Measure

For the men and women of Hewlett-Packard/MARCH 1975

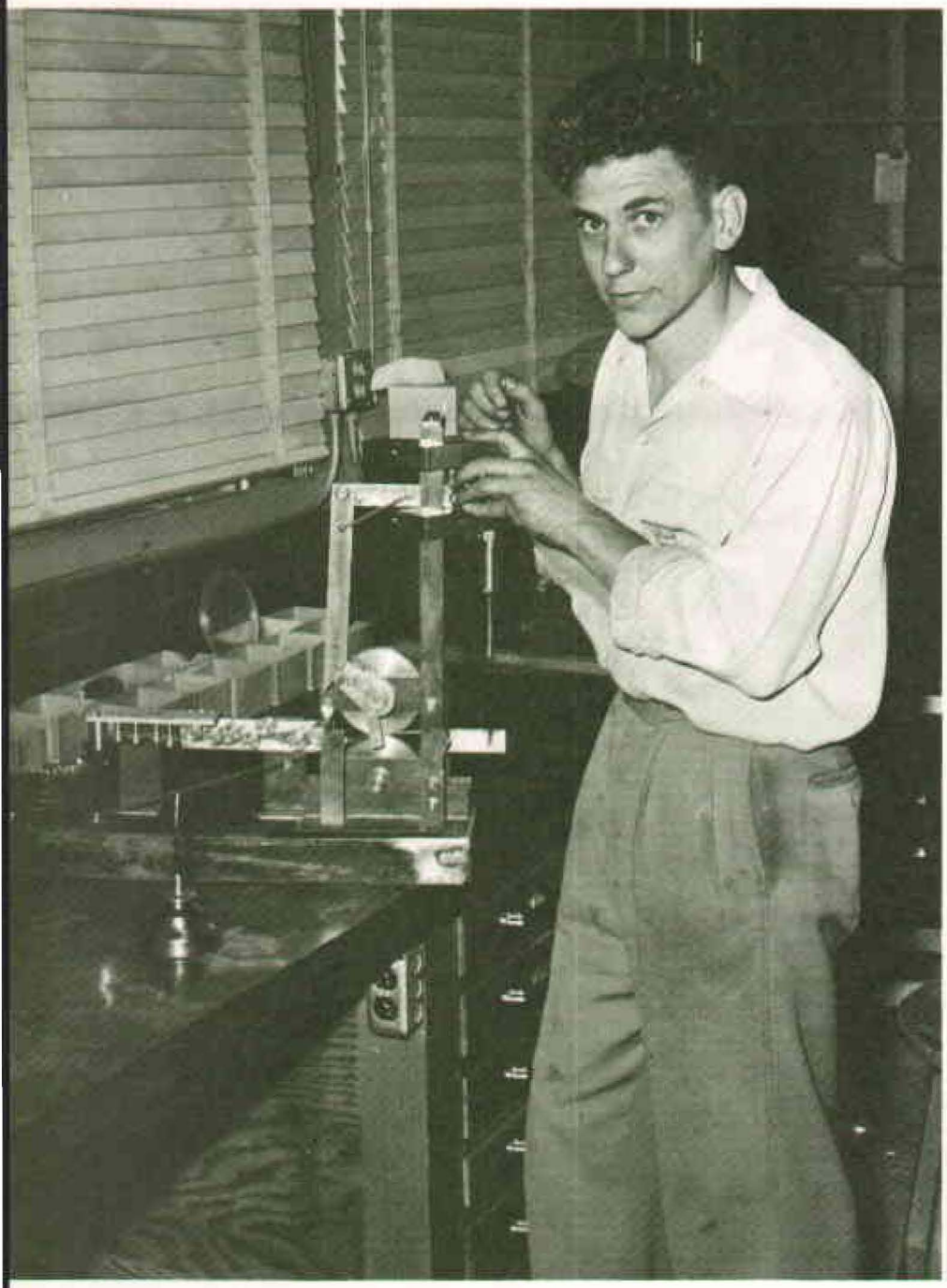
Quality in plastics

pages 11–13

"It doesn't seem that long ago..."

