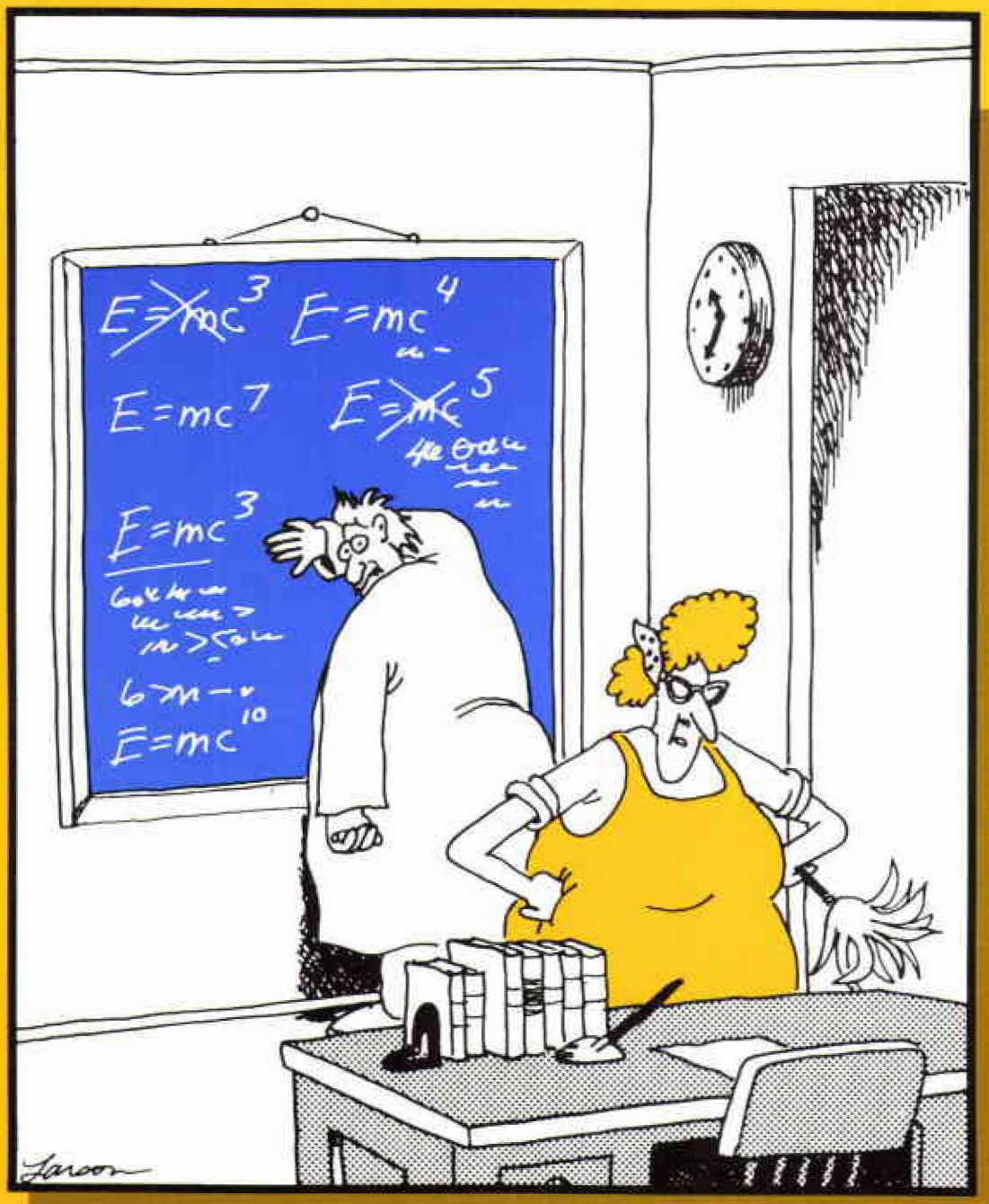
MEASURE

For the people of Hewlett-Packard

March-April 1986



"*Now* that desk looks better. Everything's squared away, yessir, squaaaaaaared away."

Where do ideas come from?

Answers to a Spectrum of questions

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Ideas, inventions and sweet inspiration. . . how do creative minds work? Cover cartoon from *The Far Side* by Gary Larson © 1985, Universal Press Syndicate. Reprinted with permission, all rights reserved.

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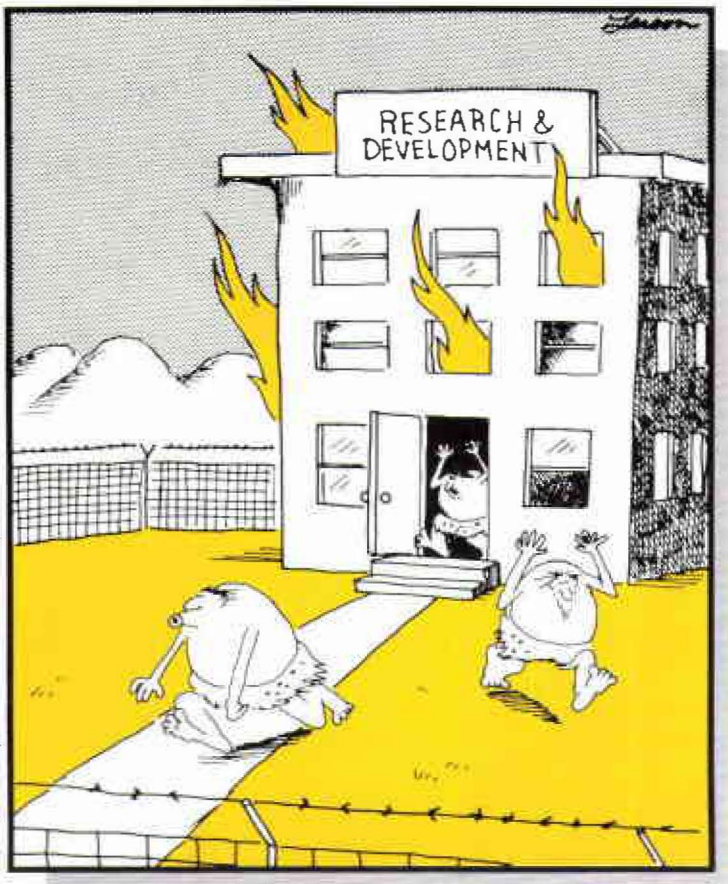


Fire is invented.

When you're hot, you're hot

"The Far Side" cartoonist Gary Larson's got it in a big way.

That creative spark, an ability to take everyday things and twist them a new way. He sees things the rest of us don't. He makes frivolous, wild connections and sneaks up on our assumptions. He lets us laugh at ourselves. All are important in the creative process.

Being creative often means unlearning what we have learned in order to see things a new way, says Roger von Oech, founder of Creative Think in Menlo Park, California. It means overcoming routines and being stimulated to ask new questions. Roger likes the way Nobel Prize winning physician Albert Szent-Györgyi describes it: "Discovery consists of looking at the same thing as everyone else and thinking something different."

In the high-tech industry, creativity is our bread and butter and innovation is a question of survival. That means the environment has to be right to foster creativity, says company co-founder Bill Hewlett.

"People have to work in an encouraging environment. Management has to be willing to give creative people a chance to prove themselves, to work on and then follow through with their own set of problems."

HP has been that kind of place from the beginning, he says, and the company is fortunate to have had and still have so many bright stars in its ranks. The form has changed, says Bill, as the company has grown, but it still offers a creative environment.

"We used to be a company of small entrepreneurs . . . a division could go out and develop something, market it, regardless of what was happening in the company. It did not have to work with something else. Now, it not only has to be a great idea, it has to be an idea that fits into the long-term corporate strategy," Bill says.

That can lead to frustration, but it's also a challenge to greater creativity says Al Bagley, engineering manager in the Components, Measurement and Design Systems sector, singled out by many as one of the company's most creative thinkers. To explain, he describes one of his favorite posters. It's a drawing of Shakespeare, forsooth, lamenting, "How can you expect me to be creative when I have to worry about iambic pentameter *and* rhyming couplets?!"

So what is this elusive thing called creativity? While the right brain-left brain debate rages in scholarly circles and medical science attempts to unlock the mysteries of the brain and the human psyche, the rest of us can appreciate and marvel at the creative souls in our midst.

There are thousands of highly creative people working in this company in all types of jobs. What sets them apart, says Bill Hewlett, is the fresh approach they bring to problems.

"Creative people don't work an eight-hour day," he says. "They're always thinking about their work. They carry it around with them all the time, whatever it is they're working on, wrangling it around in their minds, looking at all the possibilities."

And for each, it's different, he says. "Creativity isn't just a technical thing, though we tend to think of it that way."

Every creative person, he says, goes through the mental gyrations differently. "When Mozart created a beautiful piece of music, they say it was all in his head before he put a note on paper. He could see the entire structure, hear how it would sound. For Beethoven, the process was grueling, painful. He would write it all down, work it around, rework it, tamper with it. But the end result was just as beautiful."

How does an idea emerge from the productive chaos of instruments, piles of paper, books, tools and charts that are an inventor's life? How does a valuable product result from that far-away look in an engineer's eyes? Is the old light bulb theory true? Do inventors have an illuminating flash of inspiration?

Santa Clara Division engineer David Chu says the flash really does happen sometimes. "At the beginning, it's just a bug in your ear, an inspiration. You can't tell if it's a great idea, but you know if it's promising or not."

David, with a dozen patents under his belt and his doctorate from Stanford University, has worked for HP on and off the last 20 years. He took time off to go back to school and spent two years teaching at a small college in West Africa as a lay missionary for the Episcopal Church.

One of his biggest contributions

to the company has been advancing time and frequency-measurement technology with innovative designs that removed several fundamental technical problems.

At any given time, David says, his head buzzes with many unsolved problems, all waiting patiently for a solution. "Then the bug comes along and says, 'This may be the answer to that problem.'"

It starts with being exposed to a problem and getting emotionally committed to it. "You need to take ownership of it," he says, laughing while acknowledging this sounds like a very California kind of thing to say.

When he comes up with a solution, he tries to verbalize it to someone, and says it usually gets shot down at this point. "People say, 'That's a dumb solution.' You have to find out why it's dumb. Occasionally, you realize your approach is a total dead end. But more often than not, you keep working at it until the voices of those critics are finally silent."

Occasionally, says David, the well runs dry. It isn't that he runs out of problems to solve; he just sometimes finds himself disinterested in any of them. "That's the only time I worry," he says. "When I stop caring, I wonder, am I getting too old? Am I over the hill? Burned out?" He says it doesn't last long usually and he can almost always cut it short by reading. "I read about famous people, technical things, how other people solved other problems—it always gets me going again."

