did not, enjoy the advantages of substances which could have given them, illegally, an edge.

In an environment where the difference between winners and fourth-place finishers is measured in hundredths of a second or fractions of an inch, the incentive for athletes to gain a competitive advantage is enormous. Performance-enhancing drugs probably have become the most common means used by an unknown number of athletes to

push themselves artificially to the top.

The International Olympic Committee (IOC) recognized an emerging problem with competitive integrity and the health of athletes as early as 1967, when it adopted a resolution banning the use of certain substances by Olympic athletes. To follow up, the IOC issued its initial list of banned drugs and began a crackdown on substance abusers at the 1968 Summer Games in Mexico City.

Since then, drug testing has been a regular part of the Olympic Games, and HP has supplied analytical instrumentation for that purpose since 1972.

At this summer's Games in Seoul, Korea, HP once again will supply analytical instrumentation to test and screen approximately 1,500 athletes of the 9,000 expected to participate. Earlier this year, HP played a similar role at the Winter Olympic Games in Calgary, Canada, where 1,500 athletes competed.

Like the laboratory used for testing at Calgary, the lab in Seoul—housed at the Korea Advanced Institute of Science and Technology—is one of only 21 IOC-accredited facilities worldwide.

It has been fully operational since the Asian Games held in Korea in September 1987, and is filled with more than U.S. \$2 million worth of HP analytical and computer equipment.

The lab, staffed by highly trained technicians, will be a high-security facility with round-the-clock guards and a sophisticated electronic security system. In addition to providing the necessary hardware—both loaned and sold to the laboratory—HP will provide 24-hour on-site support through HP's exclusive analytical distributor, Young-In. Scientific Instrument Division employees also will be on call in Palo Alto, California, to provide additional support as needed.

In 1988, samples from athletes are being subjected to the most comprehensive tests in Olympic history.

As at the Winter Games, five classes of drugs are banned at Seoul:

- narcotics, including morphine, codeine and others;
- anabolic steroids, which accelerate muscle development;
- stimulants, such as amphetamines and cocaine;
- beta blockers, used to reduce heart rate and produce a calming effect; and
- diuretics, which are taken in hopes to dilute urine to reduce the presence of other banned substances below detectable levels. Additionally, diuretics can reduce body weight artificially and give athletes competing in weight-restricted events an unfair advantage.

This is the first year in Olympic Games history that athletes will be screened for beta blockers and diuretics. Beta blockers were identified as potential performance enhancers during the 1984 Summer Games, when officials discovered that archery scores could be improved with a steadier aim provided by these substances.

All medal winners and at least one other randomly selected participant in each event will be screened. Additionally, horses used in equestrian events will undergo testing.

At Calgary, of the 450 athletes that underwent testing, only one—a Polish



HP 5890 gas chromatographs will be used during the 1988 Summer Olympics to screen more than 1,500 athletes for use of stimulants, narcotics, analgesics and beta blockers.

hockey player—was detected using a banned substance.

But the Summer Games seem to offer more opportunity for abuse of performance-enhancing substances, given the sheer number of athletes and the events in which they participate. A weight lifter, for example, probably stands to gain more from use of steroids than a ski jumper.

After an event, the athletes to be screened are told they must arrive at the drug-testing station within one hour. Once there, the athlete provides a urine sample in the presence of an attending marshal and the sample is divided into two equal parts.

The two samples then travel in specially designed packages to the lab, where one is kept in a guarded location in case a second test is needed to confirm a positive result. The first sample is used for initial testing.

The sample is analyzed by the laboratory and all results are reported to the IOC medical commission. A second test is conducted on the first sample if there

is a positive result. If *that* positive is confirmed, a third test is performed on the other portion of the urine specimen in the presence of the athlete, a representative of the athlete's country and an IOC official.

The gas-chromatograph/mass spectrometer (GC-MS) system is so sensitive it can detect a chemical concentration as low as one part per billion, about the same as detecting a granule of sugar in a bucket of sand.

The GC—made at HP's Avondale (Pennsylvania) Division—separates dozens of different compounds in a sample from each other as they move through a narrow tube, called a column. The compounds move at varying rates based on subtle differences in molecular structure.

All positives identified by a GC are confirmed on the mass spectrometer, the most accurate verification technology available. The MS takes the component molecules from the GC and bombards them with a beam of high-energy ions. This causes the molecules to break apart and fragment in predictable, reproducible ways, creating

unique chemical "fingerprints." The MS data system then compares this fingerprint to a reference database of known chemical spectra.

