

MEASURE



Fifty years of
looking to the future

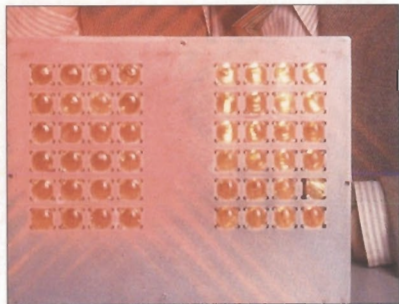
For the people of Hewlett-Packard
March-April 1989



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To be a truly global company, HP must take a global approach to its business by considering the diverse needs of customers up front.

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As Hewlett-Packard celebrates its 50th anniversary in 1989, *Measure* takes a decade-by-decade look at the foundations of success. Cover photo from the HP archives shows (from left) HP founders Dave Packard and Bill Hewlett with their Stanford University engineering school mentor Fred Terman in 1952 when Dave and Bill donated a new wing to Stanford's Electronics Research Laboratory.

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Hewlett-Packard Company is an international manufacturer of measurement and computation products and systems recognized for excellence in quality and support. The company's products and services are used in industry, business, engineering, science, medicine and education in more than 93 countries. Founded in 1939, HP celebrates its 50th anniversary in 1989. HP employs more than 87,000 people worldwide.



Thinking globally:

Seeing the world through global-colored glasses is the key to globalization.



It's a paradox that one of the key challenges to globalizing Hewlett-Packard lies not in far-away places but within the minds of HP people.

To be a truly global company, HP must take a global approach to its business, assert many of those in HP who work on international issues. Thinking globally is what globalization is all about.

What does it mean to think globally? The issue boils down to how HP people answer that critical question: "Who are my customers?" In whatever HP people do—creating marketing plans, designing products, developing manufacturing processes, writing manuals, and more—they're being asked to consider the diverse needs of worldwide customers up front.

A quick glance at the bottom line tells you why worldwide markets are critical to HP. In recent years, the growth rate of international sales has consistently out-



paced that of the U.S., climbing a whopping 100 percent since 1984. In 1988, international sales topped U.S. for the first time, resulting in 53 percent of HP's business.

But there are other reasons why international markets are important. A key factor is the dizzying pace of technological change. Product lives continue to shorten. Decades ago, an HP product might remain competitive 10 years or more. Now its life is likely to be just a few years. "HP needs to sell its products in wider markets to make a sufficient return on investment," says Bill Johnston, business development manager for the Marketing and International Sector. "We need to make up in space what we've lost in time."

International sales also are important because they help balance business cycles. Slow sales in one part of the

"A global approach is to consider worldwide markets and worldwide customer requirements up front when you make your marketing and product plans."

world can be offset by stronger results in other regions. In addition, selling globally enables HP to meet the needs of multinational customers.

Perhaps, then, it's not surprising that globalization has received increas-

ing attention in the company in the last few years:

□ In 1985, Executive Vice President John Doyle initiated the System Internationalization Program under Jon Bale to improve how HP computer systems meet the needs of non-U.S. customers.

□ In 1986, the company formed the Globalization Council under Chuck House in response to the grassroots demand of engineers and others who wanted to coordinate how they address international-product issues.

□ In 1987, Corporate Engineering established its globalization function led by Mike Ksar.

□ In 1988, Executive Vice President Lew Platt managed the issue for the Executive Committee and established the Globalization Steering Committee, made up of representatives from every HP group.

These activities imply that HP can't coast on its success in international markets. To continue that success, the company must make a transformation. It must globalize.

HP's Globalization Council described the transformation this way, recalls Jon Bale, head of the Computer Systems Group's internationalization program. "We called globalization the process of changing from an American company with overseas sales that are often opportunistic, to a company that incorporates a global point of view into its overall strategy."

"What's the difference? Well, the non-global approach, in the extreme, would be to design products for the U.S. mar-

ket and then sell them to anyone overseas who would buy them as is—no adapting to the local market, no strategizing at the start to sell in markets outside the U.S. On the other hand, a global approach is to consider worldwide markets and worldwide customer requirements up front when you make your marketing and product plans."

"For years we were able to get away with selling products outside the U.S. that were designed primarily for the U.S. market," says Franco Mariotti, senior vice president of Europe/Middle East/African Operations. "When our business was mostly instruments, we sold to a narrow market of sophisticated users, many of whom spoke English. The products were used for technical applications that didn't vary much between the United States and other countries.

"But now, as more of our business is with computers, our customers often are non-technical users. They need

"We must continue to meet local needs to compete."

software commands and so on in their own language. We need to adapt our products to local requirements. We're making progress in this area—but so are our competitors. We must continue to meet local needs to compete."

Many believe globalization is a matter of competitive survival for HP. What are we doing to globalize? What does it take to continue to sell our products in markets around the world?

For one thing, it takes market access—accommodating a country's needs so that the country will be receptive to doing business with HP.

Achieving market access often includes establishing a local presence

in the country—a manufacturing facility, for example. “People judge a book by its cover,” says Alan Bickell, vice president of Intercontinental Operations. “When HP invests in a country—employs people there and adds value to the economy, that says, ‘We’re here to stay. We support your national development and want to serve your market.’ Our presence gives local customers confidence in us.”

“Many developing countries require foreign companies to conduct some local manufacturing or R&D,” says Intercon’s Business Development Manager Lee Ting. “They want to ensure that know-how is transferred to the local people.”

“In Western Europe,” says Franco, “local presence is not a government requirement, but it is still very important. It’s a question of nuance. If customers feel a company is not committed to staying and contributing to their country, they don’t buy from you.”

HP has long demonstrated a practice of establishing international operations, beginning in 1959 with the opening of its first non-U.S. factory in Böblingen, Germany. Today, HP manufactures and/or conducts R&D at 42 organizations in 16 countries outside the U.S. Hiring locally, taking an active part in local business committees and

“Our local business partners bring knowledge of their country—their customs, customers and needs.”

executing local philanthropy are just some of the ways HP participates in the countries in which it operates.

Another way HP achieves market access is through joint ventures with local companies. Sites of recently established relationships include Australia, Korea, China and Brazil. “Our local business partners bring knowledge of the country—their customs, cus-



YUMIKO YAMAMOTO

A new version of HPDesk due soon for Japanese, Chinese and Korean users is another way in which HP is creating localized products.

tomers and needs,” says Dick Alberding, executive vice president of the Marketing and International Sector. “We bring products, technology and the resources of an international company. Match them and you get the best of both worlds.”

Market access is just one piece of the globalization puzzle. Another is providing products that meet the local needs of people around the world.

What local features do users in different countries need? The ability to use products in their own language is the most obvious example. If products such as keyboards, terminals, systems software and printers can only handle the Roman alphabet, A to Z, then

they’re not going to be much good for French users, for example, who need letters with accents, or for Japanese or Arabic users who have different alphabets. If HP products are programmed to assume that July 4 is expressed 7/4, they’ll cause a lot of confusion in many countries where 7/4 means April 7. And of course, customers want product documentation—manuals—in their own language.

There are hardware issues as well, such as different countries requiring different plugs and voltages. Some local needs are purely cultural. For example, most Japanese business people prefer plotters that draw with pencils rather than pens because it is customary to erase and make changes to drawings as they are discussed.

To meet the local needs of customers around the world, HP’s strategy is to design products that are easy to adapt



—to “localize.” Translation and other adaptation occurs in each country at HP’s Country Product Organizations.

In the last five years, more and more HP products have been designed in this “localizable” manner. For example, many HP printers now store their fonts in a cartridge rather than a chip within the printer. Changing the cartridge allows the printer easily to accommodate some non-English characters. The HP-UX operating system supports more than 30 languages thanks to native-language support, HP’s software tool for creating systems software that’s easy to adapt to local needs. (HP developed it and it has been adopted by X/Open as an industry standard.) Another example of a localizable product is HPDesk. It now supports European languages; a new version is due out soon that will do the same for Japanese, Chinese and Korean.

Creating localizable products takes a global approach to design. “Without global thinking,” says Jon Bale, “we’re likely to design products that only meet

“Simultaneous introductions are a big statement to the international markets. It says we take them just as seriously as the U.S.—and we do.”

the needs of Americans, because the majority of HP’s R&D is done in the U.S.”

To encourage a global approach to R&D across all of HP, Corporate Engineering established its globalization function, under Mike Ksar. With the help of engineers throughout HP, Mike is putting together the Globalization Cookbook. It documents globalization issues that should be considered at each phase of the product life cycle, and



Simultaneous product introductions are important worldwide, including Milan, Italy, where HP field engineer Maurrio de Berardinis meets with a store manager.

lists contacts throughout the company who can help.

HP’s efforts to meet local needs is paying off. In Japan, for example, sales of HP workstations skyrocketed 137 percent in 1988 after native language support was added to the HP-UX operating system in 1987 (see story on page 7).

Globalization requires a new approach not only to how products are designed but how they are marketed. For example, HP’s Personal Computer Group (PCG) has globalized its marketing strategy to include worldwide product introductions.

“We found if you don’t introduce localized products outside the U.S. at the same time as the U.S. introduction, you aren’t as effective in the international market,” says Frank Lucero,

who manages the international program for PCG.

“People outside the U.S. are proud of their countries, and rightly so,” Frank says. “They hear about a new U.S. product—you can’t keep it secret outside the U.S.—and they ask HP when the local version will come out. If it’s not for six months, that affects how they feel about HP. Simultaneous introductions are a big statement to the international markets. It says we take them just as seriously as the U.S.—and we do.”

PCG’S last three product platforms have been ready to ship simultaneously in the U.S., Europe and Latin America. Simultaneous introductions take extra planning because localized versions of

the product must be ready at the same time as the U.S. one. Once again, Frank says, the key to making the process work is thinking globally.

"To bring about efficient, high-quality localization in PCG, we try to get everyone to view their products not as U.S. products that will be localized later, but as worldwide products," continues Frank. "Manufacturing engineers need to understand that manufacturing processes will be implemented worldwide. When a manual is written, the writer has to understand the document will be translated and it can't include colloquialisms. Everyone needs to have the awareness."

Global awareness is the key to globalization, but, oddly enough, many of

"I think the term 'localization' will disappear from the language. You will take for granted that a product will be localized."

the people who work on international issues believe that HP will be truly globalized when a global approach becomes so much a part of our culture that we don't think of it at all.

"The real sign of maturity in this regard," says Franco Mariotti, "is when you do it automatically."

Masao Terazawa, Intercon's marketing manager, agrees. "I think the term 'localization' will disappear from the language. It must disappear. You will take for granted that a product will be localized. Just as today no one asks 'Should we use steam or electricity for power?' The answer is obvious. It will be that way with globalization. It will be a natural act."—*Rhea Feldman*



HP PHOTO

Adding Japanese kanji characters to the standard keyboard helps enhance HP's international presence.