Gary Gordon, project manager in HP Labs, says he, too, has to trust that a flash of inspiration will come. In the inventive process, he says, his subconscious tries to make sense of a problem once he leaves it alone for awhile. "The good stuff, the fun stuff comes after that," he says. "Suddenly you have a flash of inspiration when you least expect it."

Gary has been with HP since 1966 and is credited with HP's entry into instrumentation for digital design. Now in HP Labs, he is leading his third project related to analytical chemistry. His products have appeared on seven magazine covers and he has 16 patents. His creative juices don't stop when he leaves work. He likes to design and

"More often than not, you keep working at a problem until the voices of those critics are finally silent."
—David Chu

build contemporary furniture and he designed and built a house.

He's an engineer of the Beethoven school of creativity. For him, there is anguish involved. Solving a complex problem can be a messy thing, he says, until you get to the "Ah-ha!" "After that, the process is much easier, once you know what you're looking for."

He believes there are structured approaches to inventiveness. One is to take an unfulfilled need and create a technology to solve it. The second is to take a technology and look for a new use for it. He adds a powerful trick is to borrow ideas from another field. "A good example of that is the early trouble HP ran into measuring distance with lasers. Al Bagley recognized the problem as the same confronted by radio receiver designers 50 years earlier and he co-invented HP's heterodyne laser interferometer. I think that's at the root of some of the finest inventions."

A creative environment, he says, is one that is secure, non-threatening and where failure isn't punished. "There has to be an arena of important problems to solve and the engineers need the freedom to approach the problems. A manager needs to create this environment and then step back and leave people alone."

Gary has a new distinction on his employment record now. Gary, Bob Joy and Mike Lee received U.S. Patent No. 4,496,886 in 1985, for an idea that was used in the Waldbronn Division's HP 1090 liquid chromatograph. The three were the first to be honored for receiving a patent in the new HP Inventor Recognition program.

For this particular patent, the original idea was Mike Lee's, while Gary and Bob assisted by prototyping it, painting in the missing parts and helping turn a good idea into a useful product.

There's been increased interest throughout the industry in getting patents on inventions, says Steve Fox, associate director of the Intellectual Property section of the Legal Department. Steve says inventor recognition is part of a program designed to educate employees about the importance of patents, to demystify the patent process and to honor the inventors.

In 1985, says Steve, about 100 inventors were named in some 60 patents the company received, and each of those inventors received a plaque featuring a full-size reproduction of the first page of the patent. This year, HP is shooting for more.

"A fundamental problem here," says Steve, "is that often our inventors don't realize they are creating something of

"Now, it not only has to be a great idea; it has to be an idea that fits into the long-term corporate strategy."
—Bill Hewlett

value or something patentable. They just think it's good engineering and it's what they do every day. There are a lot of quiet inventors out there who have fantastic ideas."

Steve doesn't think our inventors give themselves enough credit. "Our engineers go through a lot of hard work and number-crunching. They put pretty stiff demands on themselves and their ideas. It doesn't always feel creative, but they need to give themselves the benefit of the doubt. You don't have to be an Einstein to be creative."

While patents in the company will go mostly to our engineers, they aren't the only ones with "patently" good ideas. Creativity comes in all sizes: the secretary who thinks of a way to save on copying costs; the artist whose gift enhances understanding; the sales rep who generates creative answers to customers' problems; the production line worker who thinks up a way to speed up the process.

Ed van Bronkhorst, retired chief financial officer, suggests Les Ezrati, tax counsel, as one of the company's creative thinkers. "His job is to find solutions to large problems, find new ways of structuring things. It takes a different kind of cat to come up with these things," Ed says.

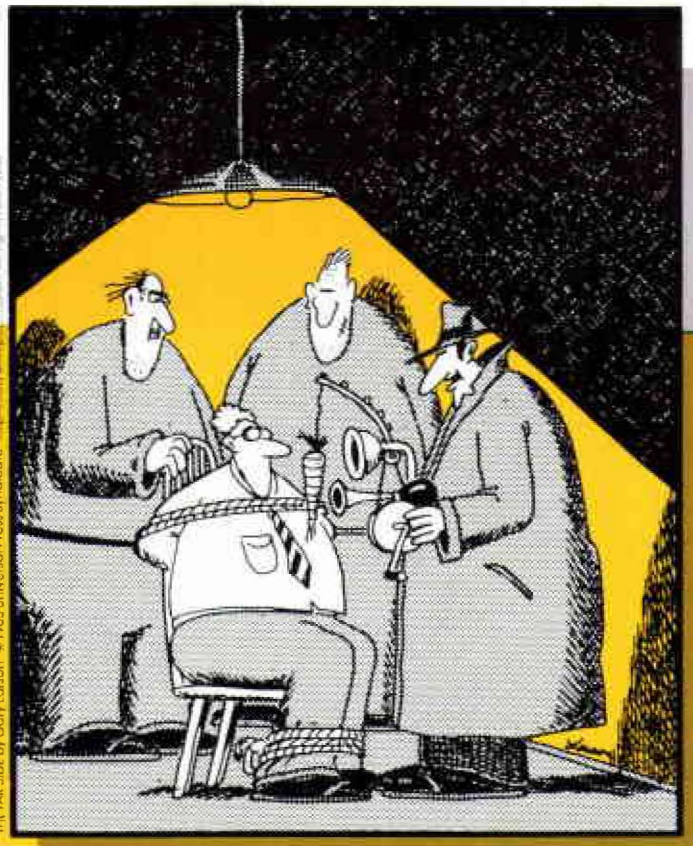
At this time of year, any American can identify with Les when he talks about what motivates him to do his job creatively. He kneads his hands together and smiles broadly as he says, "I really get a charge out of saving money on taxes."

As tax counsel, Les' charge is to plan and structure ways to minimize HP's total tax bill.

He says he nearly always gets his planning ideas from outside—through constant reading, contact with other tax professionals outside the company, membership in national and local tax organizations and seminars.

"You have to get one generic idea and then apply it to HP in a specific way. You can tell right away which ones apply to HP and if they're good or bad ideas. My biggest hurdle is selling them. That can take six to nine months if it changes the way people do their jobs."

Les talks casually about small changes in tax reporting that save the company millions of dollars each year



"Well, we've tried every device and you still won't talk—every device, that is, except this little baby we simply call 'Mr. Thingy.'"

What'll they think of next?

What if lettuce thinners were listed in the HP catalog between laser transducer systems and LCR meters?

On the way to the audio oscillator market that launched Hewlett-Packard's success story, Bill and Dave experimented with a few other inventions, according to retired HP historian George Climo.

They considered striking it lucky with a bowling alley foul line indicator, the schematic for which is tucked away in the company archives.

Someone proposed they build a weight-reduction machine with electrodes that would flex the muscles through electrical impulses. People could exercise without getting out of bed. They decided the idea wasn't weighty enough.

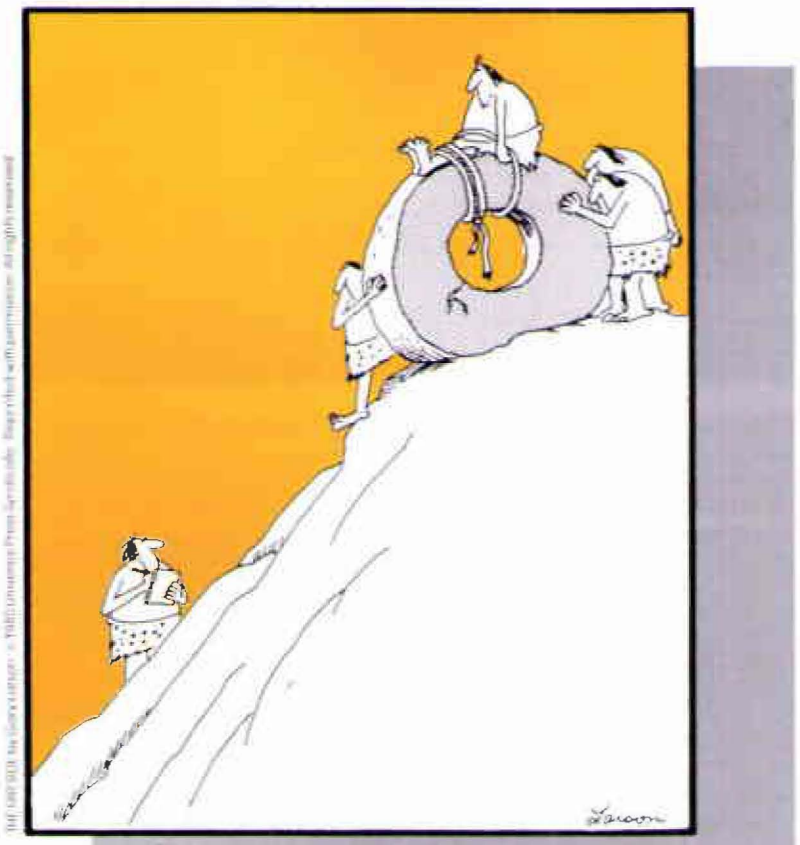
Bill built a diathermy device for a doctor in Palo Alto, a medical treatment using high-frequency energy to produce heat beneath the skin.

They also built a motor drive for Lick Observatory at Mount Hamilton that rotated the telescope as the earth revolved, keeping it focused on whatever heavenly body was under study.

The lettuce thinner project came after the company started. A device with a row of blades was attached to the underside of a tractor. As it went down the rows of lettuce, a light source tripped the blade mechanism to scoop out lettuce plants at appropriate intervals. Later, it was investigated for use in the sugar beet industry as well, but George says HP sold the rights to another company.

The Loveland Division worked for a while on a cattle anesthetizer for use in the meat-packing industry or by veterinarians. The shocking truth is it was to be used to stun the animals electrically.

A calculated risk that is a more recent memory is the HP-01, a calculator wristwatch produced for a couple of years before being discontinued. A collector's item among employees, the ingenious design probably didn't sell, George says, because it was difficult to work the small keyboard and see the display. . .an idea for which the time hadn't come.



Early experiments in transportation

and a change in terms of payment that deferred $100 million in taxes this year.

"The creativity comes in little increments," he says. "There's no particular moment when the light goes on. It's more a matter of seeing fits and needs and making the connections."

For Santa Rosa's Hugo Vifian, R&D section manager in the Network Measurements Division's lab, the creative process begins when he's hunting for a new solution to an unsolved problem.

