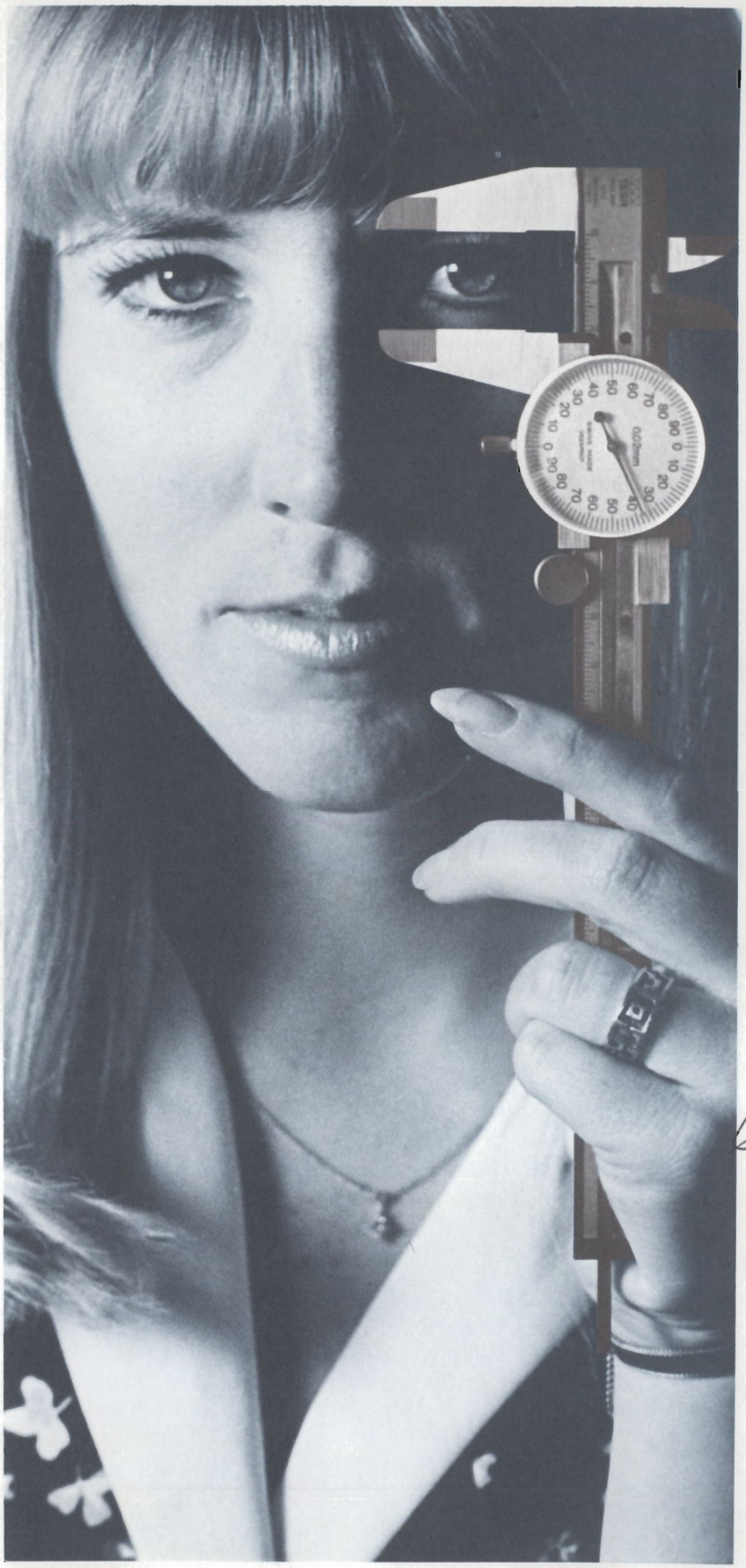
Measure

For the men and women of Hewlett-Packard/OCTOBER 1973



HP goes metric

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Would you believe it! They've been working here longer than the founders of the company!

How can that be?

□ Well, it can be Mary Fredman, who joined the organization on Armistice Day (November 11), 1926. Or it can be Buck Gleason, who came on board about a year later. Of course, the outfit they signed up with those 46 and 47 years ago was the Sanborn Company, now the Medical Electronics Division, which became part of Hewlett-Packard only in 1961. Without question, Mary and Buck are the current all-time long-service champions of the worldwide HP organization.

There are many questions that come naturally to mind when you consider their near half-century of service in a company and an industry that have experienced great change: What has that meant to them? What was it like back "then"? Would they do it all over again?