A Japanese success story

If you'd like to see Kenzo (Ken) Sasaoka's eyes light up, ask him about workstations.

The president of Yokogawa Hewlett-Packard, HP's joint venture company in Japan, delights in the fact that YHP:

- Has the largest market share for engineering workstations in Japan.
- Sells more workstations than any other region operation in HP.

And all this success has taken place in the space of a few years. Says Ken, rightfully, "It's quite a dramatic success story."

Many believe that the drama has come about because HP's 9000, series 300 engineering workstations now support the Japanese language.

And that happened largely through the good graces of SAKE (Special Accelerated Kanji Effort), a joint HP Japan-America 18-month project that involved 30 U.S. and 10 Japanese engineers. When it was done, in February 1988, the most commonly used parts of the HP-UX operating system could be used in any of the major Asian languages.

Once localization was under way, workstations immediately began to compete better in the market and YHP's workstation sales shot up dramatically. Now YHP sells 20 percent of all HP engineering workstations in the world.

It's this great surge of workstation sales that has delighted Ken and everyone working on the project.

Did it all happen because of the native-language support?

It's difficult to pinpoint that fact, but those involved in the project on

both sides of the Pacific believe that, without the Japanese kanji capability, sales would not be quite so booming. (The HP systems use the industry-standard 6,500 characters in kanji, which is a variation of sixth-century Chinese ideograms.)

"I strongly believe that, for example, if there was no localization of the ME 10 software running on HP engineering workstations, we would not have 90 percent of that business," says Masao Terazawa, Intercon marketing manager.

Itsuo Sugiyama, head of the HP-UX Execution Lab, agrees. "About 80 percent of our users are buying the local-language capability. That makes it pretty clear."

Of course, other important factors have contributed to the great success of workstation sales in Japan. YHP most certainly has a dedicated sales team with a strong, customer-oriented strategy. And engineering workstations are becoming more popular and necessary as Japan's R&D efforts expand and take the place of manufacturing activities that have moved from Japan.

But all those involved believe that localization provided a solid base for the workstations' success in Japan.

Ken calls it the survival factor. "If we don't offer our customers the native-language capability, we will not be in the market several years from now. The issue is really survival. Not localizing could menace our existence in the marketplace."

There's still much to do to build on the workstation success story in Japan, Ken says. But thanks to SAKE and localization, it's become possible for YHP to contribute substantially to HP's bottom line.—*Shirley Gilbert*

(Shirley Gilbert, communications manager at HP's Cupertino, California, site, lived and worked in Tokyo for 10 years before joining HP.—Ed.)

YOUR TURN

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

Kudos for "ONE DAY..."

As I went through the pages of "ONE DAY..." (January-February 1989), I felt a great sense of pride and joy to know that I'm part of the HP team worldwide. I experienced a sense of belonging, and I could identify with many of the photos...

John Young, in his message, crystallizes this feeling very aptly: that HP people are the same wherever you go; the easy, open environment that looks the same everywhere; the company culture that has universal appeal. I felt exactly the same as John did when he reviewed the photo essay: PROUD.

In my opinion, you succeeded "exceedingly well" in showing the uniqueness of a site and its people, and at the same time showing the cultural differences. CONGRATULATIONS!!!

BERNARD LIM
Singapore

The January-February 1989 issue of *Measure* was terrific.

TOM PETERS
(author, *In Search of Excellence*)
Palo Alto, California

Congratulations! The "ONE DAY..." issue is outstanding. It will join my other "A Day in the Life of..." books proudly.

The student photographers were excellent and every bit as good as the professionals who did the other series.

I am curious as to why there were so many student photographers from the University of Missouri, i.e., six out of 17.

GEORGE KAPOSHILIN
Palo Alto, California

Measure polled photojournalism instructors across the U.S. to find which schools they believe have the best programs. San Jose State, Texas, Indiana and Missouri were the consis-

tent top choices. Of those, Missouri has won more *College Photographer of the Year* awards the last few years by a wide margin. There were NO other reasons for emphasizing Missouri. —Ed. (*Missouri* '73)

Pope reference offensive

To say that I was appalled by your treatment of His Holiness John Paul II would be an understatement! One does not use a headline such as "A pope-ular dedication" (January-February 1989) in reference to His Holiness. And when referring to him as "the Pontiff" in the first paragraph and as "the Pope" in the second paragraph, both titles are to be capitalized.

You showed more respect for Queen Elizabeth and other foreign dignitaries in past articles than you did for His Holiness... He is the vicar of Christ and you treated him almost as a comic-book character.

(MS) B.J. SPARKS
Colorado Springs, Colorado

Measure meant no disrespect for the pope. As for capitalization, *Measure* follows the Associated Press stylebook which specifies that "pope" is capitalized only when it is used as a formal title before a name, and that "pontiff" always is lowercase.—Ed.

Child care redux

Your "Who's taking care of baby?" article (September-October 1988) was extremely interesting and the responses in the November-December issue even more so.

It is obvious HP employees the world over are concerned for the future and quality of child care. It is also obvious that many of these employees are willing to support child-care programs whether they have children requiring day care or not.

Overall, those of us "down under" have the same set of problems in the

child-care area as described in your article. There are insufficient day-care facilities, waiting lists are 2 to 4 years in length, costs are extremely high and most companies throw the child-care issue into the "too hard" or "too expensive" category.

No one is willing to "bite the bullet" on this one, not even HP. And let's face it, our children the world over are the future! We should all give child care and its related problems a top-priority ranking.

TRUDY EDGHILL
Sydney, Australia

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 87,000 other employees.

If your letter is selected for publication, you'll receive a special *Measure* T-shirt with the 50th-anniversary symbol. Be sure to send us a return mailing address, and indicate your T-shirt size—unisex medium, large or X-large.

Address letters via company mail or HP Desk to Editor, *Measure*, Public Relations Department, Building 20BR, Palo Alto. Via regular postal service, the address is *Measure*, Hewlett-Packard Company 20BR, P.O. 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.

The test of time

TOM LEA



The HP way has survived
and thrived through 50
years of constant change
and challenge...

A half-century from now, circa 2039 AD, the beliefs and practices that make up what is known as "the HP way" may be in wide and even universal use. Imagine: profit sharing, flexible hours and management-by-objective in the Ukraine!

Such innovations and adaptations in people-oriented practices and values have brought a special kind of loyalty to Hewlett-Packard, plus a good degree of recognition. In fact, HP is probably known as much for its management philosophy and style as for technology.

Meanwhile, the evolution and testing of that way or philosophy of doing business continues. Here, at the start of the company's next half-century, we look back briefly at the circumstances and challenges that made it what it is today.

What is the HP way?

Bill Hewlett once put it this way: "I feel that in general terms it is policies and actions that flow from the belief that men and women want to do a good job, a creative job, and that if they are provided the proper environment they will do so. But that's only part of it. Closely coupled with this is the HP tradition of treating each individual with consideration and respect, and recognizing individual achievements."

Later interpretations emphasize the inner core of shared values: trust, achievement and contribution, total integrity, teamwork in achieving common objectives, flexibility and innovation in responding to challenges.

Those are the durable concepts directly reflected in the company's corporate objectives and from which have flowed a variety of visible, but not necessarily permanent, practices. The essence of those values, in fact, is in their ability to accommodate change—change driven by the needs of customers, by technology, by competition and participation in global markets—in creative and useful new ways while preserving the spirit and intent of the organization.

April, 1940		Receipts Payments	
April 25	Freight Due	✓	77.64
1	Donation bond	✓	70.07
1	Hazel Trust	✓	71.50
1	Dr. Ross	✓	57.07
1	Car Radio	✓	14.00
1	288 Car Radio	✓	34.16
1	289 Salary - R. G. Ziebeck	✓	13.27
1	290 Salary - R. Ziebeck	✓	2.10
1	291 Salary - J. Williams	✓	1.20
1	292 Salary - Ed. Dutton	✓	4.46
1	293 Salary - R. G. Ziebeck	✓	57.87
3	294 Freight Out	✓	70.07
4	295 May Term Commemorative Edison	✓	54.00
4	W.A. Hewlett - Salary	✓	3.75
5	296 Oak - City	✓	14.20
5	297 W. Hewlett - Salary	✓	12.40
5	298 L. Packard - Salary	✓	55.138
5	Collins	✓	75.00
5	299 Packard - Salary	✓	2.80
5	300 Brought Due	✓	353
6	301 W. A. D.	✓	1.44
6	302 Frisco	✓	1.12
6	303 Alameda	✓	54.23
6	304 Bohringer	✓	95
6	305 Pac-Lic Metals	✓	1.00
6	306 Radio Specialties	✓	4.24
6	307 Electrical Spec.	✓	30.7
6	308 Baker Blueprints	✓	56.00
6	309 Grand Sheet Metal	✓	4.78
6	310 Oak	✓	49.234
6	311 Whittier	✓	840.66

April, 1940		Brought Forward	
6	312 Machinery	✓	840.66
6	313 Dumbell Shop Equip	✓	492.34
6	314 Shop Equip - Radio Shack	✓	10.08
6	315 Utilities - S. C.	✓	8.50
6	316 Water	✓	1.90
6	317 Shop Supplies - P. M. P.	✓	11.20
6	318 Office Equip - P. A. T. Co.	✓	65
6	319 Shop Equip - P. A. T. Co.	✓	6.35
6	320 Freight Due	✓	62.73
6	321 Pacific Metals	✓	13.91
6	322 Pacific Metals	✓	5.24
6	323 Pacific Metals	✓	4.00
6	324 Pacific Metals	✓	27.00
6	325 Pacific Metals	✓	17.21
6	326 Pacific Metals	✓	32.90
6	327 Pacific Metals	✓	3-
6	328 Pacific Metals	✓	6.60
6	329 Pacific Metals	✓	24.31
6	330 Pacific Metals	✓	33.41
6	331 Pacific Metals	✓	165.87
6	332 Pacific Metals	✓	41.50
6	333 Pacific Metals	✓	3-
6	334 Pacific Metals	✓	5.17
6	335 Pacific Metals	✓	1.55
6	336 Pacific Metals	✓	6.51
6	337 Pacific Metals	✓	1.12
6	338 Pacific Metals	✓	38
6	339 Pacific Metals	✓	24.34
6	340 Pacific Metals	✓	1.00
6	341 Pacific Metals	✓	12.11
6	342 Pacific Metals	✓	72.67
6	343 Pacific Metals	✓	99.055
6	344 Pacific Metals	✓	965.87

On the cover
Dave Packard and Bill Hewlett take a 50-year look back at one of the first documents of company history—a ledger book listing cash payments from 1938-41—prior to a 50-year awards luncheon in Palo Alto. A page from the ledger (left) shows that Bill and Dave paid themselves modest monthly salaries during the company's early days.



Making a run for it...