With the HP system, more than 110,000 compounds can be compared in less than one minute. The entire detection process lasts from 30 to 90 minutes, depending on the number of compounds to be separated.

Every lab selected to be an official Olympic drug-testing lab is required to pass extensive IOC accreditation tests before receiving final approval. During the Olympic Games, the IOC gives control samples to the lab to ensure consistency with the methodology.

The first substance-abuse controls in international sports were initiated in 1955 during a French cycling competition, at which more than 20 percent of the test cases proved positive. Since then, the list of banned substances has lengthened as new drugs are invented and chemists can identify and develop methods for detecting them.

And while thought of the actual procedures involved seems bothersome on the surface, many athletes feel the process is warranted and necessary.

"When we don't have drug testing, we discriminate against athletes who are clean," Cathy Priestner, a former Olympic silver medalist in speed skating, said at a press conference just prior to the Winter Games in Calgary.

"Drug testing done accurately and applied fairly guarantees the athletes a proper and fair competition. And I think that's the bottom line."

—Gene Endicott

(Gene Endicott—Measure's unofficial sports editor—is an HP senior press relations representative and a feared batter on his softball team. He last wrote for Measure in the May-June 1987 issue about HP's international sports marketing efforts.—Ed.)

An Olympic primer

How well do you know your Olympic trivia? Check the information below from *The World Almanac and Book of Facts—1988*, then dazzle your friends and relatives with your athletic acumen.

History—The modern Olympic Games, first held in Athens, Greece, in 1896, were the result of efforts by Baron Pierre de Coubertin, a French educator, to promote interest in education and culture, also to foster better international understanding through the universal medium of youth's love of athletics.

His source of inspiration for the Olympic Games was the ancient Greek Olympic Games, most notable of the four Panhellenic celebrations. The games were combined patriotic, religious and athletic festivals held every four years. The first such recorded festival was held in 776 B.C., the date from which the Greeks began to keep their calendar by "Olympiads," or four-year spans between the games. Winter Olympic Games started in 1924.

Symbol—Five rings linked together to represent the sporting friendship of all peoples. The rings also symbolize the five continents—Europe, Asia, Africa, Australia and America. Each ring is a different color: blue, black, yellow, green and red.

Motto—*Citius, Altius, Fortius*. The Latin meaning is "faster, higher, braver," while the modern interpretation is "swifter, higher, stronger." Father Didon, a French educator, coined the motto in 1895.

Creed—"The most important thing in the Olympic Games is not to win but to take part, just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered but to have fought well."

Oath—An athlete of the host country recites the following at the opening ceremony: "In the name of all competitors I promise that we will take part in these Olympic Games, respecting and abiding by the rules which govern them, in the true spirit of sportsmanship for the glory of sport and the honor of our teams." The oath and the creed were composed by de Coubertin.

Flame—Symbolizes the continuity between the ancient and modern Games. The modern version of the flame was adopted in 1936. The torch used to kindle the flame is first lit by the sun's rays at Olympia, Greece, and then carried to the site of the Games by relays of runners. Ships and planes are used when necessary.

1988 Summer Olympic Games
September 17–October 2
Seoul, South Korea



ANTHONY ANJO

Margaret Bailes was a skinny, 17-year-old high school junior in 1968 when she sprinted to Olympic history.

Margaret, who today is a dealer support rep at the Personal Computer Distribution Operation in San Jose, California, was a member of the record-setting gold-medal-winning U.S. women's 400-meter relay team 20 years ago in Mexico City.

"It didn't really hit me that this was the Olympics and we set a world record until we were on the victory stand receiving our gold medals and listening to the *'Star Spangled Banner,'*" says Margaret. "It was an absolute thrill."

The fact that Margaret was able to run in the premier world event is a profile in personal courage.

At 17, she was a child compared with her college-age teammates. And a month before the Olympics, Margaret was in a Mexico City hospital with pneumonia.

"I had trained for the Olympics for eight years and there I was with a 105 degree temperature. I had about two weeks to get my strength back."

Margaret's recovery was especially demanding because she had qualified to run in the 100- and 200-meter dashes, as well as on the 400-meter relay team. So the preparation was mental as well as physical.

"It was difficult because all of us on the relay team were fierce competitors in our individual events, but then we had to run together as a team," Margaret explains. "I was tired, but I never allowed myself to think 'I'm sick so I shouldn't finish as well.' I came to win."

The qualifying races were exhausting, even for runners in the best of condition. In one day alone Margaret had eight preliminary races.