"If you want to know the truth," says Mary Fredman, secretary to advertising manager Joe Shaughnessy, "I came here on a two-week temporary job, and nobody has ever told me to leave. So I just stayed on. I was 17 at the time, a typist working in the direct mail department.

"The job just grew and grew, and eventually I was responsible for the lists, with about 10 people working on them.

"Those were the days when Sanborn did just about all of its selling by means of direct mail. Sometimes the company made money, others we didn't—and we all had to accept a note in lieu of pay. There was no such thing as vacation or sick pay. But Dr. Sanborn was a very democratic fellow. Profits were shared—sometimes in stock if there wasn't enough cash, and sometimes in both cash and stock."

Buck Gleason, model shop assistant supervisor, remembers joining the company at its then downtown Boston location, getting the job through the aid of a school friend whose father worked closely with Dr. Sanborn.

"There were about 30 people in the shops then. We worked 44 hours—five and a half days a week then. Vacation was one week. Without pay.

"Those were difficult times for the company, particularly after the big depression of 1929. Our sales suffered, and sometimes I wondered if we were going to pull through.

"Our original ECG line was based on the string galvanometer—a massive machine with brass castings. You'd laugh at it today, but it put Sanborn into the ECG business. Then Dr. Arthur Miller came to the company in the thirties, and introduced it to the electronic tube that became the basis of the new Cardiette line of ECGs. That became the start of real growth.

"When Mr. Jenks came in as president of Sanborn in 1942 he backed the new ECG products in spite of high costs and early losses. But it paid off as our most important product line."

The merger into Hewlett-Packard was another signal event, according to Mary: "It wasn't easy on some people who felt they may have lost some status or who didn't want to train themselves to new roles. But generally the merger changes were for the benefit of all—the employees and the Sanborn stockholders. Policies didn't have to change much. Sanborn had always been fair to people, as HP is. So I think it has worked out very well.

"I've enjoyed all my years here, but I'm not really looking forward to retirement at the end of December. I'll find something to do, you can bet on that."

As for Buck, who still has a year to go before official retirement age, "The thing I miss most today, I guess, is the closeness we had in the early days. It was much smaller, of course. Everybody knew everybody.

"In the shop, we used to work directly with the engineers. Now it's more complicated, and some of the young engineers don't always tell you exactly what they're shooting for. But you have to expect that sort of thing in a growing organization. The important thing is to make sure that you get the right meaning across, because there's always more than one way of doing something." □

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We'll inch toward full metrication over the next decade...

Ten years from today, the design dimensions of all Hewlett-Packard instruments and components will be spelled out in a terminology now quite unfamiliar to many production and manufacturing people in the U.S. divisions. By the end of the decade they'll be measuring their production work with tools and gages marked in millimetres; weights will be recorded in kilograms—or decimal multiples and sub-multiples. Elsewhere, no doubt, we will all have begun to use the Celsius scale of temperature (zero for the freeze point of water, 100 degrees for the boiling point—and 37 for normal body temperature); the plant engineering people may even speak of so many hectares of land (about 2.47 per U.S. acre).

Whatever the case, we will be using and speaking "metric," the international language of measurement.

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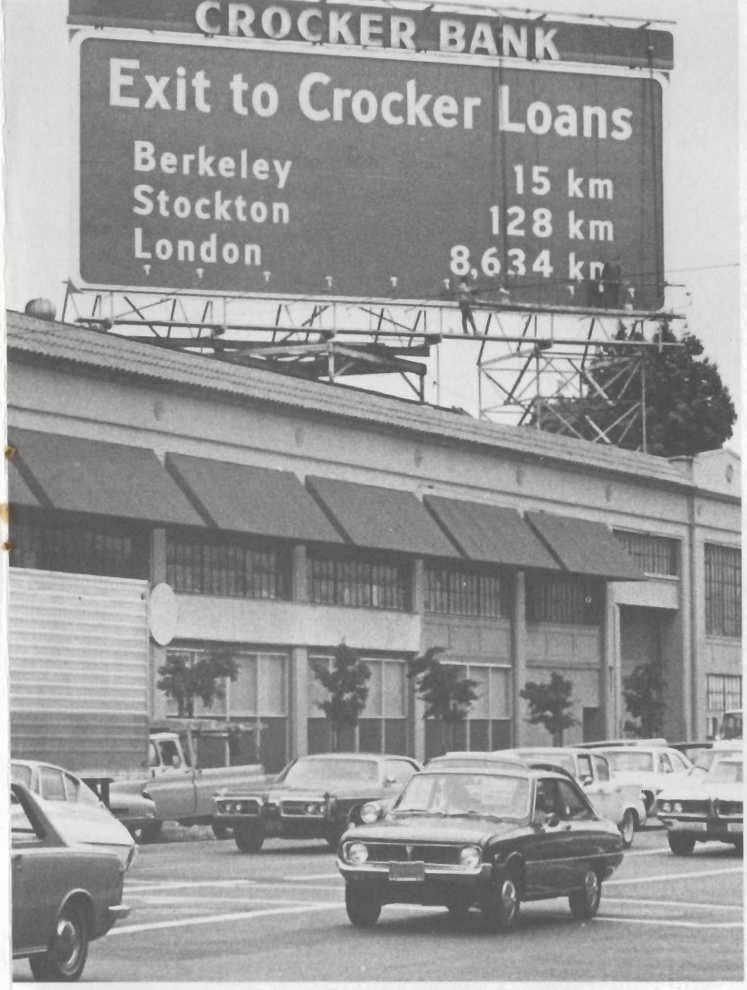