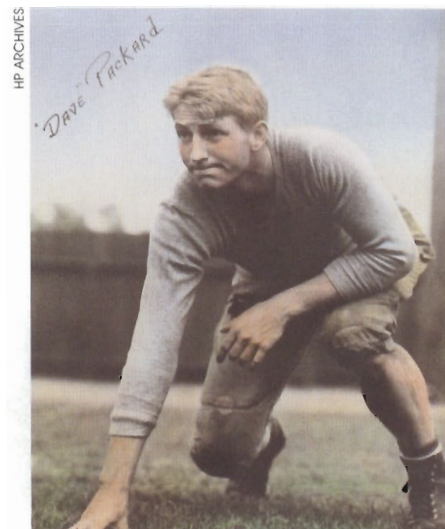
Following graduation as electrical engineers from Stanford University in 1934, Dave Packard and Bill Hewlett went on a two-week camping and fishing trip in the Colorado mountains. They discovered strong similarities in their attitudes toward most things and became close friends.

Earlier, professor and mentor Fred Terman arranged a class visit to TV pioneer Philo Farnsworth's lab in San Francisco. As a result of that and other such visits, Dave and Bill decided that "maybe we'd try and make a run for it ourselves" sometime.

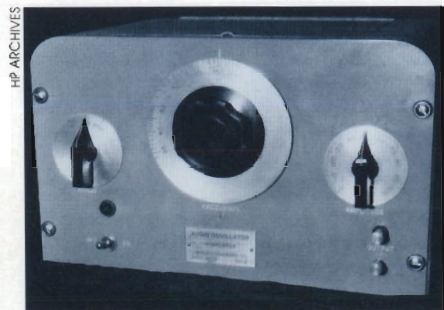
Before that happened, Dave took a job (scarce in those times) with General Electric, while Bill continued graduate studies both at Stanford and MIT, after which he undertook freelance research and development work at Stanford. With encouragement from Terman, Bill developed an audio oscillator — an important source of high-quality audio (sound) frequencies—that was simpler and more versatile than others on the market. Terman then arranged for Dave to take a leave of absence from GE. He never went back.

Dave and Bill tossed a coin to decide the name of their new business partnership. It came up "Hewlett-Packard." The partnership became official on January 1, 1939, and began business with \$538 in working capital. From a rented garage at 367 Addison Avenue in Palo Alto, California, they offered one product. Known as the 200A audio oscillator, it gave much higher performance than competing instruments in measuring the frequency of sound and—priced at only \$55—it cost much less.

In this way, "value" became an early objective. Footnote: the partners chose the model number "200" so that customers wouldn't think they were buying from upstarts.



Dave was a tough, determined competitor as far back as his football-playing days at Stanford University.



The audio oscillator, the product that started it all, made movie magic for Mickey, too.



The '40s

Get set! Go...

The young partnership got off to a very good start. Having heard favorable comments about the audio oscillator, the chief sound engineer for Walt Disney Studios purchased eight of the second model—the 200B. All were first used in the production of the stereophonic sound presentation of *Fantasia*, a hugely successful animated movie.

That order helped to firm up the young company's finances and its sense of direction. Henceforth, it would concentrate on developing high-quality, innovative electronic instruments that could be produced in quantity for broad application by engineers and scientists. This early sense of direction — of new products as a driving force—became the young company's formula for success and survival, and persists today.

In pursuit of their goal, the partners kept their little lab busy. During 1939, Bill and Dave developed and marketed several other new products—such as the wave analyzer—that won excellent acceptance among engineers and technicians in utility companies. These successful



Bill served in the U.S. Army during World War II while Dave ran the young company. Years later, Bill directed HP while Dave was U.S. Deputy Secretary of Defense.

ventures encouraged them to seek broader markets. That first year they signed Crossley Associates to sell their products for them in the Midwest U.S. and Neely Enterprises in the West.

Then they ran out of garage space and rented part of a small building. The year ended with a small band of employees producing a half-dozen different instruments. Wives Lu Packard and Flora Hewlett played important administrative roles. A friendly dog kept them company.

With Pearl Harbor and direct U.S. involvement in World War II, the trickle of government orders turned into a stream and then a flood. By 1942, 60 people were in the HP fold. New products were added, and HP built the first of its own buildings, a 10,000-square-foot office, laboratory and factory at 395 Page Mill Road. By 1943, production was in high gear. Nearly 100 people worked two shifts a day. Sales for the year hit close to \$1 million.

Over the same period, the founders made key decisions that continue to influence the relationships of the company and HP people. For the most part, those decisions arose from a deliberate effort—as Dave Packard once described it—“to get out and learn as much as we could about management — how to produce good results through teamwork.”

□ For the sake of employment stability, Bill and Dave decided not to take

DAILY PALO ALTO TIMES, SATURDAY, JUNE 26, 1948

24—REAL ESTATE FOR SALE

FOR ITS CHARM

See this nine months old, four-room modern bungalow, two bedrooms, large closets, panel-ray heater, large living room with fireplace, and entrance to a charming patio, nice lawn, garage with laundry. Los Altos, \$10,500.

You Will Like This

Five-room stucco near Crescent Park district, on bus line, two bedrooms, two floor furnaces, fireplace, combination living-dining room, large kitchen with wood, basement \$12,750.

Fascinating Home

Located in Crescent Park, seven large rooms, three bedrooms, sun room. Lot 130 x 226 beautifully landscaped, room plus room in basement, 2-car garage. \$25,000.

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Waverley Ph.: 3774

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A large lot in new subdivision. Fireplaces, hardwood floors. An excellent buy at \$13,750.

9/10 ACRE

24—REAL ESTATE FOR SALE

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District on attractive street. A strictly modern, 3 sizable bedrooms, large living and dining area, tile kitchen and bath, stall shower, hardwood floors, fireplace, central heat in all rooms, full front porch, nice yard with fruit trees. \$11,500. Norm Estes, P.A. 7374
Camino Real, Menlo

You could buy a three-bedroom house in Palo Alto for \$12,500 in 1948, the same year HP introduced microwave-measurement products.



By 1940, the young company had outgrown the garage and moved into the building which once housed "Tinker" Bell's fix-it shop.

on large contracts that could lead to a "hire-and-fire" operation.

□ Using General Radio Company as a successful example, they chose to finance growth on a "pay-as-we-go" basis. Besides, there wasn't a lot of venture capital around then.

□ They backed up their belief that employees should benefit from the success of the organization as early as 1940—a \$5 Christmas bonus (all they could afford!). This later became a production bonus and eventually the companywide profit-sharing plan. The employee stock-purchase plan also grew out of this concept of sharing.

□ In August 1942, after witnessing the devastating effect of an employee's tragic illness, the partners introduced medical insurance to cover catastrophic health problems of employees and their families.

□ The tradition of first-name informality—of "Dave" and "Bill"—got under way at the very start. And there were Christmas parties and family picnics.

Business dropped off a bit after war's end, but not for long. HP continued to develop new products and to reach out for new markets. In 1948, for example, the company introduced the first of its highly successful line of microwave measurement products. By the end of the decade, it was bringing new instruments onto the market at the rate of 20 per year.



Boogie woogie music, the craze of the '40s, had people dancing in the aisles at the Roxy Theater.



The production facility was a compact room where a handful of employees turned out a half-dozen instruments.

And that "market" now included manufacturing and processing industries, in addition to electronics and science.

Such efforts were rewarding. By 1947, the company needed a second new building. Sales returned to their 1944 peak of \$1.5 million. The firm incorporated on August 18, 1947, and continued to grow in people, products and revenue.

The '50s

Setting objectives...

Hewlett-Packard was clearly on the path of big and bigger things in 1949. The "new" technology of electronics was evolving rapidly, both in terms of sophistication and applications in the marketplace.

HP added to that pace with its invention in 1951 of the high-speed frequency counter and the low-frequency function generator, both widely used in measuring and testing electronic circuitry. Other landmark products followed over the decade. Major news events included the first public offering of HP stock on November 6, 1957, followed the next year by the company's first acquisition (F.L. Moseley Co., an electronic recorder manufacturer in Pasadena, California), and the beginning of European sales, HP's first overseas venture.

Yet, while obviously immersed in such matters, the company gave very careful thought to the internal effects of growth; the "how" of it was at least as important as "how much." As an example, old timers can recall that the partners turned down a generous purchase offer in the early '50s; they didn't want to leave their employees exposed to unknown motives and decisions of new employers. The '50s are also

remembered as a time when the HP management style was identified as "management-by-objective," in which day-to-day work decisions are made by those closest to the action.

That kind of thinking was at work when the company decided to write its operating philosophy in 1957. Known as the "Hewlett-Packard Corporate Objectives," that first document spelled out an overall framework for the organization itself, followed by seven objectives it should strive for. The latter outlined goals in terms of profit, customers, fields of interest, growth, our people, management and citizenship. Says John Young, HP's president since 1977, "These represented the distilled wisdom of the first 18 years in business." Since then, he added, "our key objectives have changed little. They have stood the test of time."

The second decade closed on some very positive notes. HP's sampling oscilloscope—first of its kind and forerunner of products still in wide use—was introduced in 1958. Europe was on its way to becoming a major HP market. Plans were in the works for new manufacturing sites, and major new product lines, plus several acquisitions to add to the company's instrument business.



Annual revenue topped \$50 million in the '50s at about the same time limber kids—and parents—adopted the hula hoop as the latest fad.

HP established its first manufacturing plant outside Palo Alto in a renovated knitting mill in Böblingen, West Germany, in 1959.



HP ARCHIVES



Lee De Forest, the father of modern electronics and inventor of the three-element vacuum tube, tries a new HP waveguide device for Bill Hewlett and Barney Oliver, long-time head of HP Labs, during a visit to HP in 1956.

HP ARCHIVES



Picnics, beer busts and a friendly, open style were HP traditions long before "corporate culture" became buzzwords.

HP ARCHIVES



In 1951, Al Bagley's development of HP's new 524A high-speed frequency counter reduced the time needed to measure high frequencies from minutes to seconds.

BETTMANN ARCHIVE



HP offered more than 300 products in the '50s at a time Howdy Doody, Buffalo Bob and Zippy the chimp delighted TV viewers.

The '60s

Running on a fast track



The '60s were indeed a venturesome time for Hewlett-Packard, a time that put its objectives through some major tests.

There was, in particular, the organizational test. Over the course of the decade the company restructured several times, growing from a single entity in Palo Alto to more than a dozen manufacturing divisions organized into four product groups. These included new sites in Germany, the United Kingdom and Japan, as well as Colorado, California, Massachusetts, New Jersey and Pennsylvania in the U.S.

The company also took major steps to develop its own sales representation wherever its products were sold. A number of U.S. "rep" organizations were acquired, and many new sales subsidiaries (or joint ventures) were established to serve growing markets around the globe. The new HP sales organization was structured along regional and national lines. In time, such actions created more than a hundred local sales teams committed to local customers. Meanwhile, all of the company's advanced research and development activities were brought together under newly formed HP Laboratories.