When Bill Girdner became Hewlett and Packard's second hire he precipitated their first plant expansion. Thirty-five years later he's planning an energetic future . . .

☐ Thirty-five years ago this month, Data System's Bill Girdner was bracing himself for what he hoped would be the first of at least two meetings. One would be an employment interview with those two young Palo Alto engineering partners he had met at the recent IRE (Institute of Radio Engineers) monthly meeting in San Francisco. Then, if all went well, he would have to let his San Francisco employer know about his new job. This wouldn't be easy because they were good employ-



In the 35 years since he began working for Hewlett and Packard in the back of the Tinker Bell building, above, Bill Girdner has worked on dozens of key development projects. Today, at left, he heads a section at Data Systems working on disc and tape heads. All the while he has dreamed of tapping the sun's energy—and now he plans to work on it in his ocean-front home.

ers and the work—building and installing communications equipment in ships and planes—was very interesting.

But Dave Packard and Bill Hewlett had communicated such a sense of purpose and direction that he had little hesitation in seeking the change. Thus, in April 1940, Bill Girdner became the second employee hired by the HP founders (Harvey Zieber, now retired, was first). In a sense, Bill represented their first expansion because as soon as he was hired the firm moved out of the Addison Street garage into its first Page Mill Road location behind the present Polly & Jake store.

Young Girdner, who had graduated in physics from San Jose State College just one year before, found himself doing a bit of everything that needed to be done. "We all did. Even sweeping the floors was shared. We worked here on production, or there on shipping. I even did some development work.

"But Dave and Bill were their own best engineers. In a way it was a bit intimidating to work there. People like the late Varian brothers would stop by, and their discussions of technical subjects made me feel I had a great deal to learn. Of course, that's not too surprising when you realize that these people were to become world leaders in the technology of the electronics

(continued)

In the early days of the company, Girdner recalls, men who later became world leaders in the electronics industry would stop by the shop for technical discussions with Packard and Hewlett.

Bill Girdner

industry. At the time, though, working with them behind Polly & Jake's, that wasn't so easy to see."

In the course of his 35 years in HP, Bill has worked in a variety of assignments, including those of chief tool designer and R&D section leader. In recent years he has been closely associated with the design and development of disc and tape heads, a project now located at the Cupertino plant of Data Systems.

At this point it would seem natural to bring this report to some sort of conclusion, perhaps recording a few more of Bill's reminiscences, followed by some thoughts on the future of the company he has served so well and how he views the outlook for retirement three to five years hence.

Bill, however, quietly gives out a thought that adds a new dimension to the script.

What Bill Girdner really wants to do is to develop methods of tapping energy from the ocean.

He's harbored the idea of doing this since the mid-thirties. It seemed clear to him even then that fossil fuels could not last forever, and that in the long run more economical energy could be extracted directly from the sun's heat or indirectly from the heat stored in the ocean. It's a virtually limitless energy sink that already furnishes much of earth's ambient heating by natural processes, so surely some small portion could be captured by engineering methods for human consumption. Bill, in fact, had attempted to develop a sun-power machine in college, but didn't get too far with the idea.

Meanwhile, of course, low-priced petroleum, natural gas and hydroelectric power had tended to rob such explorations of their economic incentive. But Girdner continued to study the subject, not even saying "I told you so" when the energy crisis first came to the world's attention.

Today, Bill's intention is to devote more of his time, especially after his retirement a few years hence, to experiments seeking practical ways of extracting energy from the seas. To do this he has already begun to equip his Carmel home with a shop and laboratory. The home, more or less just completed, is on a cliff overlooking the Pacific and on a lot that extends to mean high tide, allowing Bill to run pipes and other apparatus directly from his shop to the water.