Metrication is busting out all over the U.S. these days as the world's last major metric holdout moves to adopt the Systeme International (SI). A San Francisco bank hailed the trend with a billboard giving distance in unfamiliar kilometres (strict SI usage would preclude the comma in the London figure). HP's own program of metrication is signified in the cover photograph, with Cindy Schwafel, Stanford Park photo lab, viewing the world through the business end of metric dial-reading calipers.

Various projects involved in metrication of Palo Alto's Manufacturing Division are under discussion here. From left are Gary Young of the components area, John Bogren, Corporate metric coordinator, and John Ellis of the fabrication area. Both Young and Ellis are metric coordinators for their areas. In the foreground are various metric training aids and items to be used in the conversion process.

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HP goes metric

The situation today is as follows: most HP instruments have predominantly measured metrically, since most measurement standards used by scientists and engineers are metric, using 10 as a base number. So conversion to metric will have little if any impact on our research and electrical engineering activities; they're already there. In mechanical engineering and manufacturing operations in the United States, however, HP has always worked with the system of inches and pounds that the early colonists brought from England. There really was no choice in the matter until recently when leading industries and the Federal government became convinced that the United States—in fact the last major industrial country to retain a non-metric system—must metricate or lose huge international markets for its manufactured goods.

Legislation that would put the U.S. officially in the metric bag now awaits action. Meanwhile, many of the leading manufacturing organizations, particularly the multinationals, including the auto firms, have decided to proceed with their own metrication programs in the belief that it is desirable and inevitable. In most cases, because of the high cost involved in retooling and retraining for metric, they're spreading the adoption procedure out over a period of years. That's the posture HP has taken. First step was to explore the company's needs in metrication as a basis for establishing policy. This was launched early this year when Bruce Wholey, vice president-Manufacturing, brought John Bogren, a manufacturing engineer, in from Manufacturing Division to explore and coordinate the company's approach. The result is a metrication timetable that is now being circulated and studied by the divisions involved.

The timetable shows a gradual and evolutionary introduction: first, the current exploratory phase in which policies, procedures, training materials, legislation, coordination and some experimentation are studied; next year, certain shop activities will be started, including employee training; designing in metric is scheduled to begin in 1975 on a dual-dimension basis, along with procurement of metric equipment for model and tool shops; metric production should be launched in 1977. Dual dimensioning will be phased out over a period of two or three years in favor of metric only as our production areas and suppliers are appropriately equipped. It is not planned to go back and redesign existing products in metric.

Included in the first phase is a controlled metric experiment at Santa Clara Division. This calls for the design and building of two instruments, one involving dual dimensioning, the other fully metric. The goal is to test the theories, assumptions and procedures by which HP is proceeding toward metrication. Bernie Barke, industrial designer who's coordinating the division's program, says it is not so much an experiment as an experience: "We plan to keep right on going with it, evaluating as we go."

As evidenced by a survey of departments, the heaviest involvement in metrication will be experienced in the shop fabrication, manufacturing engineering and facility engineering areas. Here, all the equipment that people use (except programmable tools such as numeric-controlled machines) will need conversion or replacement; the people who operate them will all need some training in their use.

No doubt, some people are going to ask: "Why go to all this trouble?"

Some answers to that are afforded by the example of Great Britain which is just now in the last stage of a 10-year metric conversion program. Not too many decades ago, of course, Britain was the very epicenter of the industrial revolution. Along with its laws and the Union Jack, it exported the imperial gallon, the yard, the acre and the pound (lb.). This was a time that permitted Lloyd George to silence parliamentary debate on the question of going metric by asking: "Do you expect the British workingman to go into a public house and ask for .56825 litre of beer?" But the dissolution of Empire following World War II, together with the rise of new economic trading blocs, posed new problems and challenges to that position.