Born and educated in Switzerland, with a Ph.D. and several patents to his credit, Hugo has been associated with the creation of a host of network analyzers in his 16 years with HP.

"The creative process is very hard to describe," he says. "But the results of the process are very easy to see. They show up as elegantly simple solutions to the problem."

A relaxed, positive, supportive environment fosters creativity, says Hugo, though an occasional push can act as a catalyst. Also, an inventor needs a challenge or a goal—something to focus on.

He believes the company's most creative people have a broad background. "Creative people are not specialists. They are well-balanced, good observers, have broad interests and have the ability to draw analogies from other fields or parts of their lives."

Hugo says he's one of those people that often gets his best ideas in the shower. And when a problem is really getting to a crucial point, he likes to find a quiet coffee shop in which to work on it.

When solutions won't come or when he doesn't feel creative, his first step is sleep—lots of it. Next, he'll try playing a fun, intellectual game, go fishing, or do some soul-searching to discover what the obstacles may be.

"Being creative is not a job. It's impossible to be creative all the time when you've got a hundred things to do. I try to set time aside for my creative work and know mornings are my best hours. You don't need a 'think-tank' environment. We all have to compromise; there is regular stuff to be done. But you can allocate time for creativity."

Al Bagley says one of the most essential ingredients in creativity is a willingness to think like a customer, and imagine what he or she wants. "That is especially easy if the customer is an engineer. It's the next-bench syndrome. You develop things you'd like to have."

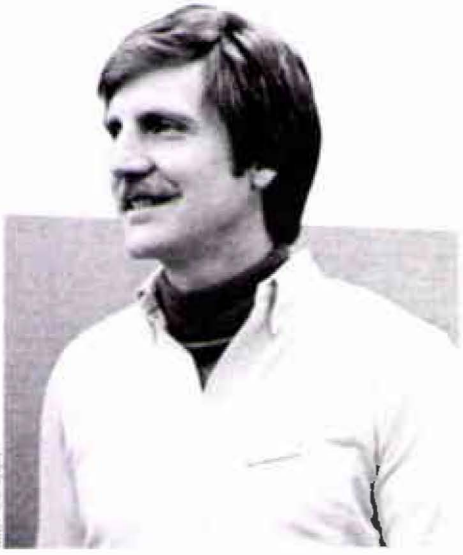
Al has been with the company since 1949 when he enrolled at Stanford on the condition he would have the HP fellowship.

After a short time with the company, he developed the high-speed frequency counter, which was one of the company's most successful, longest-selling products. Because it was so accurate and so easy to use, the technique revolutionized frequency measurement.

Al says HP engineers are taught that there is an elegance in most great ideas and inventions. "Complexity is not what you're after. The simplest, most direct way to the solution gives you that elegance."

Part of HP's secret to success, Al says, has been the encouragement to discuss ideas, to wander around and let others know what you were working on. "That creates a supportive environment. It makes people try. There's no loss of face if you suggest dumb ideas that would never work. And in this company, it exposes you to some great minds."

This idea lives on. Last year, members of the Integrated Systems Center at HP Labs started a "New Ideas Session," held the last Friday of each month. With beer, pretzels and great minds abounding, inventors present their ideas to colleagues in an informal setting. Each participant gets 20 min-



JUDY CONDON

"You have a flash of inspiration when you least expect it. The good stuff, the fun stuff comes after that."
—Gary Gordon

utes to describe his or her idea and to answer questions.

ISC director Chuck Tyler says audiences vote on the most thought-provoking ideas and the winner receives a small prize. But most important is the sharing of creative ideas.

John Doyle, executive vice president of the Information Systems and Networks sector, says creative thinking is reading, making associations, thinking, experimenting, keeping up-to-date and being willing to try over. "You must have a keen and imaginative understanding of the real users' real needs."

All this leads to an obvious question: Can creativity be inspired in the corporate environment?

Roger von Oech, labeled the "*enfant terrible* of the creativity crusade" by *Business Week* magazine, says it can. In fact, it's how he makes his living. He has provided creative-thinking seminars for many Fortune 500 companies, HP included. He has also written two fun-packed, parable- and cartoon-laden books about creativity: *A Whack on the Side of the Head* and his new *A Kick in the Seat of the Pants*.

Roger says he offers several suggestions to companies who want to inspire creativity among the troops. Some are:

- Add creativity requirements to job descriptions and expect it. "By putting it in everyone's performance plan, you'll get greater creativity. Ask for two major innovative ideas a year, for example."
- Make the environment fun to inspire innovation. Allow people to throw some discontinuity into affairs.
- Have people attend staff meetings in other departments and find out what's going on out there.
- Reward creativity with beer, pizza, compliments or plaques. But reward it.

Roger says half the world's problems would be solved if we could all learn to challenge assumptions more. "We become prisoners of familiarity. It's the same drive to work, the same parts in the same board, the same people telling us what to do. It's the way our nervous system functions best. Our mind's great success story is routine thinking, leaving us creative about five percent of the time."

To keep creativity alive and well, he encourages people to:

- look for answers outside their narrow scope.
- see fits between ideas and needs.
- takes risks, make mistakes.
- have fun, know how to play with ideas, learn to make fun of yourself.
- challenge assumptions.
- break the rules.
- once you have the right answer, look for the second and third right answers. **M**

—*Jean Burke*

Are you creative?

Exercise: Listed below are four questions. If you've done any of the activities listed in each question, then check the box next to it.

1. Have you ever: ☐

- participated in a scavenger hunt?
- done market research for a new product?
- gone to a conference outside your field?
- asked someone the same question three different ways to find out what they really thought?

2. Have you ever: ☐

- cooked a gourmet dinner?
- asked "what if" on a spreadsheet?
- danced at midnight under a full moon?
- written a poem or made up a joke?

3. Have you ever: ☐

- gone comparison-shopping?
- graded an essay exam?
- made an investment?
- voted in an election?

4. Have you ever: ☐

- made a sales call?
- loved and lost?
- negotiated a contract?
- actively supported a political cause?

How did you do? In his new book, *A Kick in the Seat of the Pants*, Silicon Valley's Roger von Oech says creative people must play four roles in the process: explorer, artist, judge and warrior. The hallmark of creative people, he says, is mental flexibility. He recommends:

When you're searching for new information, be an Explorer. Look off the beaten path, and you're more likely to find something original. Poke around in unknown areas, pay attention to unusual patterns and seek out a variety of information.

When you're turning your resources into new ideas, be an Artist. Rearrange things. Look at them backwards. Turn them upside down. Ask "what if?" Break the rules. Make your own rules.

When you're evaluating the merits of an idea, be a Judge. Be critical of your idea. Look for drawbacks. Consider the timing. Listen to your gut.

When you're carrying your idea into action, be a Warrior. Commit yourself and be strong. You may have to overcome excuses, idea killers, temporary setbacks and other obstacles. But you have courage to do what's necessary to make your ideas a reality.

(Excerpts reprinted with permission from *A Kick in the Seat of the Pants* by Roger von Oech.)

Extra ORDINARY PEOPLE

HP retirees Keith and Ken Hankins take being identical twins seriously. Theirs is a special story of brotherly love.

That's Keith Hankins on the left and Ken Hankins at right, at ease in front of their identical cars in the driveway of one of their side-by-side identical houses.

They look alike. They talk alike. They even seem to think alike. They grew up together on a farm in the Black Hills of South Dakota. The only way fellow high school baseball players could tell them apart was by their throwing arms. Keith is right-handed and Ken is a lefty.

They spent three years in the service at the same time; they learned electronics at the same technical school; and they started putting their knowledge to work together in the engineering department of the same radio station in Rapid City, South Dakota. That's where the Hankins brothers, who are identical twins, got their first introduction to Hewlett-Packard.

"Some of the equipment we used there was made by HP," said Keith.

Then in August of 1963 they packed their household belongings into a farm truck and moved to Loveland, Colorado. After about nine months, they both started working for HP but under different circumstances than they were used to.

"Before HP," said Ken, "we had always worked together. The HP guidelines said we couldn't work in the same department."

Though they would have preferred working together, being apart didn't seem to hinder their careers.

They both started repairing instruments as technicians on the production line when the electronics industry was undergoing a major transition. "Everything was still made with tubes," said Keith, "and they were just starting to build solid-state instruments."

This spurred a need for more training, says Ken. "We took all the courses we could on transistors. They hadn't taught us anything about transistors at the technical institute."

After leaving the production line, Ken worked in electronic maintenance for 18 months, spent about 11 years designing electronic tooling and has been working in the standards lab for almost eight years.

Keith left production after about four years and has been designing power transformers and coordinating with their users since then.

Their careers have taken them in somewhat different directions at HP, but during their off-duty hours, they are still very much alike.

When Ken and Keith are together, if one crosses his arms, the other does the same. If one is lost for a word, the other finds it for him.

They both have the same warm and friendly personality. They are next-door neighbors and live in homes with identical floor plans. In each driveway is a car of the same year and model with the same options. They enjoy the same hobbies: ham radios and minor remodeling projects on the cabin they own jointly. Both are married and have families of daughters (Ken has three and Keith has two).

The two retired from HP in January so they can do more of those things they enjoy. "We're mostly going to work around the house," said Ken. Keith agreed and added that they intend to spend a lot of time working their amateur radio stations.

Both have mixed feelings about retirement. "I'm going to miss the paychecks," said Keith, "but I'm not going to miss getting up and going to work so early every morning."