Internally, these changes mea

that all of the new local managers had to take on many of the roles and tasks of—among others—the founders: to be informal and on a first-name basis with employees, to take a personal interest in people, to delegate and persuade, to coach and reward performance, to set direction, and to anticipate problems. And to bring in many new people who, in spite of quite different backgrounds, would respond favorably to that style.

Observers of that period pretty much agree that the HP management style "traveled" well, and that enthusiasm for it overcame most—if not all—of the "learning-curve" problems that arose in the course of rapid growth.

The decade was studded with notable events. Charles de Gaulle, then president of France, visited the Palo Alto site in 1960. Also that year and as a sign of good times, HP split its stock 3 for 1. In 1961, the New York Stock Exchange accepted HP stock for national and international trading—a sign of reaching the "big time." In 1962, *Fortune* magazine listed HP among the top 500 U.S. companies.

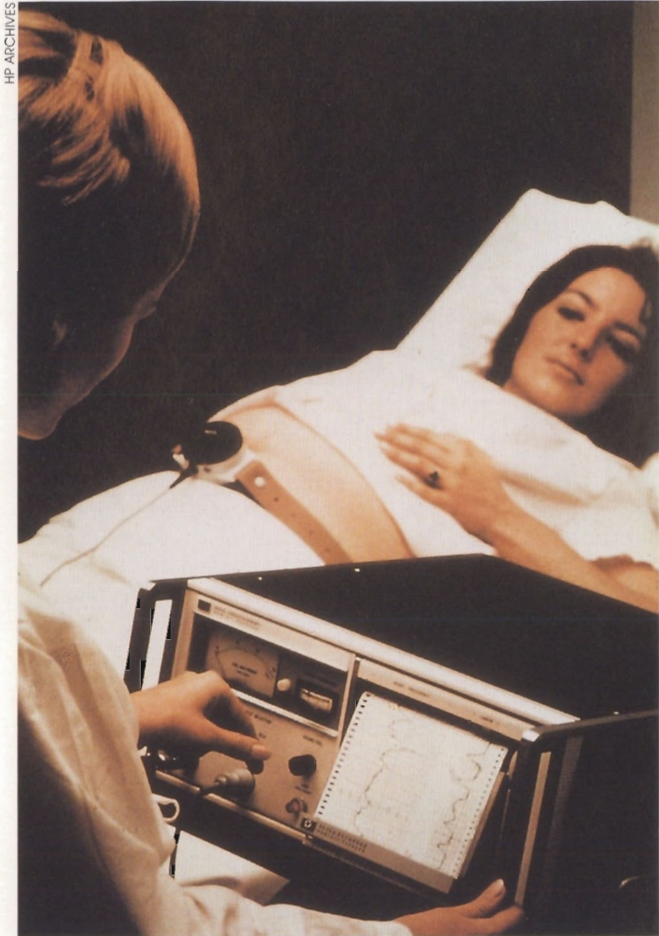
In 1967, HP's Böblingen Division in West Germany solved a lot of employees' scheduling problems by pioneering the concept of flexible working hours. Dave Packard took time out to serve as U.S. Deputy Secretary of Defense from 1969 through 1971.

HP's driving force continued to be new products and new product lines. These included many new test and measurement instruments, electronic components, the first HP minicomputer and first high-tech desktop calculator. The acquisition of Massachusetts-based Sanborn Company (medical) in 1961, F&M Scientific of Pennsylvania (chemical analysis) in 1965, plus other electronics-based firms brought entirely new lines and markets into the HP fold. It was indeed a decade of diversification.

Hewlett-Packard hit the "big time" in 1964 with its first listing on the New York Stock Exchange.



HP PHOTO

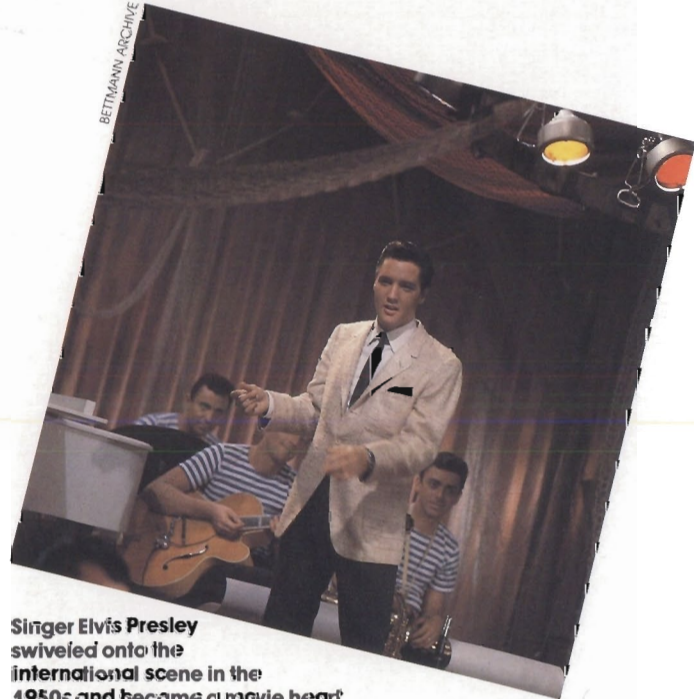


The purchase of the Massachusetts-based Sanborn Company in 1961 brought new product lines in the medical field such as today's fetal heart monitor.

HP's first joint venture—with Yokogawa Electric Works in 1963—united Toshio Muraoka, Bill Hewlett and Karl Schwarz.



Hewlett-Packard gained worldwide recognition in 1964 when two HP 5060A "atomic clocks" coordinated the national time standards of various countries to within a millionth of a second.



Singer Elvis Presley swiveled onto the international scene in the 1950s and became a movie heart throb by 1964 when HP celebrated its 25th anniversary.



The '70s

To the moon and back...



What a way to launch HP's fourth decade! There they were, U.S. astronauts Neil Armstrong and Buzz Aldrin leaping and dancing on the surface of the moon in July 1969. And just above them, in Apollo II, HP components such as diodes and switches were at work. On Earth, a host of HP instruments—including "atomic clocks" (cesium-beam precision frequency standards)—helped guide and control their journey.

There were other good signs to start the decade: Orders poured in; employment boomed; sales of computers (at 15 percent of total) were moving up; HP's stock was split 2-for-1; international orders grew to 30 percent of total; HP Ltd. in Scotland won the Queen's Award for its microwave link analyzer.

Just one year later (1970), however, the U.S. economy and HP's domestic orders fell sharply. In spite of record international sales, HP inventories mounted. The response was a unique, but HP way-compatible, program known as the "nine-day fortnight" representing a 10 percent work-and-pay reduction in most of HP's U.S. plants and for all management people. The program lasted for about a year until normal work-force attrition and some extra unpaid holidays got HP back in balance.

HP passed other tests. One was the so-called \$300-million test. In those times, that figure was seen as a limit or barrier beyond which companies tended to lose their individual styles and character. HP crossed that mark in 1969 and—if anything—the company became stronger in its determination and efforts to maintain the HP way as it was now called.

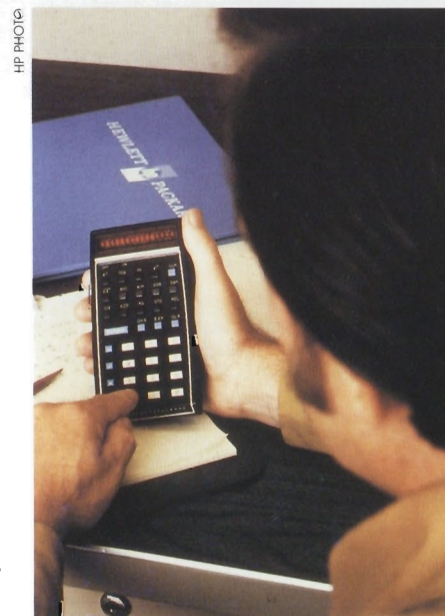
That determination was soon tested. The uncertain economic

climate of the early '70s inevitably raised questions about how HP should conduct business: Long-term debt to finance its way? Build market share at the expense of profitability? These were quickly answered: HP chose to solve its problems by belt-tightening—better control of inventories and receivables, conservative hiring, and accelerated training and development of people in anticipation of an upturn. It also continued to introduce innovative products—such as the HP-35, the world's first scientific pocket calculator, in 1972.

In still another test, the founders showed their willingness to delegate day-to-day operating management of the company. That occurred in November 1977, when the board of directors named John Young president (and chief operating officer the following year), supported by three executive vice presidents.

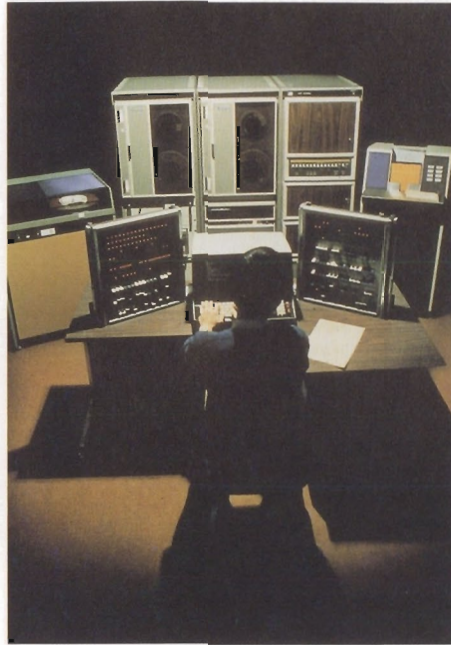
The new team had its hands full. The company had passed the \$1-billion sales mark in 1976, and was approaching \$2 billion at the end of '78, accompanied by impressive surges in earnings and employment.

The HP-35 scientific handheld calculator made the engineer's slide rule obsolete with its introduction in 1972.