For many countries and former colonies, particularly those whose tradesmen and manufacturers had come to rely on British hardware and standards, the question of choosing between the imperial and the metric systems quickly became critical.

Should they undertake to maintain dual systems? Think, for example, of the problems—the extra cost and confusion—of warehousing two incompatible systems of "fasteners," the nuts and bolts and screws that hold so much of industrial production together.

Beyond such nitty-gritty considerations, however, was awareness of the essential qualities that had already attracted much of the world to metric—its coherence and its ability to quantify the new phenomena uncovered by scientists. Now known as SI (Système International d'Unités, or International System of Units), the modern metric system makes the task of deriving all other necessary units from a base unit straightforward and logical.

All in all, metrication in Great Britain has proceeded with less difficulty and with more benefits than anticipated, as it has also in such former imperial bastions as Australia, New Zealand, and Canada.

In addition to the general advantages of aligning itself with the 90 percent of the world's population doing 75 percent of its business in metric, Hewlett-Packard will benefit in several other ways. The problems of transferring product responsibilities between international and U.S. divisions will be eased considerably. The logistics of replacement parts and service for exported products should also become simpler. Once learned, metric will prove a simpler and more efficient system. It will simplify international communications, and promote broader use of international engineering standards, which are predominantly metric.

Not everyone will necessarily feel pleased or served by metrication, of course. The fashion industry, for one, reports wide resistance to millimetres as the standard for dress size. Apparently, few customers want to admit to being 914.4-660.4-889.0 when they can be 36-26-35, even if they look and are the same. ❑

SI si!

Although legislation that would put the U.S. in the metric camp has not been voted yet, chances are it will propose the use of "SI," the international system of units. SI is built on a foundation of seven base units, as follows:

Quantity	*Name*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Temperature*	kelvin	K
Amount of substance	mole	mol
Luminous intensity	candela	cd

**Degrees Celsius also acceptable (°C = K-273.15)*

One way to demonstrate the advantage of the SI system is to compare a number of base units and derived units with the variety of units customarily used in the U.S.:

Quantity	*SI Unit*	*Customary Units*
Length	metre	inch, foot, yard, rod, mile
Mass	kilogram	ounce, pound, ton
Temperature	kelvin	fahrenheit
Force	newton	dyne, ounce, pound, poundal
Energy	joule	foot pounds, British Thermal Units, calorie
Power	watt	horsepower, tons (cooling)
Pressure	pascal	pounds-per-square-inch, inches of H_2O or mercury, bar

As demonstrated above, SI offers the unique simplicity of having only one unit for each quantity measured. It is also independent of gravity, with measurements easily replicated anywhere without concern for such factors as sea level.

Most of the base units have been defined in terms of absolute physical phenomena. Moreover, the system offers coherence throughout, that is, the product or quotient of two unit quantities—say the *acceleration* of a *mass*—is itself a unit quantity—in this case a *newton*. This is the force applied to one kilogram that gives it an acceleration of one metre per second per second.

Some special problems remain to be resolved. In particular, the field of data processing is in need of some answers before metrication becomes practical. The SI system, for example, employs k for kilo (1000) and K for kelvin, and m for milli (0.001) and M for mega (1 000 000)—whereas the character sets available in both upper and lower cases for computerized data processing entail less efficient data output.

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New electronic products to meet new needs

A dozen years ago, the big electronics shows—IEEE in New York and Wescon in California—were *the* shows for Hewlett-Packard as well as the electronics industry in general. Product introductions were scheduled to coincide with these gatherings, and their unveiling on the convention floor was news. Consequently, it was a good place to observe the important product trends.

It's no longer that simple. Hewlett-Packard has since added various product lines—data products, medical, analytical, and civil engineering—that are not primarily or necessarily aimed at the electronics industry even though they operate electronically. And as for product introductions, HP has learned that these are better done on an individual product basis.

In spite of all this, it is still possible to go to the big electronics shows and learn a good deal about the exhibitors. For example, several of the characteristics frequently used to describe the modern Hewlett-Packard organization were observable to some degree last month at the 1973 Wescon—Western Electronics Show and Convention:

Innovative: An impressive range of new products was on display to support that description. Star of the entire show was the new 970A probe, a digital multimeter that packs great capability (see separate report) into one very handy battery-powered package. Other key new products that many visitors were seeing for the first time included two logic state analyzers (5000A and 1601L) to troubleshoot such things as modern computers and calculators, a 1 MHz digital LCR meter (4271A), a bit-error rate measuring system to test microwave communications systems, a computer controlled digital circuit-board test system, a new line of low-cost LED displays for such things as digital clocks and calculators, and the desktop versions of the pocket calculators.