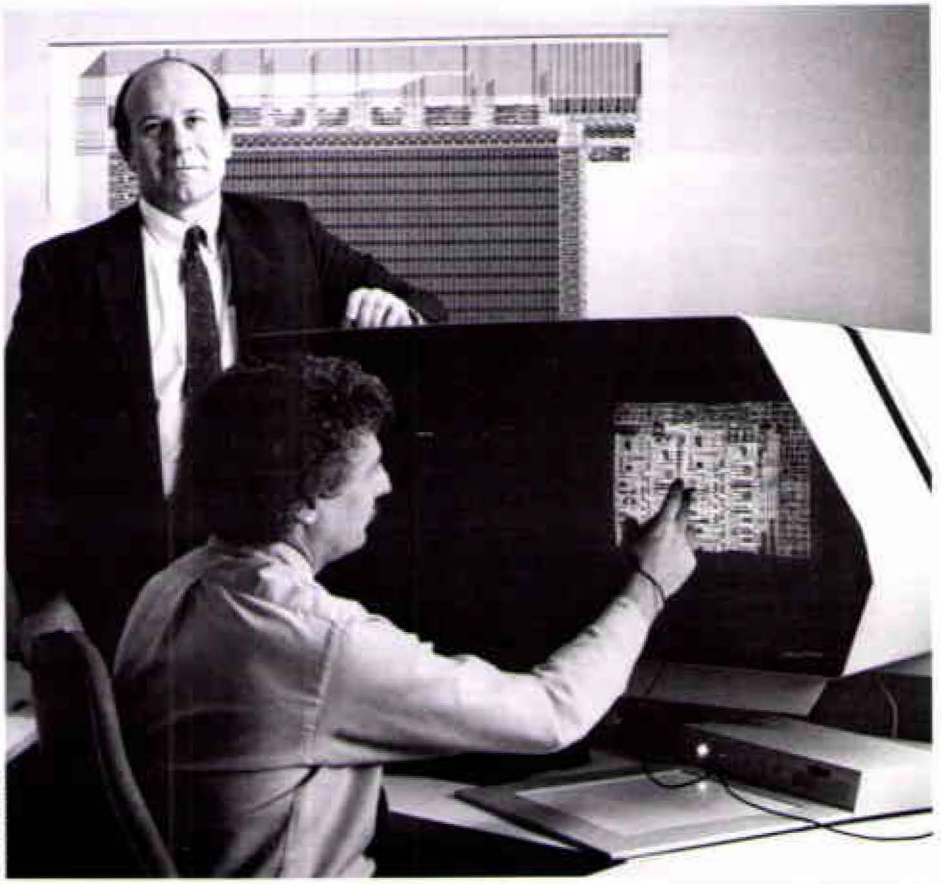
"I'm going to be able to catch up on some chores that have needed doing for a long time," said Ken, "but I'm going to miss the people. I've really liked this company. It's been good to us." **M**

—Kevin Nicks

Kevin Nicks is a production worker at the Loveland Instrument Division.

Rethinking the computer

The Spectrum family of computers marks a new direction for Hewlett-Packard and will provide a new foundation for products for years to come.



Joel Birnbaum, vice president and director of HP Labs (left) and Frank Carrubba, director of HP Labs' Measurement Systems Center, with circuitry from the new Spectrum computers.

It was January 1984.

Paul Ely, then HP executive vice president, stood at the lectern in the main auditorium of the corporate offices in Palo Alto. He had come to address a large gathering of securities analysts, a semiannual HP tradition.

This time, he had come with a special purpose. It was Paul's duty to tell them the company would not introduce its high-powered 32-bit business computer, code-named "Vision," early in 1984, as HP had hinted earlier.

Instead, he would tell them, HP had redirected the Vision program in favor of a new, even-more-promising breakthrough in development at HP Labs.

"This new approach will give us a breakthrough in price/performance compared with our competition," Paul said. "It will also provide us with compatibility across all of HP's computer families and will do an even better job of fulfilling our primary goal of providing an easy upgrade for HP 3000 customers."

With that brief statement, the first public acknowledgment of what would come to be known as the Spectrum program was made. Since that date, the press, the financial community, market researchers, customers and employees alike have been thirsting for more information about the program.

Is this new program really better than Vision would have been? Won't you be late to market with your promised advanced system? How will it stack up against the competition? How will you maintain the loyalty of existing customers waiting for the new machine?

The questions have been endless. But for competitive reasons, the answers could not be made public.

"It's new, it's based on a fundamentally different approach to computer design (RISC), and it's the most extensive development effort we've ever attempted." [RISC is an acronym for reduced-instruction-set computer, a design concept that espouses simplicity in the design and execution of a computer's basic set of instructions.] That's about all HP management could say without giving valuable information to its major competitors.

For some skeptics, that answer simply wasn't enough.

"RISC is risky business," punned more than one industry trade journal—"a trumped-up laboratory curiosity" that lacks the completeness needed to compete successfully in the competitive computer marketplace.

Some headline writers went further.

"HP Bets the Store on Spectrum," said the *New York Times*.

"Hewlett-Packard Takes Big Gamble,"

echoed the respected *International Herald-Tribune*.

It was enough to test the faith of even the most ardent HP supporters. Is HP really betting the store on a radical and unproven new design? Isn't Spectrum just another computer project?

On February 25, at a press conference beamed by satellite to dozens of HP sales offices around the world, top management finally had its chance to answer questions that had accumulated over the last two years.

Showing the world

On that day, the company unveiled three new HP 3000 business computers (two based on HP's innovative new design) and announced plans to introduce two additional machines for technical applications in mid-1986.

As part of the event, HP President John Young teamed up with Joel Birnbaum, vice president and director of HP Labs, to provide new insights into the RISC-based architecture—called HP Precision Architecture—that had caused all the far-flung debate.

It was an occasion both John and Joel had been anticipating for some time—and for good reason.

The Spectrum program, as Paul hinted two years earlier, is *not* just another computer project. It's the most comprehensive R&D effort the company has ever undertaken, and will provide a new foundation for HP computer products for many years to come.

But it's far from the risky lab experiment some had made it out to be.

Says Joel, "It has been fun but a bit frustrating to read all the headlines and not be able to respond. The critics have been right all along: RISC alone is not enough to make a computer system commercially successful.

"But we knew that, too. Unfortunately, we couldn't tell anybody what we were doing about it."

Until now.

"Our new architecture starts with the principles of RISC, but goes well beyond," John says. "In fact, fully two-thirds of the engineering achievement behind our new systems is tied to features that don't involve RISC. It's the combination of innovative features that provides the advantages of our systems."

Indeed, as predicted earlier, HP's new computers set new standards in price/performance, reliability, ease of migration from earlier HP systems, low cost of ownership and other customer benefits. These are benefits that simply would not have been available or sustainable under the Vision program, using the older architecture.

"And," adds Joel, "the potential of the new architecture hasn't even been tapped. There's a lot more to come."

So how did HP achieve so much with a "risky" architecture?

"In many ways, this new design is the lowest risk path we could have chosen," Joel says. "Every feature of the design was analyzed and measured in a way that has never been done before."

No previous project has undergone such extensive modeling, testing and verification, he says, making it in many ways one of the safest exercises in the annals of computing.

"The machines from the Spectrum program are perhaps the best instrumented machines ever built," he says. "In fact, that may be the real achievement here. We've taken the guesswork out of computer design."

Satisfying customers

HP management feels the new systems will be commercially successful for another important reason: knowledge of existing HP customers.

"Customers tell us they want computer systems that represent good value for the money, that protect their current investments in software and hardware, and that offer a well-defined growth path as their computing needs increase," says Ed Hayes, marketing manager for the Information Technology Group.

"These were design objectives for the Spectrum program team from the beginning, and they've been met very impressively. We think that's exciting news not only for existing customers but for future prospects as well."

Will the Spectrum program enable HP to expand its customer base significantly?

"Our first priority is to satisfy our existing customers," Ed says. "But we think the new foundation we've established will be recognized in the industry as a breakthrough. It's a leverage point that will help us establish a successful partnership with new accounts while building even greater loyalty among current customers."

Internally, the Spectrum program offers HP many advantages that would not have resulted under the Vision program. It gives the company a single basic design for all of its major systems, providing excellent manufacturing economies of scale and freeing software engineers from extensive reprogramming every time a new system comes into being. It will also enable HP hardware engineers to develop new systems much more rapidly—and cost effectively—than ever before.

Furthermore, HP's new architecture is technology independent—meaning it can take advantage of future advances in basic computer technology. And it's highly scalable, working well in everything from desktop machines to systems with mainframe-class power, and across all major business and technical markets the company currently serves.

"HP appears to have designed a technically competitive product and a solid foundation for a full family of computer systems," wrote Rich Edwards, an analyst with the San Francisco firm of Robertson, Colman & Stephens, in a January report. Earlier, Edwards had been a skeptic, but changed his views after learning more about the program.

Looking back, the two years since announcing the redirection of the Vision program have been filled with anticipation and anxiety. But despite the doomsday headlines, the company never questioned the longer-term benefits of making the change.

"We could have taken a quicker path to the marketplace," says John. "We could have settled for something less ambitious. Instead, we chose to rethink our basic assumptions about computing and to listen carefully to what our customers want.

"We're excited about this new direction. We think it should ensure our growing presence in this industry for years to come." **M** —*Roy Verley*

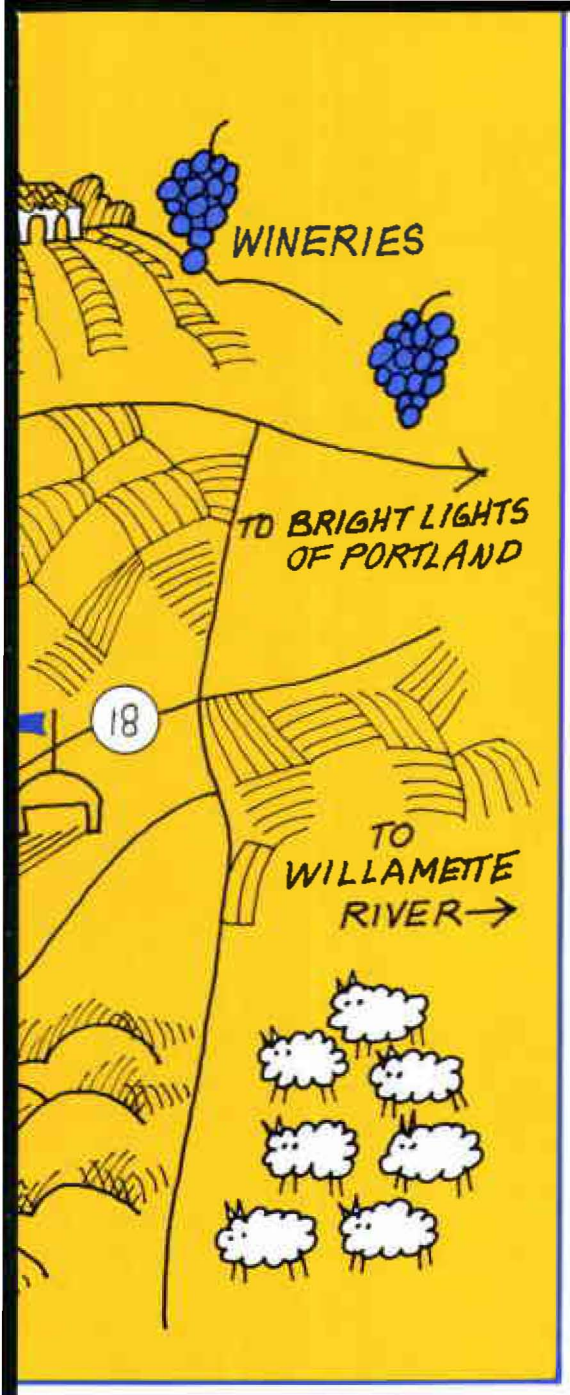
Roy Verley is manager of Corporate Press Relations in Palo Alto.