"Tremendous quantities of energy are stored in the ocean in the form of heat. What we will probably look at first will be indirect ways of taking some of it out by making use of temperature differentials. Energy potentials also occur where fresh water enters the ocean, or in thermoclines which are layers of water having quite different temperatures than the water above and below. In any case, I'm interested in trying to do something along these lines before I run out of energy myself. Any willing and able volunteers would be welcome."

Bill has an interested—and interesting—helper in his wife, Audrie.

Audrie Girdner is the co-author of a very well received non-fiction book titled "The Great Betrayal." Published by McMillan in 1973, it records the loss of liberty and property that Japanese residents of the U.S. and American citizens of Japanese descent experienced following Pearl Harbor.

Now, if you really want to know how Bill Girdner feels about his career with HP, ask him. But 35 years speak rather strongly for themselves. □

Bill and his family have been finishing construction of a home on a Carmel cliff overlooking the Pacific Ocean. He plans to run experiments from his basement to the water, aimed at extracting energy stored in the sea.

In preparing exhibits of medical products, Roz Cuschera gets a lot of help from talented HP artists and production people.

For Roz, the show must go on, and on...

□ It's not that the world of industrial exhibits, trade shows and conventions is so rough . . .

—not if you don't count the shutdowns, late deliveries, wranglings over floor space, power failures, competitive ploys, long hours and week after week on the road.

In fact, Roz Cuschera, exhibits manager for HP medical products, has learned not only how to handle such problems but to enjoy the whole crazy business.

"I've heard you can get into real trouble," says Roz. "So much is going on when a show is being set up that disputes can easily arise. But I've found the carpenters and other craftsmen to be very helpful—especially if you are willing to help them and treat them as people. A sense of humor helps, too."

That sense has been put to some strain at times. Roz recalls that she once found herself trying to set up the eight-foot high HP exhibit booth in a space with seven-foot ceilings: "We didn't make it! But with a little discussion we were given a more suitable site."

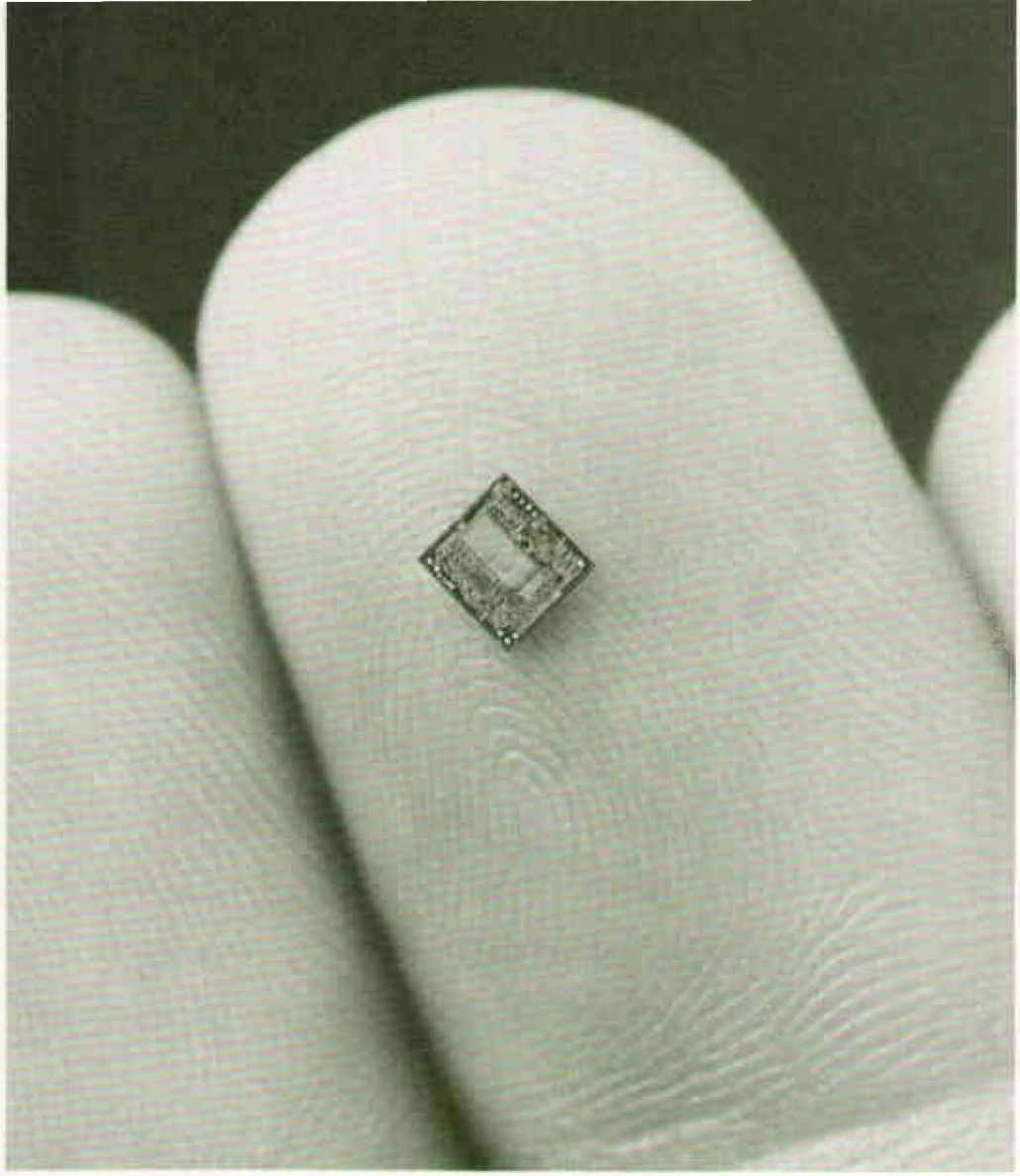
Roz's professional perspective comes from almost a lifetime in the selling side of business. Born in Quincy, Massachusetts, she started selling greeting cards in her neighborhood at seven years of age. Later she worked as an executive secretary, then director of public education for the Massachusetts Division of the American Cancer Society where she first did exhibits work. Roz came to HP in 1971 as the editor of *Medicom* and a writer of sales literature for medical products, then moved on to her present role.