Amid all of the excitement, history was being made. Some U.S. black athletes literally took a stand to highlight racial prejudice during award ceremonies by raising clenched, gloved fists—the "black power" salute.

"We were getting a rubdown prior to a race and we didn't even know it happened," Margaret says. "I didn't



Margaret Bailes, dealer support rep from PCDO, made Olympic history in the 1968 Games.

even find out about the salute until later when the media asked us about it."

Margaret's legs still felt weak the day of the 1968 Olympic finals. All the youngster from Eugene, Oregon, had to do was run in three events before 100,000 spectators and a worldwide television audience in the millions.

She finished fourth in the 100 meters, barely missing a bronze-medal third place while teammate Wyomia Tyus won the event. An hour or so later

Margaret placed seventh in the 200 meters—again just a fraction of a second behind the medal winners. It all came down to the 400-meter relay—her third and final event.

Barbara Ferrall ran the first leg of the relay for the U.S. and was neck-and-neck with the field when she handed the baton to Margaret. Margaret gave the team a slight lead when she passed the baton to Mildred Netter. Wyomia



Margaret (third American from left) celebrates 400-meter relay victory with teammates while a dejected second-place Soviet runner (left rear) observes in silence.

Tyus ran the final 100 meters as the U.S. women set a world record of 42.8 seconds.

"We all ran to the finish line, hugged each other and yelled 'We did it! We're the fastest in the world,'" Margaret recalls of the historic moment.

Ironically, it was the last race Margaret ever ran. Her husband didn't like track, so she quit to become a fulltime housewife.

Most friends and co-workers don't know of Margaret's athletic fame. She doesn't mind talking about the experience, but she's too modest to mention it without some coaxing.

"I still attend a lot of track meets and watch every one that's on TV," Margaret says. "And I never miss watching the Olympics every four years.

"I remember walking into the stadium for the 1968 opening ceremonies. Everywhere I looked I saw all of the country flags, uniforms and colors, and thousands of doves being released. It was the first time I started to feel like maybe I was somebody special. It's a feeling I'll never forget."

Bill Groot will have the lifelong distinction of being one of the first people to play Olympic baseball.

Baseball—which becomes an Olympic event in 1992—will be a demonstration sport at the 1988 Summer Games and Bill, system controller for HP Netherlands, will play first base for the Holland national team.

The Dutch team won the European baseball championship last year, which entitled it to play in Seoul against teams from the USA, Cuba, South Korea, Japan and Taiwan.

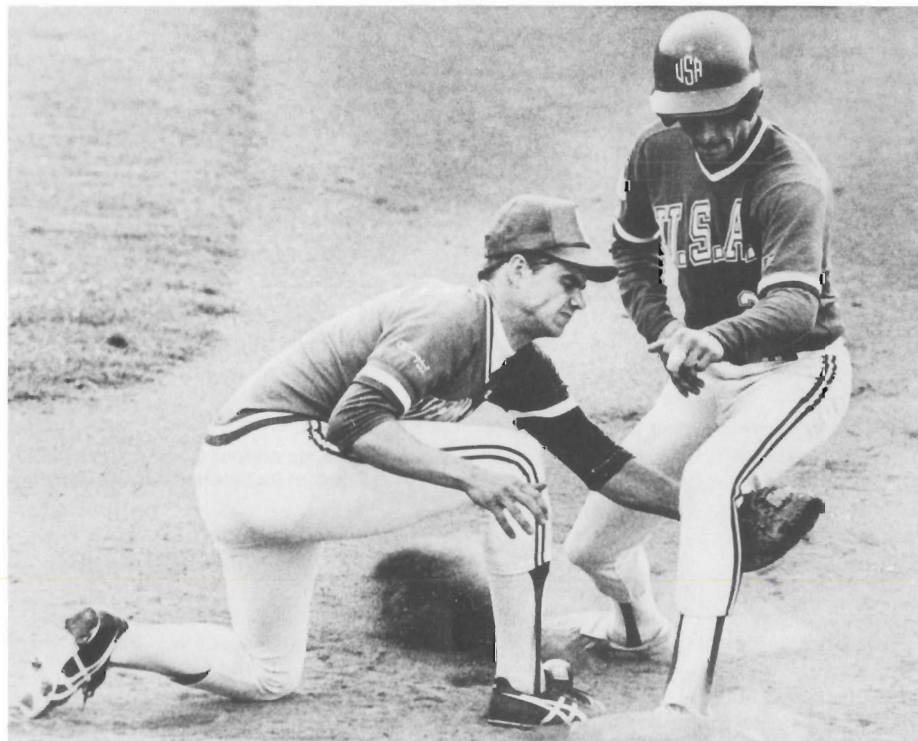
The Dutch Baseball Association chose Bill as its 1986 Most Valuable Player when he belted eight home runs, drove in 38 runs, had 65 hits, stole 14 bases and had a .460 batting average in 35 games.