International: Two of the new products represented engineering contributions by international divisions: The digital LCR meter is a development by YHP in Japan, and the high-speed bit error rate system came from HP Ltd. at South Queensferry, Scotland. Other sources are Loveland Instrument Division for the 970A, Colorado Springs for the 1601L, Santa Clara for the 5000A, Automatic Measurement Division for the circuit-board (or PC-board) test system, HPA for the displays, and Loveland Calculator Division for the desktop models.

Diversified: Looking at that lineup of new products plus others previously introduced, some important trends are evident. First, among instruments in the traditional HP area, is the development of models that are low in cost yet have HP quality. The 970A is the latest in this line that includes the logic-test probes, the 3311A function generator introduced last spring and the very new 1220A/1221A oscilloscopes. These instruments are leading HP further into new markets serving such uses as television and appliance repair, school-shop training, routine production-line testing, and industrial troubleshooting.

The Wescon showing also reconfirmed the company's continuing thrust into digital test equipment directed not only at servicing calculators and computers, but also for communications systems that connect computers with other computers. HP entries in this market include the logic test probes and clips, the 5000A Logic Analyzer, the 1601L Logic State Analyzer, and the very recently introduced Data Error Analyzer.

Extending HP's highly successful penetration of the market for scientific and engineering calculators were the new HP-45 and its desktop version, the HP-46 which offers paper-tape printout capability that many customers want.

As the accompanying photographs show, Wescon visitors were very interested in all of HP's new offerings.

Dick Cochran, left, product manager for digital scopes at Colorado Springs Division, discusses 1601L logic state analyzer with Wescon visitors.

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new electronic products

John Lee, above left, international sales manager at Santa Clara Division, briefs visitor on features of 5000A logic state analyzer which is designed to handle a higher volume of high-speed data. Both the 1601L and the 5000A were designed for roles as troubleshooters in today's high-powered data-processing systems.

The powerful HP-46 is the desktop version of the HP-45 pocket calculator. Both provide advanced scientific and engineering capability, but the 46 adds a built-in paper tape printer for permanent record keeping. Ed Heinsen, left, Advanced Products Division engineer, demonstrated the 46 and other machines for Wescon visitors.

Developed and manufactured at the South Queensferry, Scotland facility, the new HP bit-error-rate measuring system is designed for use by communications companies to determine the capacity of lines in carrying digital and voice signals as well as to point to trouble in the line. At left in picture is Rudy Poucher, Sacramento district manager for Neely Sales Region.

Precision testing of complex integrated circuits as well as other discrete components is offered by the 4217A LCR (inductance, capacitance, resistance) meter from YHP. Demonstrating the new meter is M. Shida, YHP engineer presently visiting HP organizations in the United States.

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New low-cost, low-power LED displays from HPA had a booth of their own, but were also seen in action in other HP instruments such as the pocket calculators and the new 970A probe.

AMD's new 9560B/D digital circuit test system tests printed circuit boards by means of a stored test program rather than by comparison with a reference board. The system can test digital assemblies or boards with up to 360 pins at rates to 22,000 patterns a second.

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Metamorphosis of a little black box

And now, ladies and gentlemen, up from the HP test-instrument line, but with a brand-new act, we bring you the Model 970A digital multimeter! Hand-held handiness! Battery powered! Autoranging over five ranges of ac and dc volts and ohms! Operating simplicity! Line-of-sight reading on the spot! Solid-state!

Indeed, as previously noted, the 970A has all the makings of a star performer. But will it live up to that promise?

At Wescon, the 970 demonstration booth at times was stacked five deep in visitors waiting to make a hands-on test. Independent observers there gave the neat new 7-ounce instrument the nod as the show's star. And commenting via media covering the show, various competitors acknowledged its potential impact but expressed a general feeling that "it will do more to expand the digital multimeter market than to nibble away at existing digital business," according to an *Electronic News* report.

Some of that potential new business is suggested by the photographs on the opposite page. In a number of ways such applications are suggestive of the popular usage and appeal that have been the experience of the HP pocket calculators. Technicians, repairmen, telephone craftsmen and engineers—it is hoped—will see in the 970 the same kind of high-powered "technology-at-your-fingertips."

Loveland Instrument Division, site of the 970's development and manufacturing, is more than a bit excited over these prospects.