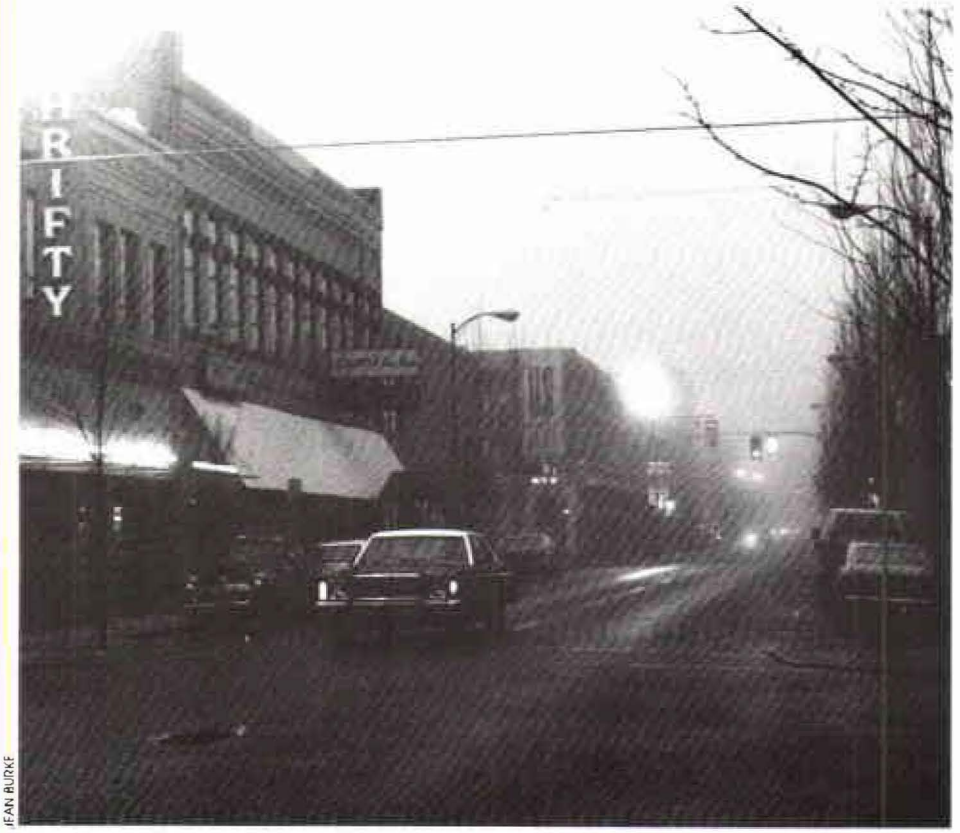
McMinnville: Good medicine for HP

Employees there like to say the McMinnville Division is the kind of place you can get your arms around.

Despite a recent burst of growth, the Oregon division is still the tight-knit, homey, mountain-air-and-wild-blackberry-country kind of place it's always been.

It's the kind of place where employees can walk home for lunch because they live only half a mile away. And where they take advantage of flexible hours, not to miss rush-hour traffic, but to get home early to milk the Holsteins. In rush hour traffic, it might take you about 10 minutes to get all the way across town. And on the way, you'd pass small-town enterprises such as Doug's McMinni-mart and Ruby's Rocket Cafe. But McMinnville is also large enough to





JEAN BURKE

Rush-hour traffic at 8:03 a.m. on Third Street, downtown McMinnville's main drag. The Thrifty Drug Store is your best bet for a cup of coffee and local and national political debates.

have recently attracted its own K-Mart, McDonald's and Burger King.

Folks at HP complain now that the McMinnville Division is growing so fast that it's hard to keep up with all the new names and that *is* a new development. The employee count has grown 25 percent in the last nine months to a current total of 229.

The McMinnville Division began in 1973 when Hewlett-Packard bought Field Emission Corporation (FEMCOR), an outgrowth of the Linfield Research Institute sponsored by McMinnville's Linfield College. Many of FEMCOR'S original employees are still employees in the division.

The division is part of the Medical Group and business-wise, it's a bright spot in the slowed-down electronics industry. McMinnville's shipments are up 106 percent since last year.

General Manager Ken Patton says the main products include defibrillators (those electronic paddles you've seen used on hospital TV shows to restart a stopped heart); ambulatory electrocardiogram (ECG) analyzers (portable machines worn by heart patients to record and analyze the heart's activities); cardiographs and ECG management systems (equipment that plots the heart's activity and provides computer-aided interpretations of those jagged lines) and Faxitron cabinet X-ray systems (with industrial, medical and scientific applications).

Also, from one of HP's smallest divisions comes the company's largest and heaviest product—a high-speed flash X-ray system that weighs 8,000 pounds, is 84 inches tall and 166 inches long. Because of an extremely short exposure time that enables it to stop the motion of high-speed events, it's often used to study ballistics and explosives.

When FEMCOR became HP in 1973, medical X-ray systems were the major product. In 1977, says R&D Manager Francis Charbonnier (originally a FEMCOR employee), the Waltham Division transferred its defibrillator line to McMinnville, after deciding that the medical X-ray systems being built weren't going to be a successful market. Defibrillators, he says, became half of McMinnville's sales by '78.

In most of McMinnville's markets, HP is a strong number two, says Dave Shultheis, marketing manager. "This affects our attitudes and our approach," he says. "We need to be much more innovative and aggressive. Growth in this business happens mainly by taking market share from competitors."

He says the division uses market research to determine the value of specific features on each product. In the medical field, there is no "next-bench" syndrome, so it is necessary to query equipment users extensively about what features they need to do their jobs better. Once identified, new features are designed into the product with an eye on reducing production costs. This is accomplished with advanced manufacturing techniques such as just-in-time material control, surface-mount technology and flexible automation.

"Our goal is to increase our market share and maintain HP profit levels," Dave says. "Through careful market surveys, for example, we learned that customers' key hot buttons in the defibrillator market were standardized operation, size, weight, price and reliability. So we engineered our newest model and entered the market with a

McMinnville

Glassblower Howard Benson prepares tubes for cabinet X-ray systems. And McMinnville retirees always receive a special glass goblet handmade by Howard or by Irene Noffsinger.

product that was 20 percent smaller, 20 percent lighter, 20 percent less expensive and guaranteed five times longer than the competition's."

The strategy increased sales 100 percent from last year's level and forced the whole market to match HP's price and warranty, Dave says.

Part of the reason McMinnville could conduct such a campaign is constant manufacturing improvements. Mary Beth Goodell, manufacturing section manager, said the defibrillator line moved into the old FEMCOR building that was renovated last November. Revamping the building, she says, allowed them to design a system in which every step of the process is in one line, from circuit board production to inspection and packaging.

A big change has been the introduction of two robots on the defibrillator line. One robot dissects parts from wheels and tapes and sends them to the second robot, which inserts the parts into circuit boards, moving the board as necessary. When working at 100 percent capacity, Mary Beth says, the robots will load 50 boards in two hours, an increase of 20 times what could be produced before.

The division is offering a new campaign now to boost cardiograph sales, similar to the defibrillator promotion used successfully in the past.

Bob de Silvio, product manager for cardiographs, says the new campaign, the Silver Anniversary Special, celebrates HP's 25 years in cardiography. (Cardiography moved to McMinnville from the Andover Division in Massachusetts in May 1985.) Bob says the campaign is aimed at both those customers who already own HP cardiography equipment and those who do not. Buyers can trade in their old equipment—whether it's HP equipment or not—for a $750 to $2,000 discount, paying a total price that is 20 to 25 percent less than competitive prices. This gives current owners a chance to upgrade their systems to the top of the line at a great savings.

The McMinnville Division's newest product—an ambulatory ECG analysis system—is in the price book now after several years of research and development, says Matt Glei, product manager.

Matt says the new device uses artificial-intelligence techniques based on an algorithm developed at HP Labs over the past 12 years. The McMinnville Division has been working on the product the past three years.

Orland Upton and Art Burkhalter are two manufacturing engineers who have spent long hours at the drawing table. They've been tinkering with parts and ideas in designing a robot to speed the new ambulatory ECG system production line. These two personify the special feeling at this small division.

Taking a break from his mechanical design work with the robot, Orland says, "McMinnville is like what HP was like back in the beginning. It's small and there's that feeling that everybody is pulling together for one common goal. When the general manager walks by, he waves at you and stops to talk. That's neat."

Art, too, is enthusiastic about his work. "This robot is my world," he unnecessarily says while explaining and demonstrating its potential in simplifying the manufacturing process. "But no one here is so specialized that there's not a feeling of teamwork and a sharing of technology and ideas."

The robots will help manufacture the ambulatory ECG patient analyzers which will be used on heart patients when doctors want a long-term, in-depth reading of a patient's heart activity. Rather than a routine cardiography test in a doctor's office, the patient wears the analyzer as he or she goes about a normal, daily routine. While commuting, working, eating, playing or arguing, the device constantly reads and analyzes the patient's heart patterns. After 24 hours, the patient takes the analyzer to the doctor's office where, with an HP Touchscreen II personal computer and a laser printer, the doctor can immediately print the results and diagnose the problems.

The advantages of the system are faster analysis, its lightweight analyzer and the low cost. HP's system will be used mostly by cardiologists and internists, Matt Glei says.

The new product went on the HP price list February 1, and was introduced to the market at the American College of Cardiology Convention in Atlanta, Georgia, in March.

A New Enterprise Startup Team (NEST), was created to introduce the ambulatory ECG analysis system to customers this year. The sales representatives that make up the NEST team have been extensively trained concerning the product and its applications. The team's small size, Matt says, will enhance communication between the team, the product users and the McMinnville staff. And after the impor-

Just the facts, ma'am

LOCATION: Situated between Corvallis and Portland, Oregon, McMinnville lies in the booming Willamette Valley on U.S. Highway 99W. Locals are quick to point out they're an hour from the dramatic Oregon coast, two hours from excellent winter skiing and an hour away from the big city lights of Portland.

ALTITUDE: 157 feet above sea level.

POPULATION: 16,051 and growing. Predicted to break 31,500 by the year 2000 if growth pattern of past nine years continues.