The kind of shows where HP chooses to be an exhibitor, generally representing a specialty within the medical field, can be very effective showcases for our products, Roz believes: "It's a case of potential customers coming to us and telling us what their needs are, and seeing how HP can provide just the instrumentation to meet those needs. Shows not only are good general public relations but they also keep us in touch with the medical community."

Part of Roz's routine after a show, in fact, is to gather the inquiry cards filled out by the visitors, send copies to the field sales offices for handling, and write a general impression of the event and visitors' reactions to the HP exhibit.

But, all in all, she says, it's a team effort. "I make as much use as I can of HP talent. For an example, an exhibit panel will cost at least three times as much done outside as the Waltham shop people can do it. And I get better service, too."

Right now, Roz is looking forward to the Spring and Fall seasons—not because of the change in the New England weather or anything so trivial as that. No, those are the big show and convention seasons—and away she goes again. □



Microprocessors: Industry's mighty new midgets

☐ That small chip shown perched on a fingertip began its career as one of the integrated circuits that caused the HP-35 pocket calculator to become a world wonder of sophisticated smartness three years ago. Today, the same HP chip design is imparting an extraordinary degree of smartness to other HP instruments. In this role it is functioning as a "microprocessor," and represents a technological trend that probably will go far beyond our own electronics industry where it started.

In practice, a microprocessor is nothing more or less than a tiny processor of data, a semiconductor "micro-computer" that can be installed at various stages of a process to provide a great amount of local control. As Barney Oliver, vice president–R&D, suggested in an interview for the *New York Times*, "In the future, whole batteries of microprocessors might work like clerks in an office, with one or more of them exercising executive control." This will affect not only the design of machines and processes, he said, but also the "architecture" of computers which have been designed to process all information in a single central processing unit.