According to participants in the 970 development process (too many to mention here), it started as a typical electronic box aimed at the lower end of HP's multimeter market. However, in analyzing the functions of such a multimeter it quickly became apparent that a probe-type design would provide greater benefits than a box. Since it could be designed as a hand-held unit to be used right in front of the operator, it would permit "push-to-read" operation and a smaller display. In turn, these features would require less power, and a smaller power supply. In addition, it was possible to concentrate almost all functions on one MOS integrated circuit, a thin-film hybrid of large postage-stamp size incorporating the equivalent of 3000 transistors. That concentration together with the other design features led to an instrument package that is low in cost ($275 U.S.) as well as very reliable and handy.

At latest reports, orders were living up to lively expectations.

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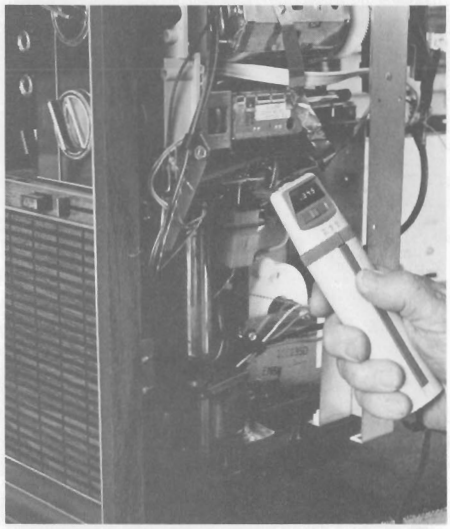
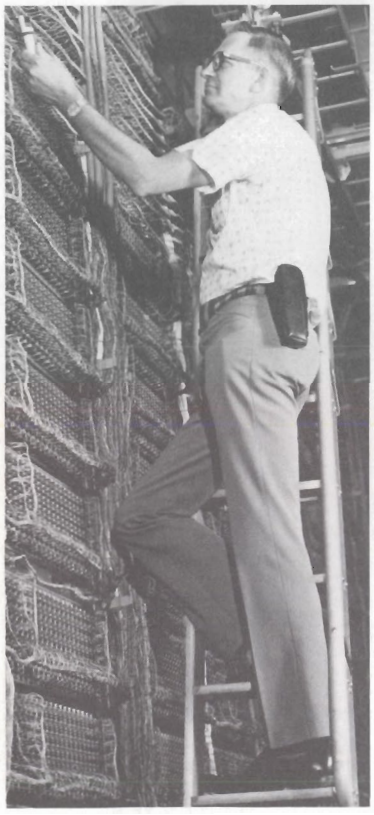
Visitors lined up to try their hand with the new hand-held digital multimeter from Loveland. The 970A probe brings extraordinary convenience to the task of reading electronic circuitry.

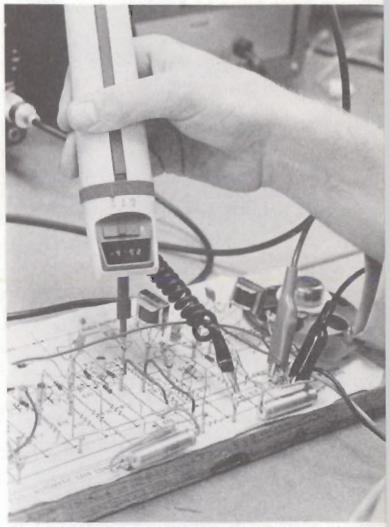


for the TV repairman.



for the telephone troubleshooter.

for the test technician.



for the electronics student.

for the computer service specialist.

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News in Brief

Cupertino—The 6,000th HP minicomputer was shipped late in July to Allen-Bradley Company, a leading manufacturer of numerical control systems.

"This is a major milestone for Hewlett-Packard," said Bill Terry, vice president. "HP is one of only three manufacturers in the world to ship more than 6,000 minicomputers."

Allen-Bradley, Highland Heights, Ohio, will receive more than 100 HP-2100 Series minicomputers under a contract signed recently with Hewlett-Packard.

Terry said that HP's Data Systems Division has increased its shipments by 50 percent in little more than one year. HP entered the minicomputer field in 1967 and delivered its 4,000th unit early in 1972.

"Customer recognition of HP as an experienced manufacturer of minicomputers is a major reason for the increase," Terry said. "This experience, coupled with the proven reliability of the 2100 Series minicomputers, is largely responsible for a significant upturn in OEM sales."

HP-2100 Series minicomputers are key elements in Allen-Bradley numerical control systems widely used in industry for precision machine control.

Palo Alto – Hewlett-Packard Company has reported a 31 percent increase in sales and a 14 percent increase in earnings for the third quarter of the company's fiscal year.