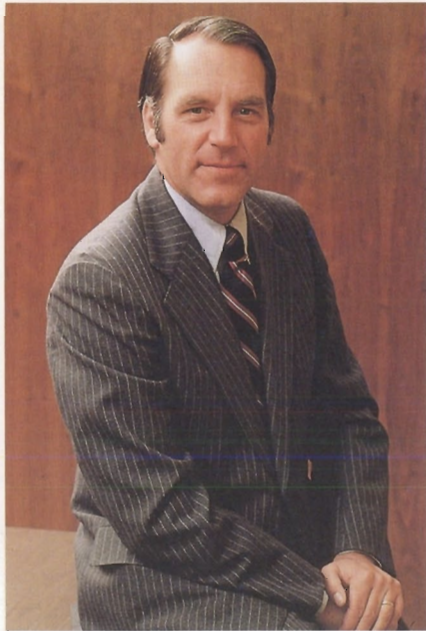




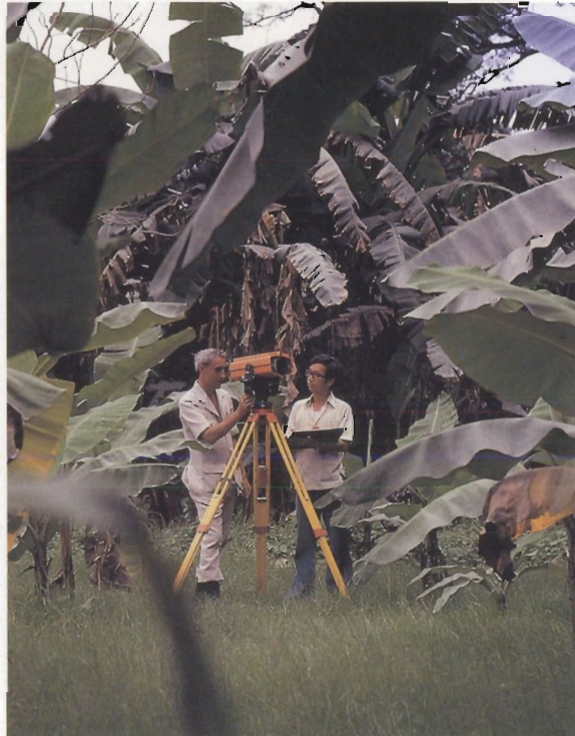
HP components and equipment played important roles in the U.S. space program in the '70s after Buzz Aldrin (shown here) and Neil Armstrong walked on the moon in July 1969.



New opportunities in business computing opened up for HP in 1972 when the company unveiled the HP 3000 minicomputer.



John Young took the helm as HP president in 1977 and was named chief executive officer a year later.



HP's total station distance- and angle-measuring instruments made land surveying faster and easier, such as this scene of an Australian engineering crew in Kuala Lumpur, Malaysia.

The '80s

All hands on deck!

To keep the company shipshape and on a profitable course during the '80s required a host of major and timely decisions and responses. The decade's big challenges to HP were—and are—growing global competition, rapid economic changes, fast-rising customer expectations, social and environmental concerns, and—especially—the massive impact of computer technology on HP's product lines, processes and the organization as a whole.

These developments came as no surprise. Yet, where once HP tended to set the pace in its markets, it now had to work harder than ever to gain and maintain a competitive advantage. And work it did, pursuing a set of strategic goals with renewed vigor. They include:

□ **Quality:** Yokogawa-Hewlett-Packard, HP's joint venture in Japan, had performed poorly in the mid-'70s, with a great deal of fierce homeland competition. So it set a new course—Total Quality Control—based on continuous improvement of every process through scientific measurements. The result in just a few years was a dramatic turnaround, one that not only won the prestigious Deming Prize but also helped to inspire and inform the whole company. At the same time, President John Young challenged the company to a 10-year effort to achieve a 10-fold reduction in hardware failures. Results—in controlling costs and meeting customer expectations—were significant. Quality, one of HP's major strengths, had become a renewed way of life—of doing business—as well as a goal.

□ **Products/Organization:** HP began the '80s with a number of excellent computer products, but saw that it was not organized or staffed for the task of becoming a leading, broad-line computer supplier. To remedy that, the company formed its Computing Center lab, brought in people with computer-systems expertise and leadership



HP PHOTO

HP helped the People's Republic of China move toward modernization when the company established a sales and distribution office in Beijing in November 1981.

experience, chose a single, unifying product architecture, took a leadership role in promoting industry standards, established strong third-party relationships, and realigned the organization to implement those decisions.

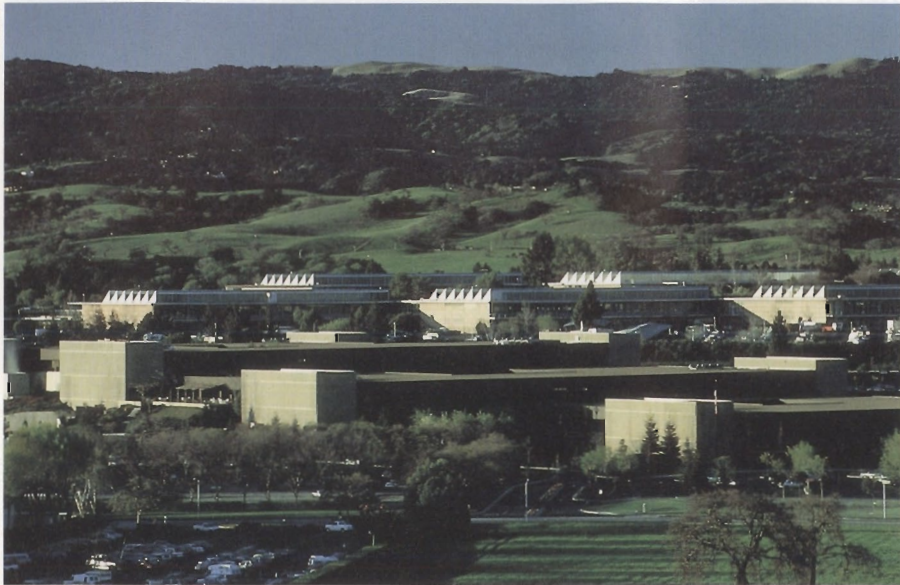
All of these undertakings came into focus in 1987 when the company introduced the first offerings of its new RISC-based (Reduced Instruction Set Computing) Precision Architecture products and a multivendor networking strategy that earned rave reviews.

The original "half" of the business—electronic instruments, components, medical and analytical products—had its share of challenges and triumphs.

HP's test-and-measurement business advanced in several significant ways. Technological developments as well as new industry standards cleared the way for the union of instruments and computers. In turn, this created broader markets because engineers could design instruments and systems



HP PHOTO



More than 1,400 people moved into the new Corporate office building site in 1981—a 478,000-square-foot facility in Palo Alto.

that gave much higher performance at lower cost.

Analytical and medical products also experienced important changes. A special driving force in the medical area was the demand for better diagnostic and monitoring systems that would improve health care at lower cost. Analytical technology was spurred by the rapid growth of biotechnology ventures and environmental programs. HP was a contributor in all of these.

□ **Globalism:** Just about every industry in which HP has a role as producer or supplier saw the acceleration of another trend during the '80s—the strong shift to worldwide response was to work very hard to lower manufacturing costs, improve quality and speed up the process of introducing new products. These efforts, combined with its solid and growing presence in Europe and Asia, helped to strengthen HP's position as a world leader or major

BETTMAN ARCHIVE



American track star Carl Lewis won four Olympic gold medals in the '84 Summer Games in Los Angeles and went on to star in the '88 Olympics in Seoul, South Korea.

HP PHOTO



The HP Touchscreen personal computer—the HP 150—presented a new concept in hands-on computing when it reached the market in 1983.

The '80s

NOBUTOSHI TAKAGI



A commitment to Total Quality Control, which began at Yokogawa-Hewlett-Packard in 1977, paid off when YHP won the prestigious Deming Prize in 1982.

competitor in each of its business segments worldwide.

□ **People:** There is no question that decisions made during the '80s required considerable changes in the way many HP people did their jobs. New forms of organization, designed to unify HP's strategy in several major marketplaces (particularly computers), created some complex new lines of communication and new kinds of working relationships for employees.

How did employees respond? Most adjusted with enthusiasm: new challenges, new opportunities! Of course, some worried about the new complexities, and others wondered where the "good ol' days" (as well as the once-traditional coffee-break doughnuts) went.

The fact is, as old timers can affirm, the "good ol' days" were just as demanding in their way as today. There were no easy paths to success, no sure things. Change was a way of life, just as it is today. The one exception is that remarkable set of beliefs and values that gave—and will continue to give—the company and its people a special sense of partnership and achievement.—*Gordon Brown*

(HP retiree Gordon Brown was Measure editor from 1968 to 1982.)

HP PHOTO

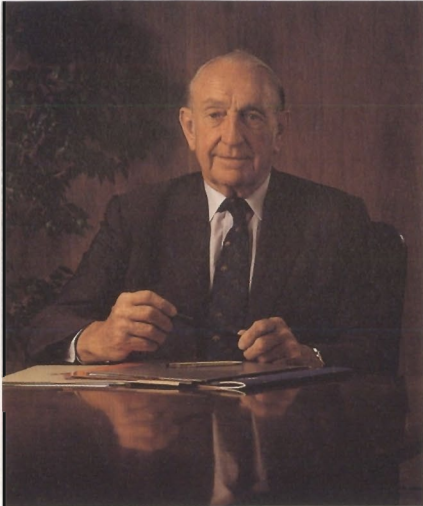


Franz Nawratil and Dave Packard escorted Queen Elizabeth II around the Cupertino site during a royal visit to California in 1983.



HP equipment even found its way onto international postage in 1980 when a Christmas Island stamp saluting the phosphate industry featured the HP 2000 computer.

HP PHOTO



Looking ahead, Chairman Dave Packard noted that "Instruments are the tools of the (electronics) trade, tools that need to be better than the work. The thrust will be toward smarter, smaller, more reliable and easy-to-use solutions-in-a-box with multiple standard interfaces."

HP PHOTO

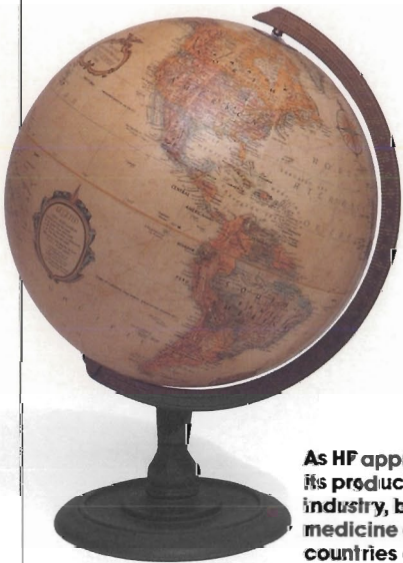


When introduced in the mid-1980s, the Spectrum computer program represented the most comprehensive R&D effort ever undertaken by HP.

LARRY BRAZIL

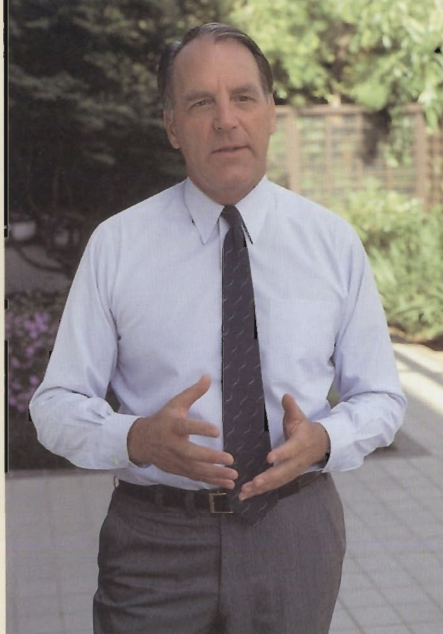


The garage—Bill and Dave's first workshop—has been designated California registered historical landmark No. 976 as the birthplace of "Silicon Valley."