For Maurice and Rita Dubois, participating in the opening ceremonies of the XIV Winter Olympic Games in Calgary, Alberta, Canada, was the culmination of five months of intense rehearsals and preparation.

Maurice, an analytical customer engineer with Hewlett-Packard (Canada) Ltd., and his wife were among 960 people selected as square dancers for the lavish opening ceremonies. The troupe was divided into 14 groups; each group practicing alone for two hours each week, then en masse.

"All of the rehearsals were outside, no matter what the weather was like," Maurice explains. "One day it was -22 Celsius (about 14 degrees Fahrenheit) and everyone was still there!"

Maurice and Rita also donated more



Bill Groot, system controller for HP Netherlands and a member of the 1988 Dutch Olympic baseball team, applies a tag during a game against the U.S. team last year.

than 150 hours in the Olympic costume shop where they helped make some of the 5,000 costumes worn during the opening ceremonies.

If anyone epitomizes the true Olympic spirit it's Alfredo Rego, a member of HP's "extended family" and the developer and president of Adager Software, which is used on most HP 3000 systems.

Alfredo was a member of the seven-person Guatemalan ski team—the first time the country competed in the Winter Olympics. At 41 years old, he was one of the oldest Olympic competitors. Being a competitor—competing—is what really mattered to him.

Alfredo finished dead last in both Olympic ski events he entered. But winning wasn't the point.

"Being an amateur means you do it for the love of the sport," he explains. "Of all the Olympic skiers, only 60 percent completed the events. The others didn't start for some reason, fell down and didn't finish or missed a gate and were disqualified. I finished both of my races. That was my achievement."

Alfredo hasn't ruled out competing in the 1992 Winter Olympics. "I'll be 45 years old then, but I'll have four more years of practice," he adds. "It's like a computer program: first you make it work, then you make it better. By 1992 I'll be a lot better."

An HP employee with a keen interest in the women's 400-meter relay in Seoul is Werner Spaeth, the national coach for the West German team and manager of HP's repair center in Böblingen.

For 20 years, Werner has coached female sprinters, including a member of the bronze-medal team in the 1984 Games.

"Our goal for 1988 is to finish among the top four relay teams in the world," Werner says. "With a good deal of luck, we could finish in the top three. The strongest teams to compete against are the USA, the German Democratic Republic, the USSR and Canada."



Alfredo Rego, developer of the Adager software used on most HP 3000 systems, was the standard bearer for Guatemala's seven-person team at the 1988 Winter Olympics.

Shaune Hilton, a clinical applications specialist in HP's Calgary office, also was one of the 9,500 Winter Olympic volunteers. Shaune was a course steward, responsible for security enforcement, crowd control, first aid and information during the downhill ski races.

Hoping to repeat his performance from the 1984 Games in Los Angeles is Jukka Rauhala, a district manager for HP Finland. Jukka won a wrestling bronze medal in the 150-pound (68-kilogram) weight class four years ago and will represent Finland in Seoul as well.

"The Eastern bloc countries and the United States have the best competitors in my weight class," Jukka says, "and I will be very fortunate if I am able to win a medal again in Seoul."

A new train of thought

After 10-hour days filled with lectures and lab training, many students might opt for a relaxing evening as far away from work as possible.

These students were different.

"As soon as dinner ended, several students would go back in the lab to get more experience on the equipment," explains Don Hawke, a member of the training staff. "I've never seen a more energetic, enthusiastic group."

The 26 students were sales engineers and technicians from China Hewlett-Packard (CHP). The setting was Beijing, China, where five engineers from the Test and Measurement Fundamentals training staff in Palo Alto, California, conducted a rare, on-site two-week training course in March and April.

Usually the "neophyte" training is conducted in Palo Alto. But the size of the class and the difficulty for the CHP employees to travel as a group to the U.S. made it more efficient to take the course to them.

More efficient, perhaps, but not without an enormous amount of preparation.

HP had to apply for licenses and ship more than two tons of equipment for the course and a three-day product fair.