Sales for the third quarter ended July 31 totaled $164,079,000, compared with $124,977,000 for the corresponding quarter of fiscal 1972. Net earnings amounted to $10,550,000, equal to 39 cents per share on 26,748,225 shares of common stock outstanding. This compares with earnings of $9,256,000, equal to 35 cents per share on 26,386,398 shares, during last year's third quarter.

David Packard, board chairman, said the company's incoming orders for the quarter amounted to $198,690,000, a gain of 45 percent over orders of $137,349,000 booked in the corresponding period of 1972. For the nine-month period ended July 31, orders totaled $530,158,000, up 41 percent from a year ago.

"International markets have been particularly strong," he said, with orders from non-U.S. customers amounting to $222,096,000 for the nine-month period. This represents a gain of 54 percent over the corresponding period of 1972. Domestic orders for the same period have risen 34 percent to $308,062,000."

Palo Alto—Hewlett-Packard has reported a marked change in the relationship between its government and non-government business during the first half of the company's fiscal year.

Chairman David Packard said an analysis of the company's incoming orders for the six-month period ended April 30 showed that HP's government business in the U.S. declined 6 percent from the comparable period of fiscal 1972.

On the other hand, the company's non-government domestic business increased 63 percent over the same period, and its international business rose 46 percent. These gains far exceeded the decline in government orders.

As announced to the press on May 18, HP's total orders for the first half amounted to $331.5 million, up 39 percent from the first half of 1972.

"A subsequent analysis of these orders indicates that $54.5 million are traceable to U.S. government spending," Packard said. "This compares with $58.1 million a year ago.

"As a percentage of our total business, government orders have dropped from 25 percent in the first half of 1972 to only 16 percent in the current year."

The company classifies government business as any sale directly to the Federal government or to private firms fulfilling government contracts.

Packard said that as recently as 1969, government orders accounted for 35 percent of HP's total business.

"The continuing decline in the government percentage is a healthy trend, clearly indicating that we are broadening our base and strengthening our position in markets that are not dependent upon government spending."

Palo Alto—Construction was started in August on an 80,000 square-foot sales office in Santa Clara to be occupied by the northern area office of Neely Sales Region.

The Neely office now is located at 1101 Embarcadero Road, Palo Alto, and has approximately 90 employees.

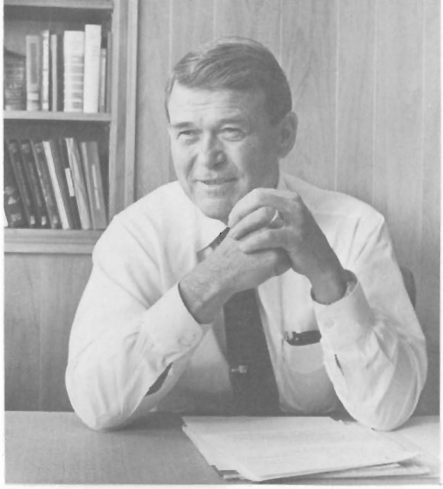
The building will be ready for occupancy in about seven months. It will house sales, service and training personnel and facilities.

Palo Alto—Barney Oliver, vice president of research and development for Hewlett-Packard, has been elected to the company's board of directors.

Oliver joined Hewlett-Packard in 1952 as director of research and has been vice president of research and development since 1957.

He received his A.B. degree in electrical engineering from Stanford University in 1935, and earned an M.S. degree as well as a Ph.D. degree, magna cum laude, in electrical engineering from the California Institute of Technology.

As a member of the technical staff of the Bell Telephone Laboratories from 1940 to 1952, Oliver worked on the development of automatic tracking radar, television transmission, information theory and efficient coding systems.



From the president's desk

This year was the tenth anniversary of the establishment of Y-HP, a joint venture between Hewlett-Packard and Yokogawa Electric Works of Tokyo. Y-HP has become a very important part of our international operations, particularly as Japan is now the second largest international market for HP products.

The anniversary, coupled with the growing importance of our operations in Singapore and Malaysia, provided an appropriate occasion to let our Board of Directors see firsthand the extent and importance of our Asian operations. The Board therefore held its October meeting in Japan, and following this meeting and an anniversary ceremony, visited HP Singapore and HP Malaysia. It was, I think, an eye-opening experience for all of us.

Y-HP now employs over 800 people and is responsible for both the marketing of all HP products in Japan and for the manufacture of its own product line. About 80% of Y-HP-manufactured products are sold in Japan and about 20% are exported to the rest of the world, including the U.S. About half of the products now manufactured in Y-HP are products of its own research and development program. Not only is Japan our second largest international market, but it is also one of those showing the most rapid growth. To meet these needs, this year we doubled the size of our plant in Hachioji, and are now planning future expansion. Y-HP has been a very satisfactory investment for both HP and YEW.