As HP approaches the end of the 1980s, its products and services are used in industry, business, engineering, science, medicine and education in more than 90 countries around the globe.

MATT WATSON



“ The future is as big as we have both the will and the skill to make it. Despite our fine record, I think we still have our best years ahead. ”

John Young
1989

Extra

ORDINARY PEOPLE

Egon Loebner—scientist, engineer, inventor—was having his picture taken for *Measure*.

Glancing at the soft-light equipment arched overhead, he asked, "Did you know that one of your lights is bluer than the other?" The photographer, instantly concerned, wanted to know more. In the world of cameras, blue light is bad.

It turns out, of course, that early in his richly varied career Egon was the first researcher to measure changing color in photo flash bulbs. "You're probably one of the few people in the world who could spot this," said the photographer, awestruck.

Egon, who is the counselor for science and technology at HP Laboratories, has a way of astounding people.

The constant whirring of his mind has produced inventions of his own—he holds more than 40 patents—and stimulated other members of the technical staff at several companies.

Egon has been characterized as "a high-risk guy" who works at the fringes of an emerging field—or preferably 10 emerging fields at one time. In his constant pursuit of the unknown, he's not afraid to "win a few and lose a few," says longtime associate Paul Greene of HP Labs.

He adds that Egon "is a great inventor, one of the few people who can capture on paper the essence of an invention." Often Egon is inventing a new technology: something that is possible but hasn't yet been done.

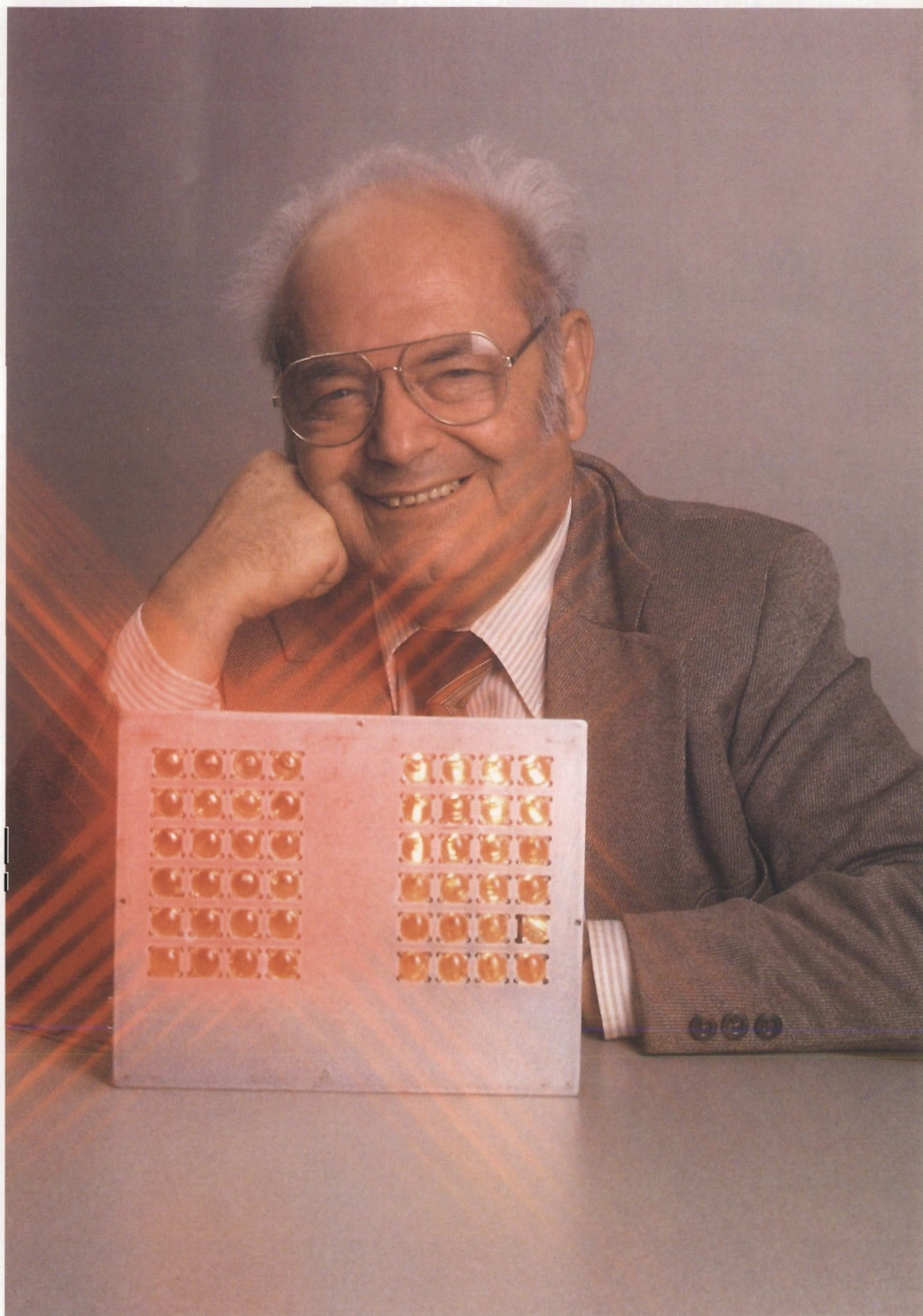
For 25 years Egon was a pioneer researcher in the field of optoelectronics, both in the generation of light and optical sensing in solids. On record, he was the first to use the term "optoelectronics" (see page 26).

But that's just the first part of the story. The citation which accompanied his election this January as a Fellow of The Institute of Electrical and Electronics Engineers (IEEE) reads:

"For contributions to optoelectronic materials, devices, and networks, and for transdisciplinary research across life, social and computer sciences."

"Transdisciplinary" is another Loebner-coined term and one dear to Egon's heart. He firmly believes—and has proved it repeatedly—that pre-

LARRY BRAZIL



Egon Loebner, a pioneer in optoelectronics, holds an array of today's showy light-emitting diodes—descendants of early LEDs that couldn't be seen in daylight.

Extra ORDINARY PEOPLE

cepts from one field can be moved into another. He even has a tried-and-true process he has used 10 times to master a new field (see box below) and taught to Stanford University students in a course on inventing.

Intellectual curiosity and persistence have marked Egon from the time he was a boy in Pilsen, Czechoslovakia. The road had one grim detour: during World War II he spent three years in a concentration camp, where both his parents died. But even in imprisonment he continued to learn through lectures and lessons that the inmates conducted secretly.

With the help of a Jewish student organization, Egon came to the U.S. in 1947 to continue engineering studies that he had begun as a teenager. He enrolled at the University of Buffalo in an area of New York where his hometown sweetheart Sonya, now his wife, was living.

As his studies progressed, Egon was lured by the challenge of physics, but a change of majors was discouraged by

his sponsors.

Undaunted, Egon suggested that he seek advice from Albert Einstein, an advisor to the organization. Egon's letter to the great physicist brought an invitation to visit him in Princeton, New Jersey. They talked for two hours — a wide-ranging conversation that Egon will never forget—and Einstein wrote a letter that clinched Egon's switch to physics.

"I was nervous but totally fascinated by his manner and views," Egon recalls.

By the time Egon joined Hewlett-Packard in 1961 he had received his A.B. and Ph.D. degrees in physics, and rolled up impressive research credentials — three years with Sylvania Electric Products in such fields as electroluminescent devices and TV displays, and six years with RCA Laboratories, working with solid-state image transducers and light-emitting diode (LED) device physics.

Both his technical expertise and his wide contacts in East Coast scientific circles were a plus to the newly founded HP Associates (HPA), set up by Hewlett-Packard as an arm for solid-state research. Although HP was the world's largest manufacturer of photoconductive arrays in the late 1950s, the company was looking ahead. Egon remembers his job interview in Dave Packard's Palo Alto office. "Dave pointed to one of the instruments and said, 'Today there are 90 percent tubes and 10 percent transistors in this box. In 10 years that ratio will be reversed. We need people like you to help us get there.'"

HPA, headed by Jack Melchor (now a Silicon Valley venture capitalist), had a small but high-powered technical staff. One member was Paul Greene. Another was Irv Wunderman, later to found his own local firm.

An inventor himself, Irv relished the vigorous discussions of projects that he had with Egon, who brought a strong background in chemistry and physics to HPA—along with some equally strong convictions. They shared a futuristic outlook and were convinced that transistors, while still somewhat unreliable, were the way to go.

"Egon has a tremendous variety of interests," says Irv. "He's always had a

great curiosity about how the mind works. Even then he was looking at neural networks—the wiring of the brain—to explore the analogy between biology and technology."

The broad program in optoelectronic materials, devices and systems which Egon initiated at HPA positioned HP for a massive entrance into this field.

Joe Diesel, now in HP Labs, was one of the researchers Egon hired at HPA. "I remember it was literally a 'red-letter day' when we saw the first visible LED," he says. "That product made it possible for the company to bring out the HP-35 calculator. Egon laid the foundation for millions of dollars of sales for HP."

Egon and other HPA researchers were absorbed into the newly formed HP Labs in 1966, where he continued work in the solid-state laboratory on infrared emitters and detectors. Projects included a study of night vision under a U.S. Army contract, and optical gas analysis (including the breath).

By 1974 Egon was ready for a change. Taking a special leave of absence from HP, he accepted a high-level post in Moscow as chief of the science section at the American Embassy for two years. Sonya and daughter Mindy, their youngest child, went with him and sons Benny and Gary paid occasional

Coining a word

How does one add a new word to the lexicon?

In 1953 Egon Loebner, then a young researcher in radio and TV at Sylvania Electric Products in Buffalo, New York, sent his supervisor and mentor Karl Wendt a memo.

"I suggested that several R&D activities for which I was responsible should all be viewed as related and classified under the common name of 'opto-electronics.'"

It was a time when the fields of electronics and optics were merging—but the language merger wasn't straightforward. In optics, the term "electro-optical" already had a specific use; so did "electron optics" in electronics.

Staying with Greek origin roots, Egon weighed the terms "photoelectronic" and "optoelectronic" and chose the latter. It first appeared in public print in a journal article in 1955 and after some opposition, has prevailed. Today HP has an Optoelectronics Division.

Cutting across fields in a hurry

"The prefix 'trans' means to move between two fields that are completely apart, not overlapping," says Egon Loebner. "With me, it started out as a game to find out how long it takes to go from being completely ignorant about something to learn enough to give a speech to experts.

"The key is to find common metaphors between your own field of expertise and the new one. Get a text that's not too general, not too technical, and underline the common terminology. In the process of establishing a new science, terminology is often carried over. Find the common metaphors (such as "orbit" used in both astronomy and quantum physics) and you're on your way to grasping the new field."

visits during college breaks.