HP instruments making extensive use of microprocessors were first introduced to the market last year. They included the 1722A dual channel oscilloscope from Colorado Springs, Loveland's 3805A distance meter, 3580A low frequency spectrum analyzer and 3551A portable test set, and the 5830A gas chromatograph from Avondale.

The specific role of one HP microprocessor was described recently by Marco Negrete, engineering manager for the Instruments Group: "The Model 3805A distance measuring equipment is a very significant usage because of the number of functions performed by the microprocessor. The instrument determines distances to a passive reflector by measuring the phase difference between an internal infrared reference beam and a beam that has traversed the external optical path, at two different modulating frequencies.

"The microprocessor, which uses the same basic chips as the HP-35 pocket calculator, performs the following functions:

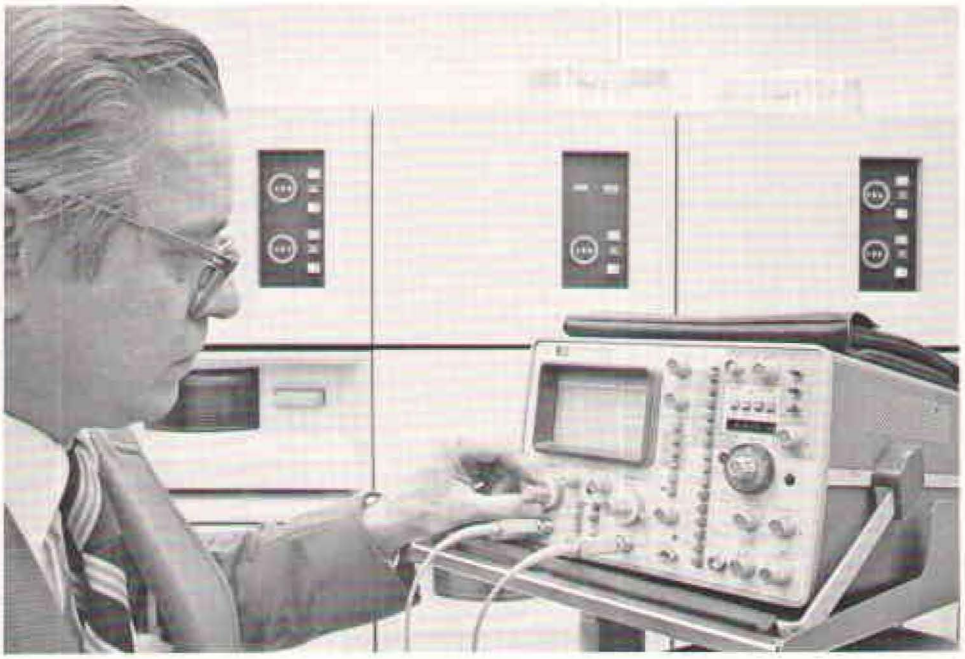
- Selects the modulating frequencies in a prescribed sequence.
- Averages several thousand individual measurements, taking as many as needed to achieve a given signal-to-noise ratio.
- Interrupts the measurement process if the beam is momentarily interrupted.
- Calculates the distance, applying a temperature/pressure correction previously selected by the operator.
- Calculates the answer for display in either meters or feet at the throw of a switch.
- Provides a digital output for storing information for further processing.

—All of that in a matter of seconds."

Obviously, with that kind of processing and controlling capability we'll be seeing more and more microprocessor applications within instruments—in rather short order.

Meanwhile, the auto companies, the appliance makers, the process control firms and any number of other industries all are looking very seriously at their own numerous potential uses for microprocessors. Powerful, reliable and inexpensive, they are also small—nigh unto invisibility compared with the devices they will control. Yet their impact may well equal and eventually surpass that of their predecessors, the discrete transistors, industry's original mighty midget. □

3805A Distance Meter



1722A Oscilloscope

Is there no end to the end-of-the-month rush?

Maybe there's something you can do about it...

□ Whoever wrote the script for the end-of-the-month shipping rush at Hewlett-Packard could easily qualify as a writer of bad television commercials . . .