In addition to the HP Board meeting and the very enjoyable and informal anniversary program, all of the U.S. visitors had a good opportunity to meet with, and get to know, both the key management personnel of Y-HP as well as the top management people in YEW. It was Japanese hospitality at its best.

HP Singapore proved quite a contrast to Y-HP. The company is located on the top two floors of a facility leased from the Singapore government, and the conditions are crowded at best. It has no R&D or marketing responsibility to speak of. The products manufactured are all for export either as end items or as assembled components. HP Singapore was originally started to supply labor-intensive subassemblies to HP plants in the U.S., such as core memories for computer production in Cupertino. Prior to the establishment of HP Singapore we had been purchasing these components from U.S. companies who in turn had them produced in such areas as Hong Kong and Taiwan. As our business in solid-state components expanded, HP Singapore was also asked to provide manufacturing assistance for a number of these high-technology items.

Within the last year, two steps have been taken that changed the pattern of production. The first was the decision to manufacture all the hand-held calculators for markets outside the U.S. in Singapore. The principal advantages are favorable tax treatment and the fact that such items manufactured in Singapore can be exported to such important markets as Europe and Japan on a duty-free basis. The second change resulted from the decision to establish HP Malaysia with the express purpose of providing a second source of supply of core memories. Most of this core assembly work has now been transferred.

Although we are very crowded at our HP Singapore facility (about 1800 people in 50,000 square feet), we have now obtained a site for a new plant not far from our present location and will begin construction probably in late 1974. Dave and I were to have participated in a tree-planting ceremony at the new site but, in typical Singapore fashion, we were rained out (Singapore has about eight feet of rainfall a year!).

Our visit to HP Singapore allowed us to see firsthand both the successes and the problems of that operation. We also had the opportunity to meet with a number of key Singapore government people and learn more about the future plans for the area. I must say that as a group they were most impressive, and having met them one can understand why Singapore has made such rapid progress in the last few years. We were all impressed with the great job that Tom Lauhon and his group have been doing, under sometimes most trying and difficult circumstances.

Our last point of call was HP Malaysia, and in some ways, this was the most impressive of all. It was hard for me to realize that just 18 months ago I was in Malaysia and concluded that the best location for HP would be on the island of Penang just off the mainland of the Malay peninsula. Since that time, the necessary agreements have been negotiated with the government, a suitable plant site located, and within a period of four months—a 40,000 square-foot building erected. Additionally, a workforce of over a thousand people was selected and trained, and are now engaged in production. In achieving this record, credit must be handed out in all directions: to the government of Malaysia and particularly to the State of Penang for a magnificent job of cutting red tape and doing all in their power to get us started; to HP Singapore for all the backup it took to train the key people and smoothly transfer production of the core stringing operation to the new site; to the HP plant engineering people who were responsible for the total plant planning program; and last, but not least, to the employees themselves who have shown an outstanding ability to learn a complicated assembly operation and to rapidly improve their production efficiency. The manager, Liong Wong, has been the person who had the ultimate responsibility to see that all of those things happened and happened on time. I can assure you that Liong is rightfully proud of the results.

One of our most pleasant experiences in Malaysia was a buffet luncheon held in the plant at which the directors and both plant shifts shared lunch together. The average age of the girls is about 20. They are young, attractive, and enthusiastic. It was a warm and gratifying exeprience for all of us.

The formal ceremony at the new plant consisted of a dedication of a plaque by the Chief Minister of The State of Penang, Dr. Lim Chong Eu. In addition to the Chief Minister and his staff, the U.S. Ambassador to Malaysia and Mrs. Lydman were in attendance, as were several representatives of the Federal Government of Malaysia.

In retrospect it was a long, hard trip for all the participants, but without exception the Board was enthusiastic about what they saw and the value of the trip. I can say that they in turn contributed greatly to the HP image and demonstrated by both their presence and their actions that HP considers these operations an important and continuing part of the HP picture.

Bill Hewlett

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Coldly calculating...

Nearing the top of Mount Everest, world's highest peak, British expedition leader Chris Bonnington recently used an HP-35 pocket calculator to work out the loads and bonuses of the Sherpa carriers. The instrument was also used for physiological and surveying calculations. And despite the temperatures in the region of −30°C at the 6588 meter altitude (21,614 feet), the little machine worked perfectly. Meanwhile, Skylab astronauts for the first time took an HP-35 with them into earth orbit, using it in making real-time calculations that previously were made on earth after completion of a mission.

Measure

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