It was the heyday of détente. Egon was charged with overseeing 1,300 joint research projects between the U.S. and the U.S.S.R., including the docking of Apollo onto the Soviet space ship Soyuz 19 in 1975.

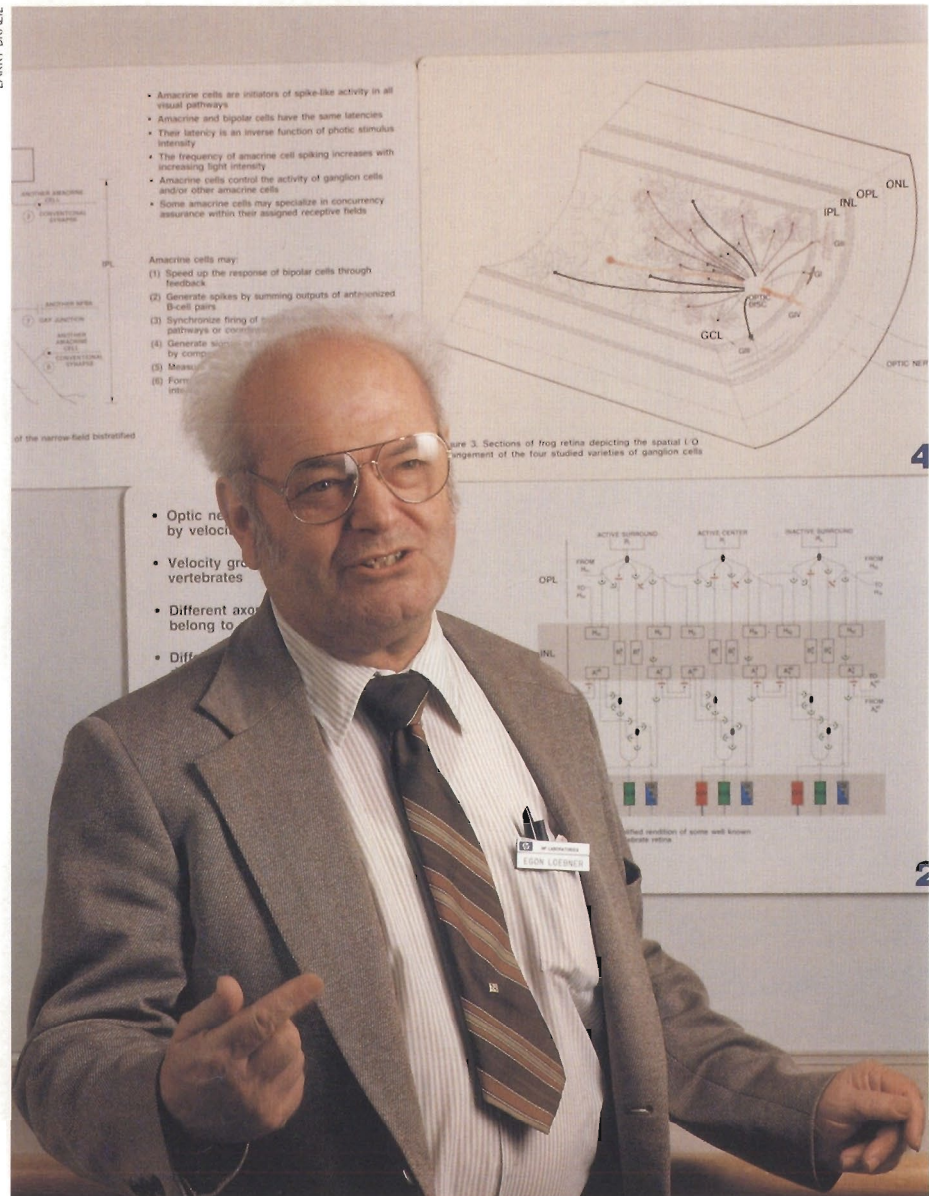
One obvious need was a way to systematically track the rush of collaborative activity. Putting to use his own HP 9830 desktop computer, Egon plunged into the unfamiliar field of data-base management. A project born of necessity, it led to a decision to change his field of interest when he returned to California and HP Labs in 1976.

"To make a contribution, I had to first understand the state of the art," Egon says. Working half time, he took eight computer-science courses at Stanford University. He has since worked with a variety of advanced software projects and a user interface, always taking a multidisciplinary view to synthesize ideas from philosophy, linguistics, computer science and engineering.

The physical property of neural networks has continued to interest Egon, who contributed a scholarly paper on the subject to the IEEE's first international conference on neural networks in 1987. In the early days he was seeking a relationship of biology (through mapping the visual systems of animals) to the switching of light in optoelectronics; today he sees a carryover to computer science.

Egon tends to deprecate what he's contributed to his adopted field. But others point out that he kept alive the interest in artificial intelligence in HP Labs during the 1970s when no one else was championing the idea. A project he began then in natural languages (to give commands to a computer in ordinary English) is under active investigation in HP Labs today.

"Egon's been an important generator of ideas that have led to a lot of advanced data-base interactions between people and machines," says Vice President Joel Birnbaum, who formerly headed HP Labs and now directs the Information Architecture Group. "He's constantly inspiring other people and serving as an intelligent sounding-board for new ideas." Joel credits Egon with first suggesting the metaphor



Is there a relationship between neural networks (the wiring of the brain) and other types of connectivity? Egon Loebner diagrams the retina of a rabbit and a frog to make his point.

of the "domesticated computer"—a machine tamed for easy use.

Along the way Egon has applied his gift for mastering unfamiliar fields to several personal projects.

When the state of California sought to levy income tax for the two years the Loebners were in the U.S.S.R., Egon contested the tax — representing himself in pre-trial proceedings. (In the end, the U.S. Supreme Court denied his petition to hear the case.)

A more critical project has involved studying medicine. Egon was diagnosed with a rare form of epithelial cancer in 1985. He helped devise his own regimen of treatment, and is the only patient invited to lecture on his illness to doctors at the Stanford University Hospital.

The breadth of Egon's interests has resulted in his reading and writing

about many scientific topics. Over the years he's published 50 papers in bionics, biophysics, chemistry, cognitive science, computational linguistics, electronics, human factors, information displays, materials science, optics, physics and telecommunications.

Small wonder that his colleagues marvel at Egon's filing system: an unerring knowledge about the scientific books and journals heaped on all the surfaces in his office. According to one popular story, he once couldn't find his telephone which someone had hidden under the stacks of paper on his desk—but he always knows exactly where every reference is.

Coming up with the right answer is easy for Egon Loebner, the quintessential scientist/engineer/inventor.

—Betty Gerard

LETTER FROM JOHN YOUNG

President John Young looks to the future

As part of our 50th anniversary, this issue of *Measure* takes a look at HP's past—a history of achievement that all of us can be proud of. Anniversaries not only prompt us to review the past, but to look forward and position ourselves for the future. HP has done this well throughout its history. That's why "Fifty Years of Looking to the Future" was chosen as the theme of our anniversary.

What does the future hold for HP? One thing I can say with confidence is that the future will not be serene and quiet. It will be full of ongoing, rapid change, driven by two forces that make what's ahead hard to predict.

The first force shaping our future is technology, and it doesn't stand still. You can see that just by looking at our order picture. In any year, more than half our orders come from products introduced in the preceding three years. So we're making our future on a continual basis.

A second force that will affect HP is the changing international marketplace. Technology is highly mobile, and nations around the world are targeting development incentives to the electronics industry. So more and more, we'll be affected by worldwide political and economic events.

What's the best way to deal with this kind of uncertainty? Well, we can position ourselves to take advantage of changes as they occur—something we've done for a long time.

Our worldwide development team can help us use changes in technology. We're working on capabilities for the future right now: "smarter" instruments, artificial intelligence, superconductivity, neural-network computing—the list goes on and on.

We're also well positioned to take advantage of changes in the global marketplace. We have a strong worldwide



John joins in the retirement party for his secretary, Nancy Thoman.

MARY LOU SIMMERMACHER

people doing instead of growing or making things? Economists estimate more than half of American workers today deal primarily with information. I find the worldwide rise of the knowledge worker the single most striking industrial trend in recent times—and it's going to continue.

The needs of today's knowledge-workers are not adequately met. Instruments and computers are still relatively unfriendly. Your tools can still take up more time than your tasks. People work in groups and want to share information easily, but that's still cumbersome to do. Often, finding the right information is impossibly difficult.

HP is at the forefront of meeting those needs. We're working on enabling networks of diverse computers and instruments to operate together as an integrated whole, and to be extremely easy to use.

This vision goes by different names: computer-integrated manufacturing, a cooperative-computing environment, measurement systems, the hospital of the future—and more. But all of our visions share the same central purpose: to provide the capabilities that enable people and organizations to tap the power of information, and to use it to improve the way we live and work.

So, as we begin our 50th anniversary year, my message to you all is simply this: The future is as big as we have both the will and the skill to make it. Despite our fine record, I think we still have our best years ahead.

presence. All told, we sell HP products in 93 countries and have 42 manufacturing organizations outside the U.S. So we have access to talented people, innovative ideas and growing markets around the world.

We're also well positioned because of something about HP that I believe won't change: our values.

Our belief that every individual can make a difference and should be recognized for it; our tradition of technical excellence, customer satisfaction and quality; our goal of being a good citizen wherever we conduct our business—these values give us stability in a changing world and a common bond wherever HP people work.

We may not be able to foresee the exact shape of our future, but I can assure you it will present a wealth of opportunities for HP. Why? Because the business we're in—helping people acquire, display, analyze and communicate information—directly addresses the changing nature of the way we work.

In the early 1900s, 40 percent of U.S. jobs were in agriculture. Now that number is about 3 percent. In the 1940s, one third of all U.S. jobs were in manufacturing. Today that fraction is almost cut in half. What are all those

A handwritten signature in cursive script that reads "John".

EXTRA ASSURE



McMINNVILLE PHOTO

Dick Kennedy (left) and Mike Krull help pack some of the \$50,000 worth of equipment from the McMinnville (Oregon) Division for the Armenian disaster-relief project.

HP efforts aid Armenia

Joe Boucher arrived at HP's Andover Division (Medical Products Group) at 6:30 a.m., his usual starting time. With cup of coffee in hand, he went downstairs to the systems-assembly and testing area where a dozen other HP employees gathered.

It appeared to be a usual day, except it was Sunday, December 11, 1988—four days after the devastating earthquake struck Soviet Armenia. Doctors had asked HP for help and teams of U.S. employees on both the sides of the country responded.

Less than 24 hours passed from the time the phone call from the International Physicians for Prevention of Nuclear War came in requesting diagnostic ultrasound equipment to the time the equipment was configured, tested and packed.