CLIMATE: Wet, with 42 inches average annual rainfall. Temperate, with a mean average temperature of 70 degrees from June to September, and 40 degrees from November to February. Growing season is 174 days.

MAJOR EMPLOYERS: Linfield College (400 employees); McMinnville School District #40 (350 employees); Cascade Steel Rolling Mills (350 employees); Skyline Corporation (300 employees) and Hewlett-Packard (229 employees).

RECREATION: Bayou Golf Club; Michelbook Country Club; four tennis courts; two bowling alleys; two movie theaters; high school spectator events; Linfield College sports, theater and speakers; Gallery Players of Oregon community theater; five city parks; a brand new Community Center with classes, indoor track, racquetball, gym; a new Olympic-size swimming and diving facility; Turkey-Rama, an annual event held the first weekend after the Fourth of July in honor of the Thanksgiving bird; tours and taste testings at local wineries; outdoor sports of every kind—fishing, hunting, hiking, river rafting and backpacking.

tant first year for the new product, the sales team will grow, he says.

Matt has been with HP two years and says he's enjoyed being part of the process in developing this product. He'd never been in Oregon before his HP interview two years ago, but now is a convert. "When I saw the town, the people here at work and their dedication, I knew this was what I wanted. Each person here—from the production line workers to the controller—is very important to what we do. It's really a team. And it's always great to come back to McMinnville after a trip. The cost of living is reasonable, people have a different value system, and heavy traffic is two cars in front of you."

Industrial X-ray cabinet units are also manufactured in McMinnville—all the way down to the glass vacuum tubes that are part of the units. They are carefully created by glassblowers Howard Benson and Irene Noffsinger.

The X-ray production line is supported by the machine shop where some of the metal cabinets are fabricated, and where prototypes for products are built.

Gregg Robinson, an HP machinist, is a lieutenant in the McMinnville volunteer fire force and a member of the division's emergency response team. He says, "HP is very supportive of my volunteer work and also supports the town by donating defibrillators and equipment for emergency use. As far as I'm concerned, there is no other place in town to work. This is it."

San Diego native Sal Eramo has been a machinist with the McMinnville Division for 12 years. But he also has a hobby that has almost turned into a second full-time job.

Each of his days begins at 5 a.m., milking 30 "black and white and dumb" Holsteins with his wife's help. He milks them again at 7 p.m., seven days a week.

"I'm a city guy," says Sal. "I moved out here, bought some land, the kids got involved in 4-H and raised some animals. The mamas had babies. I invested in some buildings for them—and now I'm in the cow business."

And he enjoys his work at HP. "This is a neat group. I'm one of those lucky people that can say I don't dread coming to work in the morning."

Growing pains the last couple of years have changed the family feeling at McMinnville in mostly logistical ways, says Marilee Craven, senior personnel representative. It's difficult to have the traditional Christmas potluck because there's no place big enough to hold the group. There's even been an move toward wearing name tags at a site where it's never been necessary.

And it makes communication harder, Marilee says, because it's difficult (but not yet impossible) to fit everyone into the cafeteria for coffee talks. "But coffee talks and communication are more important than ever. Since the defibrillator line moved to the old FEMCOR building, people want to know what's going on next door."

But none of the changes have profoundly affected the unity and fierce loyalty these employees have for their division and their corner of the world.

Cliff Jensen, safety and health coordinator, after 35 years in the community, is another strong HP and McMinnville advocate. "When people around here ask you where you work and you tell them 'HP,' they're envious. The quality of life is perfect." **M**

—Jean Burke

LETTER FROM JOHN YOUNG

HP's president discusses highlights of the 1986 management meeting.

© GED DIJKSTRA & ZN. B.V.

Dean F.J. Schilff (left) thanks John for donating HP PORTABLE computers to the Nijenrode Business School in Amstelveen, while His Royal Highness Prince Claus of the Netherlands (right) looks on.

A sense of purpose and a feeling of urgency—these were the results of the 1986 management meeting held January 19-21, in Silverado, California. More than 170 HP managers from around the world met to hear our business plans and discuss some of the operational issues that are key to HP's success. It was one of the most interactive, productive, and informative sessions we've had in years. I'd like to report on its highlights.

We devoted the first day to business plans. Over the past year, the Executive Committee has spent a lot of time—including six retreat days—discussing a number of strategy issues. We determined we had five goals: 1) to make our corporate-level strategy more visible, 2) to review how well our organizational relationships matched our business directions, 3) to clarify implementation responsibilities, 4) to put in place some performance measurements that accurately track our activities and 5) to devise an ongoing strategy management process.

We've made a great deal of progress toward those goals, and the overview I presented provided general managers with some needed clarification of business directions and responsibilities. We'll be continuing to review many issues during the coming year, since strategy is an ongoing process—not a product.

The Executive Committee isn't the only group of HP management that's been reviewing business directions. In parallel with our review of corporate

strategy. HP's sectors have been going through their own planning process. As a result, we were able to hear plans for HP's key business segments—integrated information management, design systems, manufacturing systems, test and measurement, medical and analytical. Directions for peripherals, networks and components were also discussed, as well as future activities in marketing and international.

There's a real value in making these strategic directions visible. We need a shared sense of purpose and teamwork to carry them out. So in the months ahead we will be communicating our business plans to a broad HP audience. It will be a bit of a challenge. We're hoping to get the right amount of information—with the appropriate degree of detail—to everyone.

> ***"We can't let our pride blind us to the real—and unmet—challenges we face."***

While I'd characterize our first day as one of common purpose, I'd describe the second as a day of operational urgency. Dean Morton started it off with a review of our 1985 performance. The results were really quite reasonable, considering the environment in which we were operating. We faced just about every possible challenge you could think of—implementing a new organization, starting and staffing some new programs, essentially flat orders, a wildly fluctuating dollar and a need for the nine-day fortnight. So we have much to be proud of.

But we can't let our pride blind us to the real—and unmet—challenges we face. Dean Morton reminded us of the stakes involved in this way: "Performance is an essential ingredient of the HP way." We want to have the kind of growing, vibrant company that provides job opportunities, interesting challenges and stable employment.

Quite simply, our profit margin in 1985 was substantially eroded. We have to aim for better in 1986. We can't let our historical organizational forms or culture get in the way. Nothing will destroy the HP way more than poor performance. We have to pick the essential ingredients of our past and add new responses to the competitive environment in which we operate.

With Dean's remarks as preamble, the second day of our management meeting was spent in small groups discussing goals, issues, and action plans in four critical operational areas. Let me just quickly share some of the key messages that came from these discussions.

First, our internal manufacturing processes—for example, integrated circuits (IC) and printed circuit boards (PCB)—have to be competitive in quality, price, turnaround time and other key criteria with outside suppliers. Too often, they have not been. That's been the reason behind the consolidation of our IC and PCB facilities—that is, to permit more focused management of these processes. The same motivation may also lead us to buy rather than make an increasing portion of our subassemblies, etc. We need to continually reassess our ability to make a cost-competitive, technological contribution.

Second, we have to change our idea of what engineering innovation means.

> ***"How well we perform will determine what kind of company we're going to be as we enter the next decade."***

It's not just designing the latest, most innovative products. Engineering innovation includes building on and improving existing products. It also means improving manufacturing processes—a contribution we haven't recognized or rewarded enough in the past. We have to design for manufacturability—and that means new attitudes and new organizational relationships between R&D and manufacturing.

Third, we have to be a truly international company with a global strategy. Increasing our international presence provides us three advantages—lower costs (labor, materials and taxes), increased market access in the face of growing protectionism, and decreased vulnerability to currency fluctuations. Being a truly international company means managing design, manufacturing and marketing in a global arena.

Fourth, we need to increase the productivity of our field sales force. The average price of many HP products is decreasing. That means the sales hours invested also have to fall. We need to better use and balance the resources we have. In order to make those decisions, the field needs a better understanding of our business plans (and what selling is required to achieve them), and sales force automation technologies. The use of alternative (and less expensive) means of selling must also be explored.

That's about all I have space to say about our annual management meeting. You'll be hearing a lot more about all of these topics in the months ahead. In the meantime, let me leave you with this thought. I think 1986 will be a pivotal year for HP—both in major product programs such as Spectrum and computer-aided engineering, as well as all the internal programs I mentioned earlier. How well we perform will determine what kind of company we're going to be as we enter the next decade. We know what we need to do. This is the year we must focus on excellence of execution. We have a shared vision. We feel a sense of urgency. Let's get on with it all.

YOUR TURN

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

Where's this bus go?

In Sam Lightman's article, "Personal computers: Past, present, future," in your November-December 1985 *Measure*, he says: "HP is definitely on the blue bus now. One important question remains. Who's driving?"

The question is not who's driving. IBM is definitely driving the bus. The question is: Does HP know the route the bus is taking and where it is headed?

It's our job to make sure we do and react accordingly.

BOB HARTZ
Cleveland

Article creates panda-monium

Your "Parting Shot" story in the November-December *Measure* mentioned teddy bears twice in describing the R. Dakin Company's 3000 inventory management systems. However, the photo looked suspiciously like a panda. I wonder if the *Measure* staff is too young to remember how a "teddy bear" looks. Regretfully, I'm not.

SY CORENSON
Palo Alto

I read with great interest the article about Dakin. The impression in the article is that an HP 3000 Series 42 manages the inventory and manufacturing for the company. But what do you suppose the computer could do without the HP product which most likely sold the business, namely Material Management/3000?

RICHARD HAWLEY
Palo Alto

I remember the R. Dakin sale from a competitor's point of view as I was a consultant for Sperry and we came in second to HP. The sale was definitely software-driven. The contest was between UNIS 80 and HP's software—Material Management/3000.

Typically, when a manufacturer looks for better systems to run the business, the decision is driven by software. Hardware is usually an afterthought, or only a price consideration.

STEVE KENNEDY
Palo Alto

Equality for all

As a five-year veteran of Hewlett-Packard Company, I have often bragged to my friends about equality at HP. I feel it is exceptional for a company to treat salaried and hourly employees equally and make no distinction for benefits or other privileges.

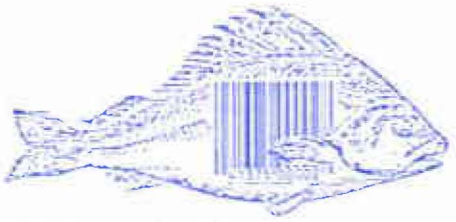
I am, therefore, quite distressed with the recent decision regarding pay reductions. The different plans for exempt and non-exempt employees do not seem to reflect the company's philosophy of equality.