Supervisors, disguised as Mr. Cheer, dispense last-minute wisdom that suddenly breaks production bottlenecks. Line leaders show up as the White Knight, miraculously bearing hitherto unavailable parts and materials. Over in the corner, quality assurance technicians appear to be in need of some anti-acid medication, after being hit by the contradictory old one-two of (1) test it properly and (2) do it in a great hurry.

Meanwhile—but let's not go into all that. Just assume it's a scene of mixed troubles and triumphs. At the very end of the month, all shipping targets are met and everyone relaxes again.

So what's so bad about that?

A 1974 study by Ed Miller of Corporate Manufacturing put it this way: "All HP logistic systems or procedures were designed, staffed and equipped to handle material or information in a steady linear fashion. When these systems attempt to digest peaks, spikes or lumps (referring to the charted ups and downs of monthly production) they either fail or become less efficient."

Ed went on to note that non-linear shipments, or shipments lumped at the end of the month, cause problems in three areas: cash flow is affected because products are held longer in inventory, and billings are delayed; costs are increased by excessive overtime and by extra transportation charges; relations with customers may be damaged by any of the resulting delays, while the potential for error in paperwork and other procedures goes up with the degree of EOM (end-of-month) haste.

During the past year a number of divisions have made strenuous efforts to spread shipments more evenly throughout the month. Some of these are described in the separate box on page 10. Notwithstanding those efforts, Ed Miller recently took a look at the monthly reports of the various divisions and concluded that improvements have taken place at some divisions, but for the overall corporation things had not changed all that much. We are still mired in EOM.

Like so many other bad habits, EOM tends to perpetuate itself. It does this quite simply by demanding so much time and attention during the last week of the working month that the first weeks of the succeeding month are spent in getting up a new head of steam. And so it goes, month after month.

EOM is an expensive habit—probably in the order of several millions of dollars a year if all costs could be counted. Isn't there something we can do about it? Surely modern business science has something useful to say about that.

It does. First, it notes that modern industry more or less sets itself up for the EOM problem by measuring itself on a monthly basis. There seems to be no good way around that, and any managers who consistently miss their monthly targets are in for some questions. Another point made is that the EOM rush is mostly a problem for organizations that manufacture products to order. Producers of shelf-type items such as shoes, autos and pocket calculators are usually very linear in operation. On the other hand, custom-made products such as many Medical, Data Systems and AMD systems just naturally tend to peak at month's end. In between, traditional instruments really can be produced on a generally linear basis, but any disturbance to the production process—any reason to set a job aside and go on to another—will set up EOM pressure waves.

Of course, that business of setting aside a half-finished product for want of a part can hardly be blamed on the assembler; somewhere along the line that miss-

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end-of-the-month rush

ing item was not anticipated, ordered or made available in time. While the assembler may think of this as a failure of the system, those are functions for which people are responsible.

All of which suggests that EOM is not some strange business syndrome that can be cured only by management medicine. Rather, it appears to be primarily a "people" problem whose solution requires understanding and action by HP people in a great many capacities.

A steady flow of production and shipments through the month is a goal for all HP instrument divisions. End-of-month rushes are not only costly but also hard on people.

Reports from the front lines...

Peter Carmichael, plant manager and former manufacturing manager at South Queensferry, Scotland, said that "On the quality front we feel that we have not seen any marked effect from linear or non-linear shipments. Although we often have a last minute rush through QA, we find that the assembly and test pressure is less intense and occurs over a longer time period, thus destroying the myth of month-end 'dogs'."

Mac McGrath, Stanford Park's production manager, believes "the important thing in smoothing out shipments is getting off to a good start in the first week of the month. Otherwise it's hard to catch up.

"We've worked hard at linearizing shipments throughout 1974, and by now it's become routine. Actually, some non-linearity in production is not necessarily bad, so long as it's under control and doesn't create shipping problems."