Five HP SONOS 100 cardiac-ultrasound-imaging-

systems and supplies, valued at more than \$330,000, were sent to medical centers in Moscow where patients from the earthquake site had been transferred. Since most of the injuries were crush-related injuries, the units were used to look for damage to the heart, and to evaluate changes in the heart's function.

Employees in HP's Moscow office coordinated the product set-up, training and support needs.

Additionally, the Medical Products Group responded to a second request from a U.S. surgical team sent to Armenia.

As more than 30,000 earthquake victims were said to be waiting for surgery, a team at the McMinnville (Oregon) Division assembled \$50,000 worth of electrocardiographs and defibrillators, as well as other supplies.

"Normally we just test the units," said Joe Boucher, "but that Sunday we followed them down the line and helped pack them."

Blue-ribbon awards mark red-letter day

The U.S. Army recently awarded Blue Ribbon Contractor Certification to eight HP divisions "for maintaining the highest standards of quality control and on-time delivery. . ."

The Army's Communications-Electronic Command (CECOM) honored the Spokane and Lake Stevens Instrument divisions in Washington; Loveland Instrument and Colorado Telecom divisions in Colo-

rado; and Support Materials Roseville, and the Santa Clara, Signal Analysis and Stanford Park divisions, all in California.

"... I guess everybody is beginning to think we are passing these things out like we had a hundred of them," said Colonel Joel S. Levanson, CECOM procurement director, during his stop in Colorado Springs, Colorado. "But in reality, when you consider we process about 20,000 procurement actions a year, this award is very rare. . ."

REG. FRANCHESLYN



Production worker Ann Babcock explains the intricacies of a Blue Ribbon-winning instrument to (from left) Colorado Telecommunications Division GMAI Steiner and Army procurement representatives.

SHIRLEY GILBERT



Mitsutoshi Mori, factory manager at HP's Hachioji, Japan, facility, honors Fujio Maki at an all-employee meeting.

Maki's a real Killer

If you call Fujio Maki a Killer, the Yokogawa-Hewlett-Packard production worker will smile and thank you.

This isn't because the Japanese YHP employee is extremely polite but because he IS a Killer—a Hachioji Killer (pronounced Keerah in Japanese).

The Hachioji Killers is a basketball team from Hachioji City, just outside Tokyo, where YHP's factory is located. The Killers is one of about 100 wheelchair basketball teams in Japan.

Maki is quite an athlete. Along with his first love, basketball, he also swims, plays tennis, enjoys judo and is learning the sport of marathon-wheelchair racing.

Recently, the super athlete was awarded a plaque for his athletic ability and dauntless spirit at an all-

employee meeting at YHP's factory in Hachioji. "It's important," he said, "to have a goal and shoot for it."

Maki should know—he's good at that. He's one of the three top scorers on his team and, as team captain for eight years, has led the Killers to the number three spot in the Tokyo League.

The basketball enthusiast, who joined YHP five years ago, lost the use of his legs after getting a virus at age 17 that affected his spine.

Despite the fact that Maki is wheelchair-bound, he drives, does sports every day but Wednesday and is a great YHP contributor.

Does his disability stop him from doing what he loves to do? Not at all, he says with a grin. "I'm busy, but I like it," says the Hachioji Killer.

—Shirley Gilbert

YHP READY TO EXPAND

With its Hachioji factory running out of room, Yokogawa-Hewlett-Packard will build a second plant in Kobe that will add 59,400 square meters of space. When completed in 1991, the new facility in Western Japan near Osaka will nearly triple YHP's manufacturing space.

To prepare for the move, the former YHP Instrument Division has been split:

- The YHP Hachioji Division under **Shigeki Mori** as general manager stays at the original site, with responsibility for YHP's own analog IC-test product line and for transferred products.

- The YHP Instrument Operation under **Yoh Narimatsu** as operations manager will move to Kobe when the permanent facility is completed. It is responsible for YHP's own component-test product line.

The permanent Kobe site will also house several other YHP activities, some of which move into leased space in Kobe later this year.

NEW HATS

David Eisner to general manager, HP operation in Israel... **Bruce Campbell** to operations manager, Data Systems Operation... **Wade Clowes** to operations manager of the Cupertino Manufacturing Operation.

Ong Keok Teng has

been named to head China Hewlett-Packard's Shenzhen operation as manufacturing manager. Located in a special economic zone in Southern China, it started up last July.

WORTH NOTING

In December 1988, HP awarded 107,160 shares of stock to long-service employees around the world. A program to give 10 shares of stock at the tenth-year anniversary has been expanded to include all decade anniversaries. Catch-up awards of stock for past decade marks were made this year to all long-service HP employees.

To encourage standardization efforts in the automatic-test industry, HP has opened to the public its HP 70000 modular-measurement-system (MMS) architecture. HP has released patent rights to the system's private modular-system interface bus.

MARKETING CHANGE

The Networked Systems Sector's marketing organization under **Bill Murphy**, NSS marketing manager, now pulls together a U.S. Sales Center; a coordinated communications and sales productivity function; and programs for aerospace/Department of Defense, telecom, manufacturing industries, major account services, financial services, vertical markets and value-added business.



Oregon Governor Neil Goldschmidt (left) and Fred Schwettmann, general manager of HP's Circuit Technology Group, lend a hand to ground-breaking ceremonies in Corvallis, Oregon.

Celebrating from the ground up

HP employees in Corvallis, Oregon, braved cold winds and a brief hailstorm January 5 to celebrate two major HP historical events.

First, officials at the site raised HP's 50th anniversary flag to mark the beginning of the company's year-long birthday party. Then city and state officials joined in a ground-breaking ceremony for a new \$100 million

production facility at the site.

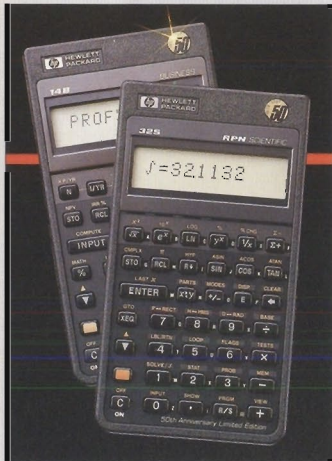
Construction is under way on a 200,000-square-foot building where HP will manufacture six-inch silicon wafers. Scheduled for completion in early 1990, the building will house the Corvallis-based Northwest IC Division.

"This project is happening because of you," Oregon Governor Goldschmidt told 200 HP employees during the chilly outdoor ceremony. "You've done a great job for yourselves."

Limited-edition calculators bearing the 50th anniversary symbol are available this year to HP employees and stockholders only. Calculators in the U.S. are \$50 each; prices outside the U.S. will vary, depending on local taxes and duties. The offer is limited to two commemorative calculators—equivalent to the 14B business and the 32S scientific calculators—per shareholder or employee.

Order forms were included with the annual-report mailing. Employees who aren't stockholders can get order forms and details through their personnel department.

Order forms should be mailed by March 31, 1989. Calculators will be shipped by July 1, 1989.



An anniversary item you can count on

Are you in the market for a new calculator, or something as a keepsake of HP's 50th anniversary? How about one item which gives you both?

NEW MOVES

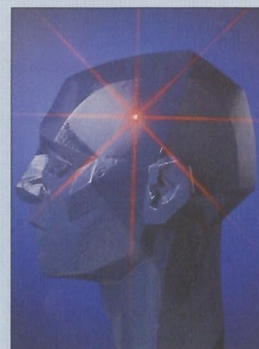
HP announced in January that it has applied to list its stock on European stock exchanges in London, Frankfurt, Paris and Zurich. If approved by the exchanges, the listing will take place during the fourth week in April.

HP has acquired Eon Systems Inc. of Cupertino, California, which designs and makes intelligent network-management systems. It becomes the Intelligent Networks Operation, reporting to the Colorado Telecom Division... HP has made a 25 percent equity investment in Hilco of St. Louis, Missouri, which designs and markets software systems for factory-floor control which run on the HP 9000.

NEW PRODUCTS

The Logic Systems Division has introduced a new emulator/analyzer combination for the Intel 80386 32-bit microprocessor, operating in the HP 64000-UX microprocessor-development environment... The HP 78352A patient monitor from the Medical Group's Waltham, Massachusetts, site is a low-priced (US \$2,807) version for electrocardiograms only. It offers a high degree of accuracy with fewer false alarms... HP Test Expert, an expert system for electronics manufacturing from the Advanced Manufacturing Systems Operation, is one of the first automated test

equipment (ATE) tools to incorporate artificial-intelligence capabilities. It is written in "C."



HP PHOTO

HP Test Expert incorporates artificial-intelligence.

Firsts: The Avondale Division's HP 5921A atomic-emission detector can detect almost any element on the periodic table, including oxygen... The HP LAN Manager networking-software family from the Information Networks Group has expanded to span DOS, OS/2 and UNIX operating systems... The HP 9000 Model 340SRX workstation is said to be the first 3D workstation under U.S. \$15,000 to offer the best graphics-application in its class. From the Workstation Group.

The HP ScanJet Plus is a new 8-bit, gray-scale scanner that provides higher-quality images of photos, line art and other illustrations. From the San Diego Division... A new version of HP DeskManager from the Office Productivity Division includes support for Asian, Hebrew and Arabic languages, along with other new features.

PARTING SHOT

Run this up the flag pole

The winds blew, a light rain fell and a hearty band of umbrella-covered employees gathered around the flag pole outside Corporate headquarters in Palo Alto in January as Hewlett-Packard officially launched its year-long 50th anniversary celebration.

San Francisco Bay Area newspaper photographers and HP-TV documented the historic event as President and CEO John Young and Jack Brigham, vice president of Administration, helped raise a flag bearing HP's 50th anniversary symbol.

Most HP sites around the world have held similar flag-raising events to signal the start of HP's next half-century.

Entities are encouraged to design their own creative ways to celebrate the anniversary. In addition to picnics, open houses and customer-recognition events, many sites are capitalizing on the special year to hold equally special observances:

- Employees at HP Taiwan kicked off the year with a January flag-raising, extended coffee break and traditional lion's dance as the first of several events.

RENEE LYNN



Jack Brigham, John Young and Brian Flonory hoist the 50th anniversary flag at Corporate offices.

- Beginning in April, HP stock will be listed and traded on four European stock exchanges—London, Paris, Zurich and Frankfurt.
- In June, more than 15,000 HP employees and their families from Northern and Southern Colorado

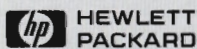
are anticipated for a state-wide anniversary celebration at the Air Force Academy in Colorado Springs.

- And in May, more than 150 employees, including a representative from each site, will gather in Palo Alto for the dedication of "the

garage"—the place where Bill Hewlett and Dave Packard started HP—as a California state historical landmark.

It's guaranteed to be a memorable year as Hewlett-Packard celebrates "Fifty Years of Looking to the Future."

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



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