"We applied for the licenses six months ahead of the trip and received them six days before we left," sighed Bob Kirkpatrick, who organized the trip with Don Hawke, Paul Archambeault, Microwave Communication

PHOTOS BY BOB KIRKPATRICK



Approximately 500 customers from the Beijing area attended the three-day HP product fair which was held in conjunction with the "neophyte" training seminar for 26 CHP employees.

Group training manager, and Yeng Wong, former CHP Test and Measurement program manager and newly named business development manager.

Don had been in China in 1979 for a measurement and computation show, and Bob was there in 1981 to present a microwave seminar.

"HP was the first company to bring a hardware seminar into China," Don remembers. "Nine years ago, everyone dressed alike in the blue, gray or drab green Mao pants, jackets and caps. Today you can see a definite influence from the West in their clothing."

Adds Bob, "We expanded the course from two 40-hour weeks to two 60-hour weeks because of the language barrier, but all of the students were bright and spoke English to some degree. They had a clear understanding of electrical engineering theory, but they just hadn't had an opportunity to get their hands on the breadth of test and measurement equipment."

"The training was like a bridge that took me from being an electrical engineering student to a T&M marketing engineer," says Gau Jianhua, marketing engineer in HP's Beijing office. Adds Sun Tao, sales engineer from the same office. "The whole experience gave me confidence; now when I talk to customers about systems, I have firsthand experience, not just information memorized from data sheets."

By the end of the second week, the students had completed all of the classroom and lab training, and plans were



Sales engineers and technicians from China Hewlett-Packard completed 120 hours in test and measurement fundamentals—and even spent extra hours in the lab.

in the works for a return session.

Based on the success of the CHP experience, Bob says Test and Measurement has shown the ability to take the course to other Intercon countries.

"The on-site course and product fair gave us the opportunity to demonstrate HP's commitment to technical training in the People's Republic of China," Don says. "When a field engineer walks into a customer facility, the customer knows that the HP person has the knowledge to recommend the measurement solution which will provide the data the customer needs."

LETTER FROM JOHN YOUNG

President John Young reviews the Board of Directors' recent Asia-Pacific trip.

SHARON HALL



For John Young, leading an international company of 83,000 employees means spending hundreds of hours each year flying from site to site.

In May, the Board of Directors took the opportunity to visit Hewlett-Packard operations in the Asia-Pacific area to see firsthand how we're doing in that part of the world.

Believe me, it was an enlightening and encouraging trip for us.

I think there's little question that the Asia-Pacific area is on the cutting edge of competition in the world today. That's in part due to the new mobility of technology, which is increasingly available across the developing world.

Additionally, those developing countries have targeted electronics as an industry they want to nurture, and are rapidly building the technological infrastructures to become world-class manufacturers.

Those factors, coupled with significantly lower costs for both direct labor and professional staff, add up to a very low-cost production base. Yet, products from the Asia-Pacific area have extremely high quality and are widely accepted in world markets.

The board visited this region five years ago, but for some newer directors, it was their first look at the burgeoning Far-East region.

A couple of key issues for HP emerged from the trip:

□ First, we have substantial business opportunities in the Asia-Pacific area. Obviously, as these countries develop their own technological capabilities and manufacturing know-how, they become more likely to buy high-technology products. We need to be an important part of that development and make sure we are participating fully for the long term.

□ The second issue involves the competitive products that flow from the Asia-Pacific area to world markets. We need to factor this impact into our thinking, particularly with regard to sourcing of parts. It's important that we take advantage of manufacturing opportunities in this area for increasingly sophisticated products, while simultaneously we understand that companies located in that area have advantages and abilities to change the world marketplace itself.

There have been tremendous developments of the countries themselves and in HP's programs in those coun-

tries since the 1983 visit. In fact, this year Hewlett-Packard will record more than \$1 billion in business in the Asia-Pacific area. Clearly, our development is more than keeping pace with the area's growth.

For the directors' trip we used a starburst approach—that is, everyone started in Tokyo for a YHP review and a celebration of YHP's 25th anniversary. This included a formal dinner attended by many top executives and presidents of major Japanese companies. YHP is having an outstanding business year in 1988, and this success made the celebration even more special.

Leaving Tokyo, the directors fanned out to either Seoul, Taipei or Beijing to have a close look at ongoing HP country operations. The directors met with industry and government leaders, as well as HP employees in those three cities to get a good perspective of our business in the country and our relationship with key country leaders.