CAROL MOSES
Stanford Park

Beyond the ordinary

Just a quick note to say I really enjoyed the January-February issue of *Measure*. I enjoyed the diversity of articles and was particularly pleased to see the coverage of Geoff Ainscow and his not-so-traditional community activities. It was nice to see recognition given to someone who is doing other than United Way, Junior Achievement, Chamber of Commerce, Little League kinds of stuff. Since I'm also active in Beyond War, it was extra nice.

KIM WISCKOL
San Diego



Fish and chips

In the "Extra*Measure*" section of the last magazine you point out that it would be difficult to read a bar-coded fish unless that fish could swim through a slot.

What if the fish were a barracoda?

RON KEIL
Corvallis

For the people, of the people

It was interesting to note the two negative responses printed about your use of my warrior photo (September-October) were from Vancouver. I just wanted to say that I received positive messages from Italy, Germany, Geneva, Guadalajara, and various locations in the U.S. including the Corporate offices and here in Roseville. (I'll bet the model for the "What if" commercial who is shown running around in a towel has really stirred up some controversy in Vancouver!)

I am glad to see that you do not limit your material. Because of this, you have a strong reader interest. I would like to see more of the out-of-the-ordinary hobbies our employees enjoy away from work.

As it says on your magazine cover, "*Measure*—for the people of Hewlett-Packard."

Variety is the spice of life. Thanks for spicing up mine.

REBECCA GIDDING
Roseville

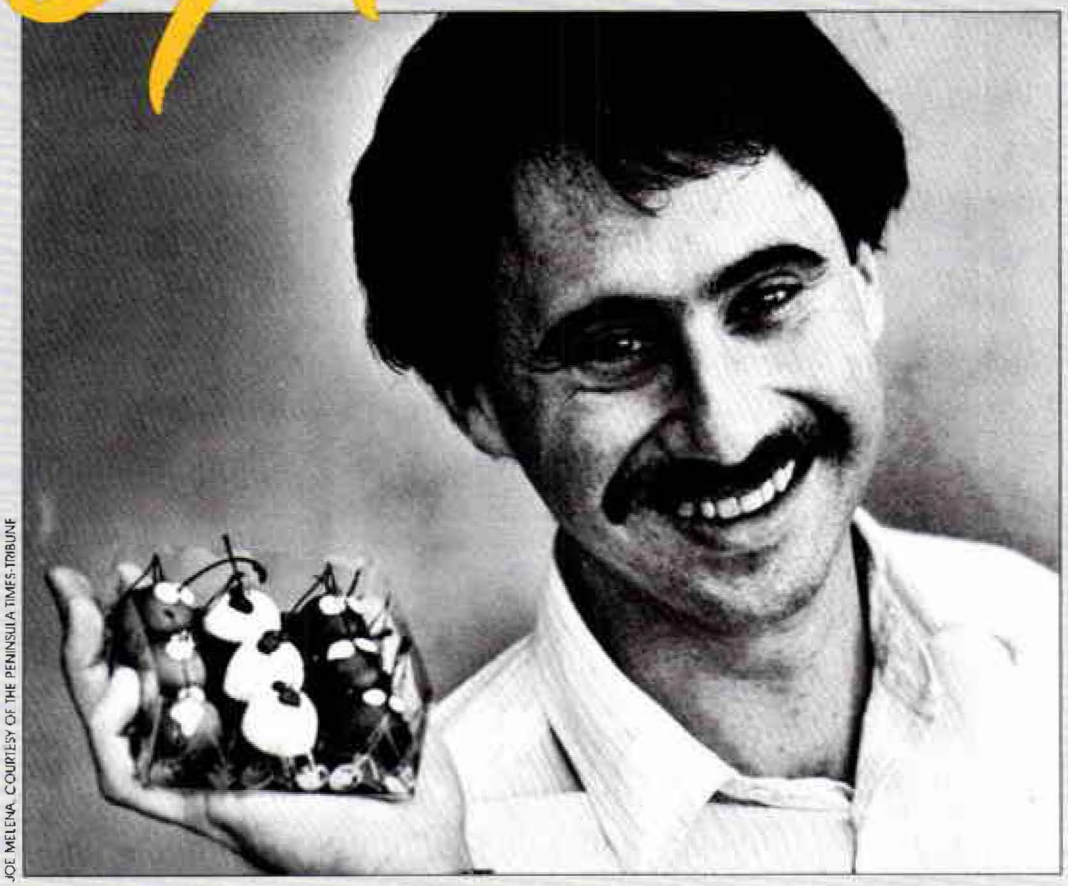
Write on!

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

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

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

MEASURE Extra



JOE MELENA, COURTESY OF THE PENINSULA TIMES-TRIBUNE

His life isn't the pits

Howard Fish's life is a bowl of cherries—chocolate-covered, beautifully presented and sinfully delicious.

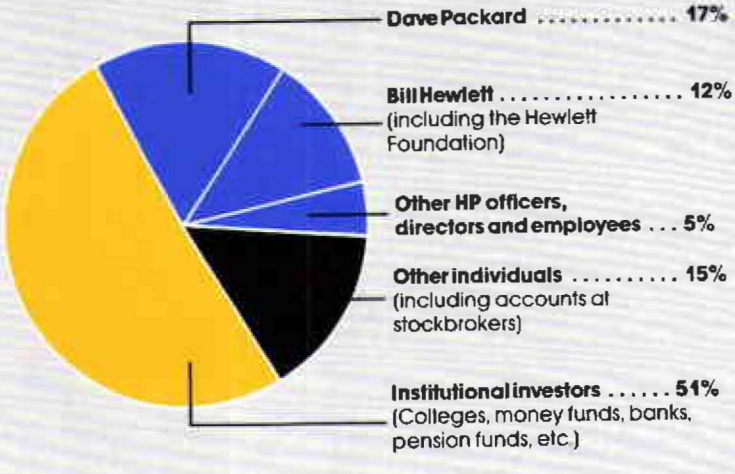
After five hours on the phone in the Direct Marketing Division's telemarketing area as a marketing specialist, the part-time HP employee becomes Howard Fish, founder of *La Bonne Cerise*. His cherry cordials have become popular the past year as he's put his marketing abilities to work and sold his bonbons to several Bay Area chocolate shops and to some large stores such as Macy's and Neiman-Marcus.

Howard says he uses the finest ingredients, including Belgian chocolate, in his cherry cordials.

He's loved to cook all his life and got started on the cherries after improving on a recipe he read in a cooking magazine.

Who owns HP?

Here's an estimate, based on company records, of how HP's 258 million shares of common stock are distributed:



GEOFF STURDY

Treating visitors royally

Carol Osborne, an assembly specialist at the Computer Peripherals Bristol Division, shows the Duke of Kent how she loads components on a printed-circuit board. The Duke's tour of the manufacturing facility and HP Labs' Bristol Research Center was part of the official opening for the 170-acre site in western England in December 1985.

Extra MEASURE

ANN WEECH BRADY

Rock of (Pleistocene) ages

Lake Stevens Instrument Division boasts HP's only pet rock—a 120-ton granite boulder that greets visitors to the company's facility in the Seattle, Washington, area. The pet rock arrived on the scene long before HP purchased the 133-acre site. The former chunk of a Canadian mountain range hitched a ride on a southbound glacier about 20,000 years ago, according to the pet rock's vet—a retired geologist who lives near the HP site.

But the rock's travels didn't end when the Pleistocene-era glaciers melted. The site's architect decided to move the boulder as part of the general landscaping plan. It took two cranes to lift the rock onto a trailer for its ride to the front of the facility. When one crane first tried to lift the heavy pet alone, the load snapped the cable. A second attempt with a larger cable simply bent the crane's boom. To make matters worse, the trailer had a flat tire en route. With any luck, Lake Stevens' pet rock won't take any more trips for a long, long time.

What's shakin' with the PORTABLE?

The HP PORTABLE computer, along with its built-in spreadsheet software, is being used by engineers at EPI-Center in Palo Alto, California, to analyze building structures to determine what a major earthquake would do to a building and its inhabitants.

The copyrighted mathematical model, called the Seismic Survival Indicator, (SSI), was co-developed by EPI-Center and Stanford University's Earthquake Engineering Center. SSI rates a building's potential damage during a quake on a scale of zero (total collapse) to 100 (no damage).

Using the PORTABLE's analysis of building safety, EPI-Center engineers can provide advice to building owners on possible structural changes that can protect lives and improve the building's survival chances. The PORTABLE has been used to inspect more than 5,000 buildings.

CHART CHANGES

The Colorado Networks Operation was elevated to full division status in February and is now the Colorado Networks Division within the Information Networks Group. . . . A new Mechanical Business Operation (MBO) headquartered at the Lake Stevens Instrument Division comprises the latter's mechanical design and test area and the Böblingen Engineering Operation.

NEW HATS

Dennis McGinn to operations manager, Advanced Manufacturing Systems Operation. . . . **Tilman Schad** to operations manager, MBO (see above). **Fritz Rombach** to operations manager, Böblingen Engineeering Operation. . . . **Alfredo Scarfone** to general manager of HP Italy, responsible for day-to-day management. . . . **Terry Cheng** to operations manager of Hewlett-Packard FPG Ltd., the joint-venture in Taiwan of HP and the Formosa Plastics Group's Nan Ya Plastics Corporation. . . . **Dick Toftness** to operations manager of the Loveland Technology Center, one of three operations that make up the Integrated Circuits Division.

WORTH NOTING

Hewlett-Packard has agreed to sell the distribution software products of the Information Resources Operation (IRO) to the Distribution Resources Company, a new firm organized by a group of IRO employees. HP will continue response-center support of existing IRO products.

HP and M/A-COM Telecommunications Division, a subsidiary of M/A-COM, Inc., have agreed to jointly sell and support private X.25 data-communications networks worldwide.

In recognition of community activities, HP's Mountain View, California, site has received the 1985 Outstanding Community Award from the chamber of commerce. The award has previously been given only to individuals.

NEW PRODUCTS

The Colorado Springs Division, a technology leader in the oscilloscope market for more than 20 years, has introduced seven high-performance digitizing oscilloscopes since October 1984. Rounding out the current line are the new HP 54201A and HP 54201D, designed to replace the company's key analog oscilloscopes (174X and 172X lines). The newcomers offer 300-MHz repetitive bandwidth and 200-megasample/second digitizing rate.

(continued on page 22)

What's an ice guy like Derek doing in a band like this?

When Derek Brink isn't calling on customers near HP's Rochester, New York, office, you can probably find him with two dozen ex-hockey players playing rock-and-roll music in a band called Nik and the Nice Guys.