At the end of the week, the board members convened at our region sales headquarters in Hong Kong to compare notes and observations. We also heard a presentation from our region marketing center people about opportunities in other countries, such as India, and the growing ASEAN countries: Singapore, Malaysia, Thailand, Indonesia, the Philippines and Brunei.

The trip was very successful for several reasons:

□ First, it gave the directors a chance to meet the many enthusiastic and

committed HP people who work on the other side of the world. Our businesses are excellent in the area, and we are certainly in a position to capitalize on the many opportunities available to us.

□ Secondly, it confirmed that we have made the right investment in local organizations and people. We're localizing products for Asian languages, including terminals, PCs and their associated software, and special measurement configurations to solve problems such as disc testing, a technology which proliferates in that part of the world.

□ Thirdly, the nature of products sold in the Asia-Pacific area is no different than other parts of the world, because they are supporting the very sophisticated developments going into place. That means there can be no shortage on support. The new networking center, marketing support centers, response centers and the strength of YHP's organization backing up the area are all major factors that allow us to deliver advanced, high-level service and support while dealing with smaller country organizations.

□ If you add to those factors the very substantial manufacturing presence we have and the leverage available from our international procurement organization, you can see that we have a very capable and broadly based Hewlett-Packard operation. It is fully able to respond to today's challenges and build for the future.

In short, the board's trip was a good chance to learn and understand the problems and opportunities HP faces daily in the Asia-Pacific area. Perhaps more importantly, it was an opportunity to meet with and recognize the many dedicated people who are pursuing HP's interests and creating a leadership position for us in a very dynamic and developing part of the world.

Make no mistake about it: the Asia-Pacific area is an important one for HP, and we have the people and products there to achieve even greater success.

EXTRA TREASURE



HP "courts" potential customers at the Italian Open.

Advantage HP

With sponsorship of 30 major European tennis and golf events— as well as the Tour-de-France bicycle race—in 1988, HP is a definite "hit" among European sports fans.

HP is the official computer partner of the Association of Tennis Professionals (ATP) and the Women's International Tennis Association (WITA), in addition to the Professional Golf Association (PGA) in Europe.

One HP press information system for tennis provides weekly updates for European sports editors on player rankings, biographies, head-to-head comparisons, prize money

earned and tournament history.

Television information is prepared on an HP 3000 Series 37, while a communication line between the HP van and the broadcast unit enables the producer to give instructions on what text or graphics to insert live on the TV screen during the broadcast.

HP's European Sports Marketing Program reports that during the first six months of 1987, the words "Hewlett-Packard computer" appeared 364 times on one national TV channel, reaching an estimated 6 million people.

That's championship performance.

1988年。本日、東証に上場。

Tokyo takes stock in HP

Hewlett-Packard stock assumed international proportions in May when the Tokyo Stock Exchange (TSE) began listing HP. It's the first time HP has been listed on a non-U.S. exchange. The company also is traded on the New York and Pacific stock exchanges.

To be listed in Tokyo the company had to receive approval from the TSE and the Japanese Ministry of Finance. Daiwa Securities Co. Ltd. sponsored HP in conjunction with the listing.

HP's market price on the TSE is independent of the U.S. stock exchanges; prices in the two countries tend to move together with only slight differences.



STEVE CASTILLO

New diamonds are a hit with students and HP softball players.

Diamond jubilee

More than 1,000 HP men and women softball players in the San Francisco Bay Area now have access to nearby playing fields, thanks to an HP partnership with Foothill College in Los Altos Hills.

HP provided nearly \$200,000 to build a multi-use sports facility which includes three softball dia-

monds and a soccer field. Foothill students use the fields during the day and HP's 56-team softball league takes over from 5 p.m. to 8 p.m. week nights from mid-April through mid-September for the next 15 years.

Foothill and HP participants dedicated the new fields in May with a brief ceremony, followed by a barbecue and exhibition game in which "everybody won."



Tim, Ashley and Mike's contributions are on the record.

Saying thanks up front

In his newest book, *Design with Microcontrollers*, Prof. John B. Peatman of the Georgia Institute of Technology thanks five HP people for their support.

Tim Settle arranged HP's donation of more than \$400,000 of equipment to the digital lab. Application engineers Mike Stipick and Ashley Miller defined and installed five HP 64000 microprocessor development systems and an HP 9000 running HP-UX with 16 terminals.

Two Coloradoans also

came in for thanks: Tom Saponas, R&D manager for the Electronic Instruments Group, and Bill Pherigo, Colorado Springs Division digital design engineer.

John Peatman knows a good deal firsthand about HP. The summer of 1971 he worked for HP in Colorado Springs "to see good designers on the job." He's since spent several summers with HP.

"HP has been good to us," John says. "I tell my students that the last time I tried to give blood, it was refused—there were HP logos on my corpuscles."



What's up down under?

Visitors to the U.S. Pavilion at World Expo '88 in Brisbane, Australia, are learning about U.S. sports and tourism by using HP equipment.

More than 2 million people visited Expo within the first month after its April 30 opening. The six-month exposition with the theme "Leisure in the Age of Technology" falls in the same

year as Australia's bicentennial celebration.

In the U.S. "Sport and its Science" Pavilion, visitors can use one of four HP Vectra ES/12 personal computers to display a variety of activities, including hot-air ballooning over New England, white-water rafting in the Pacific Northwest, or water sports in Florida. The information is then printed, using one of four HP RuggedWriter Printers. The rapid, reliable printers are churning out an estimated 2,400 sheets a day.

HP loaned the systems for the pavilion, plus another 10 Vectras for pavilion and Expo administration use.

Extra MEASURE

BOTTOM LINE

Hewlett-Packard Company reported a 24 percent increase in net revenue and a 25 percent increase in net earnings for the second quarter of its 1988 fiscal year, ending April 30.

Net revenue totaled \$2.496 billion, compared with \$2.017 billion for the corresponding quarter of FY87. Revenue from U.S. sales and service was \$1.163 billion, up 17 percent.

Net earnings were \$202 million or 82 cents per share on approximately 248 million shares of common stock outstanding; comparable year-ago numbers were \$162 million or 63 cents per share on 258 million shares outstanding.

Orders of \$2.487 billion for the quarters compared with \$2.077 billion in the second quarter of FY87, with U.S. orders up 11 percent and international up 29 percent.

For the first half, net revenue was \$4.688 billion, up 25 percent over the first half of 1987. Net earnings were \$381 million (\$1.53 per share), up 37 percent from \$278 (\$1.08 per share) from the year-ago period.

NEW HATS

In the Information Architecture Group, **Alain Couder** has become general manager of CCE Architecture.

The Information Networks Group (part of the newly formed Networked Systems Group) has

renamed one of two divisions created in a split of its Information Networks Division (IND) in March. The Technical Systems Division will now use the old IND name. (No change in the new Business Networks Division.) **Andre Meyer** becomes Grenoble Networks Division GM, and **Ed Muns** moves to IND GM... **Mike Forster** to operations manager of the Guadalajara Computer Operation... **Jack Parks** to operations manager, Puerto Rico Operation. **John Weidert** replaces **Dennis McGinn** as operations manager of the Advanced Manufacturing Systems Operation, with McGinn becoming fulltime operations manager of the Corporate Networks Operation... **Bruce Greenan** to operations manager of the Far East Distribution Center.

INITIATIVES IN ITALY

The Information Networks Group will start a research facility in Milan, Italy, to develop computer-network technologies based on the Open Systems Interconnect (OSI) standard.

In a separate move, HP will acquire a 35 percent equity in Network Control Systems S.p.A. (NECSY), a subsidiary of STET, Italy's state-owned telecommunications company. The Microwave and Communications Group plans to sell and support worldwide such NECSY products as telecom test systems.



A fiber-optic network inside the sculpture at the Burlington, Massachusetts, sales office creates changing patterns.

Smart art

It may only look like a large block of stone outside the Burlington, Massachusetts, sales office, but this monolith has a brain.

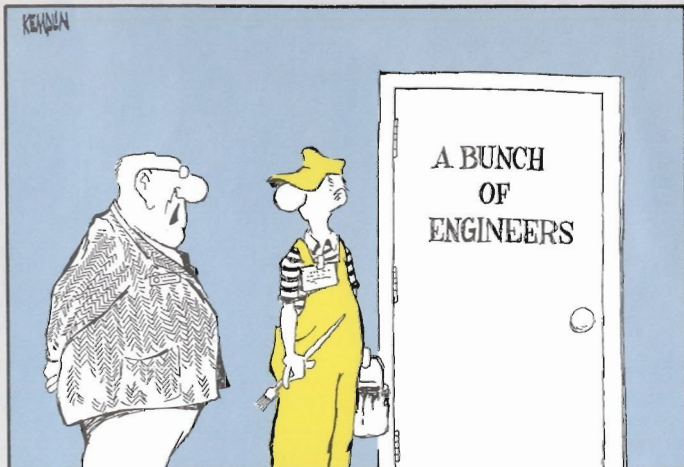
The 15-foot-high, 3,000-pound sculpture of stainless steel and concrete contains a fiber-optic network which creates a continually changing pattern of colored light.