The band is one of Rochester's most popular and is a fun, part-time job for a group of lawyers, accountants, other professionals (like Derek). After covering expenses, the band donates its proceeds to charity. Rochester General Hospital's cancer treatment center netted $6,000 from a recent concert.

The band has a sense of humor to match its musical talent. During its rendition of Madonna's hit "Material Girl," two band members dubbed the Audit Brothers run totals on their adding machines.

There's also a long list of "official Nik and the Nice Guys products" including the official sunglasses (Bausch and Lomb Wayfarers), the official snack food (toast on a stick), the official newspaper (*The Wall Street Journal*) and the official computer vendor (Hewlett-Packard, naturally).

COLORGRAPHICS

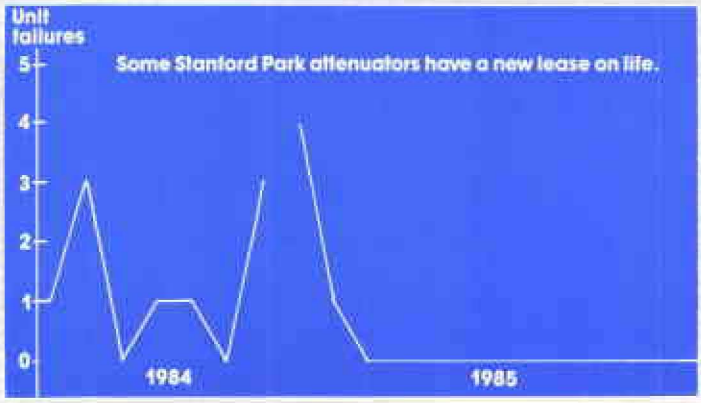
A good idea

In the recent surge of child kidnappings and widespread searches for missing children, the Dallas and Atlanta HP offices decided to do something to help protect employees' children.

HP employees and volunteers from local sheriffs' departments offered parents an opportunity to update their children's identification files. Deputy officers donated personal time to fingerprint the children. Officers provided information forms for recording height, weight and other identifying features. HP supplied black-and-white photos of each child to attach to the forms.

Videotapes were taken of each child. Officers said the tape should be kept in a secure location, such as a safe-deposit box, for use in case of a kidnapping.

Of course the parents who participated hope these forms and tapes will never have to be used, but they're a good idea for parents everywhere.



Quality one step at a time

Stanford Park Division's programmable step attenuators, which fit comfortably in the palm of a hand, are used more and more these days in automatic microwave test applications. In a mechanical assembly the instrument's sliding parts and flexible flippers get an exhausting workout.

But these days the HP 8494-7 and HP 33320-3 families of attenuators have a new lease on life.

In a year-long total quality control (TQC) program at the division, central engineering, production, quality assurance and statisticians worked together on a series of parts and assembly improvements and stepped-up training.

The public payoff took place November 1: the warranty was doubled to two years, and the life rating increased by a factor of 10—from 500,000 cycles per step to 5 million.

Some step attenuators taken at random off the line and "driven to destruction" kept going well beyond 10 million cycles.

Extra MEASURE

Local heroes in Madrid

In December 1985, HP's fire brigade in the Madrid sales office put its skills to work when an apartment building behind the HP office caught fire.

An HP employee noticed flames coming from the window of a third-floor unit and immediately triggered emergency procedures. The employee called the public fire brigade and paged HP's volunteer fire brigade.

Within five minutes, hoses were connected and ladders were set up against the building. The HP heroes had the fire under control within 10 minutes. Only a few hot spots remained when the Madrid fire brigade arrived. The fire's only casualty was a dog.

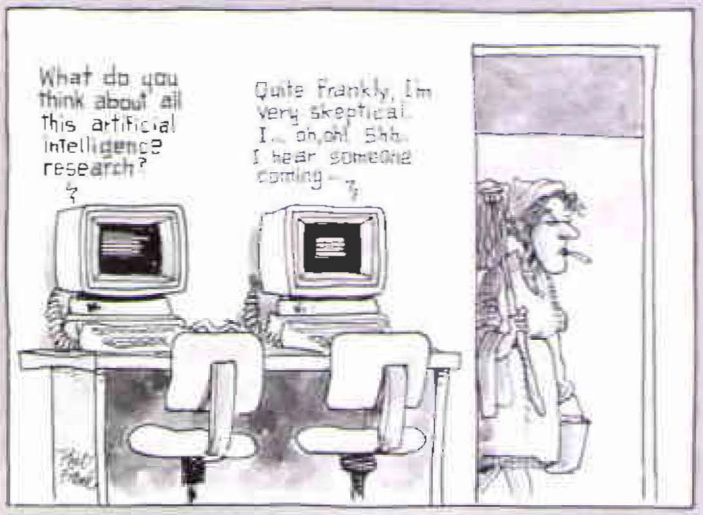
SCOTT ANDERSON

This is no pleasure cruise

HP is playing a big role at race headquarters in Portsmouth, England, for the Whitbread Round the World Yacht Race which started last September and should wind up by early May.

HP Touchscreen personal computers, HP 7585 and HP 7550 plotters and HP LaserJet printers are all playing a part as the yachts sail the course.

HP programmer Julie Nock of the London sales office says, "The whole idea behind the work that we did for the race was to provide them with the facilities to monitor the yachts' course by plotting race progress, producing statistical reports, and having the ability to send this information around the world with minimum involvement from HP staff."



NEW PRODUCTS

Other new instruments expected to make mighty waves:

- From the Stanford Park Division, the HP 8770S arbitrary-waveform-synthesizer system that is super-fast (producing 125 million waveform-sample points per second). Teamed up with an HP 9000 Model 216 or 236, it lets a user create any waveform desired by mathematically describing the segments or constructing them from various menu elements. The test engineer can thus test a system with real-life signals from DC to 50 MHz that incorporate noise, jitter, distortion and interference.
- Colorado Telecom Division's new HP 4971S LAN protocol analyzer is one of the first instruments on the market for troubleshooting and maintaining local area networks. (A LAN ties together data communication within a building or small geographic area.) It has a powerful range of testing capabilities to help customers maintain IEEE 802.3 or Ethernet LANs. Placed anywhere on a LAN, the HP 4971S gives an easily understood analysis of the problem. It also has remote capabilities.
- Extremely rugged, the HP 97503B is the newest member of the Greeley Division's disc-drive line for original equipment manufacturers (OEMs). It is a 20-Mb 3½-inch Winchester hard-disc subsystem that can tolerate a factory floor's harsh conditions of high temperatures and vibration. The new drive will also be used in HP products—it's already integrated into the Vectra personal computer.

HP8753A network analyzer

- The Network Measurements Division's new HP 8753A vector network analyzer offers substantially more performance than any other analyzer on the market—and at $23,500 (U.S.) is priced well below the previous best. (It will even have the competitive edge in European countries and Japan when priced in the local currency.) The 300-kHz to 3-GHz measurement system is so precise that its dynamic accuracy is ±0.05 dB over a 50-dB measurement range. A built-in synthesized-signal source adds to its performance.

The Boise Division has announced a new dot-matrix printer, the HP 2567B, believed to be the industry's only 1,200 line-per-minute dot-matrix line printer. (It can also print 1,600 lines per minute if fewer dots are used to create a character.) A second new dot-matrix printer, the HP 2564B, replaces the HP 2565A—offering the same speed at a little less than half the price.

A helping hound

The Stanford Park Division recently helped the Royal Air Force in Swanton Morley, England, out of a real jam by quickly providing 185,000 feet of RS422 HP cable needed to install an HP 3000 Series 68 computer system with 81 terminals and HP Touchscreen computers. Regular vendors had been unable to supply the cable, and the HP Böblingen sales team was worried it might lose the job to a competitor.

But no sooner than the cable was sent from Stanford Park, another doggone problem presented itself. The cable had to be routed through underground ducts, linking remote buildings at the airfield. Trained dogs, along with a professional dog handler, were hired from the actors' union to do the duty.

But these canines were dogmatic. Despite cajoling and coaxing, they refused to enter the tunnel.

In the end, the local rat catcher's terrier saved the day, understanding the show must go on. He carried the cables through the entire ductwork. Good boy!

Gas pains

HP recently received a letter of thanks from an Alaskan family that was traveling through California last fall. Their car ran out of gas near the Page Mill Road exit on Highway 280, close to HP's facilities in Palo Alto.

The family walked until they encountered HP security officer Arthur Sweeting near an HP building. He took the family to a gas station and then back to their car. The letter stated, in part, "I can better understand the fine reputation of HP now that I have met one of your people. Thank you again—we won't forget."

The PORTABLE takes a cannonball run

One HP PORTABLE computer recently got a ride it's probably still trying to forget.

Joe Mangano, field marketing manager in HP's sales office in Piscataway, New Jersey, offered the use of the PORTABLE to three entrants from Volvo to use in the "One Lap of America," a time/speed/distance road rally in which participants drove around the perimeter of the United States. The goal was to average 55 mph and hit various checkpoints along the way at specified times—neither too early nor too late.

Volvo's Wayne Baldwin and Dan Johnston, along with Anthony Assenza, associate editor of *Motor Trend* magazine, used the 9,000-mile road rally as a test of strength for Volvo's 740 Turbo Wagon. Dan says the threesome used the computer to set speed and distance reference points and measure against them. Using the built-in spreadsheet software, they could accurately update time-of-arrival calculations to arrive precisely on time. He says they also kept track of fuel consumption, gas prices and other expenses.

The Volvo and the PORTABLE went through a lot together: an ascent in Death Valley from sea level to 5,000 feet in 10 minutes; a major snowstorm, rain squalls and black ice; and morning rush hour in Houston, Texas. But the team made it, finishing a respectable 16th out of 78 competitors.

PARTING SHOT

Work all day, sing all night

For the past year, Ron Ealy has been leading a dual life. In the day, he's part of HP's Bay Area temps pool where he works part time at various assignments in the Bay Area. At night, he rehearses and sings with Opera San Jose. The easy-going tenor most recently appeared on stage as the witch in the company's performance of *Hansel and Gretel*.

Ron's singing is taking him places. The *Peninsula Times-Tribune* named him one of the area's up-and-coming artists for 1986. He just won a $20,000 scholarship to live and study opera for a year in Europe where he plans to master the German language, get opera coaching and audition for theaters in West Germany, Switzerland and Austria. Ron plans to leave for Europe in August and return to the Bay Area and HP when his year of study is up.

OPERA SAN JOSE

Ron Ealy as the witch in *Hansel and Gretel*.

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