"The configurations are always shifting, changing shape and color over several days before the cycle repeats," explains Chuck Lundeen, branch business manager. "It's been fun to watch the reaction of our

customers and the employees. High technology is second nature to us, but everyone has been awed by the sculpture."

A 100-foot-long, cast-paper sculpture dominates the Burlington main lobby. Titled "Aerial," the artwork is a polymerized, cast-paper representation of the natural and man-made elements surrounding nearby state Route 128, as viewed from above.

Chuck Lundeen says the response to both works of art has been overwhelmingly positive, both from employees and the community.



A simple L-A-B would have been better.

GETTING TOGETHER

Hewlett-Packard and Northern Telecom Inc., have formed a strategic business alliance to provide corporate networking systems built on an open network architecture platform. Headquarters will be HP's Corporate Networks Operation in Santa Clara, California.

HP is one of seven leading computer companies forming the Open Software Foundation to develop and provide a completely open software environment using X/OPEN™ and POSIX specs. (See page 12.)

HP will purchase and remarket under its own label (by the end of 1988) a custom version of Zenith Data Systems' new SupersPort 286 Model 20 portable computer.

NEW PRODUCTS

A new breakthrough technology to support HP's OSI program has been introduced by the Networked Systems Group: HP OSI Express, which supports the seven layers of the OSI model. Five of seven new OSI-based products are based on the Manufacturing Automation Protocol (MAP) 3.0 standard for connecting computers and devices from many vendors on the factory floor.

The Lake Stevens Instrument Division has a fast new Fourier transform-based analyzer, the HP 35660A. It lets test engineers take advantage of a powerful new test-

automation language: HP Instrument BASIC.... A new digitizing oscilloscope, HP 54501A, from the Colorado Springs Division marks HP's entry into the market for low-priced (U.S. list \$3,465) general-purpose benchtop oscilloscopes.



HP 54501A

Santa Clara Division's new HP 4284A precision LCR meter is believed to be the first with a 20 Hz to 1 MHz frequency range.... From the Optoelectronics Division comes a first in surface-mount-technology (SMT) components: Schottky diodes in a SOT-143 package that allows multiple diodes in an SMT component, thus reducing part count on the printed-circuit board.

Other newcomers are two new scientific calculators from the Corvallis Division: the HP-22S with algebraic-entry and the HP-32S with reverse Polish notation... San Diego Division's two new low-priced, high-resolution electrostatic plotters which expand its line of CAD/CAE output devices... A new component monitoring system from the Critically Ill Patient Monitoring Business Unit that makes it easy to update parts of the system.

PARTING SHOT

ANTHONY ANJO

Peggy gives it her best shot

For HP's Peggy Pollock, making the 1988 women's Olympic team in the shot put is a numbers game.

Peggy, who works in inventory stock control at the Corporate Parts Center in Mountain View, California, is ranked No. 5 among U.S. women shot putters. That's prestigious, she admits, but only the top three women will make the team during the July Olympic Trials.

"Some people have totally written me off because I had a back injury last year," Peggy explains. "But the top four women haven't written me off. They know they will have to throw their best to beat me."

Peggy, who is 28 years old and 5 feet 10 inches tall, has been a shot putter since high school. Tossing a four-kilogram (8-pound, 13-ounce) steel ball isn't exactly a glamour sport—especially for women. It takes speed, strength and an iron will to throw the sphere nearly 70 feet, which is Olympic-caliber distance.

"My best throw is 58 feet 4 inches last year, but I feel I'm capable of throwing 63 feet," Peggy says. "I'm not as big as a lot of women shot



HP Olympic hopeful Peggy Pollock, who's ranked No. 5 in the U.S., puts her all into the shot.

putters, but I get `mega-Adrenalin' flowing when I compete."

Peggy says she knows female shot putters who take steroids to increase their size and strength.

"The Russian women, particularly, are huge—like


6-foot-2," she explains. "I feel like a sprinter next to them. I decided a long time ago not to take steroids or other drugs. You can only do what you can live with, and I figure I'd rather feel good about myself naturally."

This is her last chance to

compete in the Olympics before she retires to pursue art and other interests.

"I believe I have at least a 33 percent chance of making the Olympic team, and I'm going to give it my best shot," says Peggy, laughing at her own pun.

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

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