Backing up that point, Alistair Lucas, South Queensferry production control supervisor, notes that "The major reason for deviations from short-term targets is material shortages. In practice, most work orders and instrument runs will proceed despite shortages, until they are held up by the particular shortage. This results in many jobs being virtually 90 to 95 percent complete and only very minimal time needed to complete the work once the shortage is cleared.

"Thus, if we have planned to produce 100 instruments for the month at a rate of 25 per week, at the end of Week 3—instead of having completed 75 instruments with 25 still to be produced—we might have 100 instruments each 75 percent complete. If the material shortage is then cleared, the 100 instruments will be completed in Week 4.

"This effect in itself should occur randomly within any month but, when coupled with the emphasis on monthly production targets plus the effect of weekly inter-division materials shipments, results in disproportionately large number of instruments completed at the end of the calendar month. Consequently, there will be very few almost-completed instruments available for completion in the following first week."

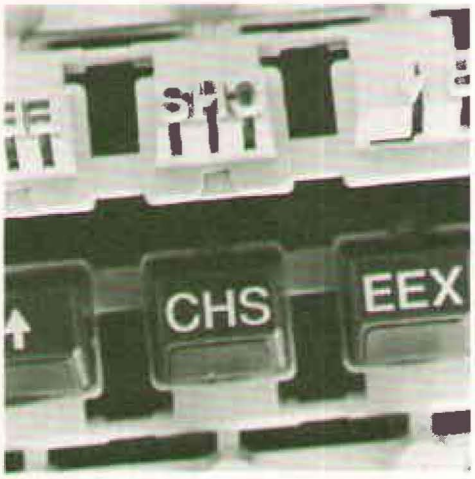
Jim Phelps, manufacturing manager at the Waltham, Mass. division, pointed out that medical systems make up from 80 to 90 percent of their business.

"Linearity under those circumstances is just not possible," he said. "But what we have done is adopt a 'Bactrian' month—that is, a month that peaks twice like a two-humped camel. We concentrate on patient monitoring products the first half, other products the second. We still experience some end-of-month push, but it's at least 30 percent down."

Augie Stuart, manufacturing manager at New Jersey Division, states that the one thing that cannot be truly represented in a summary of EOM overload is the tension and strain it causes in all departments.

"At the beginning of 1974 we were experiencing large back orders for parts; we had hot lists, we had priority meetings —we had everything that would indicate an inventory control system that was indeed not controlling inventory. At the same time we were experiencing a severe month-end production rush.

"We found the major problem was inventory management. That is, our solution to the EOM rush was not in trying to control the month or spacing out of product lines to finish at different times. Rather it was going further upstream and controlling the inventories and production schedules that made sense for us. The result is that we have gone from a severe month-end overload situation to quite a smooth shipment profile." □



Displayed are the molded parts for HP's lowest-priced pocket calculator, the HP-21. Enlargement above shows how keys are molded in two colors. After numbers or symbols are formed, plastic of another color fills in around them.

They're molding quality in plastics

□ "This is the *plastic* age, the era of the sham and the bogus," quotes Webster's, attempting to illustrate one of the more subtle connotations of an otherwise straightforward technical term. Having its semantic origins in the post-war period, when synthetics were considered cheap substitutes for "real" materials, the word is much maligned. In other words, plastics are taking a bum rap. The science of polymers has come into its own, the art of molding them has advanced dramatically, and plastic has become a strong, versatile material for which there is no substitute in nature.

Denny Thompson, a manufacturing engineer for Advanced Products Division, touched upon a basic HP philosophy when he discussed his division's use of plastics in pocket calculators. "If we can make a part *better* by making it with plastic," he said, "we'll do it—we never use it to cheapen a product." From Denny, one gets the impression that, while advancing technology will keep manufacturing costs down, HP quality will never be compromised.

Part of the reason is that HP's Manufacturing Division in Palo Alto has one of the best facilities in the U.S. for plastic molding. Process manager Geoff Ainscow says that the shop uses the most up-to-date techniques available to turn out switches, knobs, calculator parts, instrument panels, gears, cams—in all, twelve to fifteen hundred different items for all HP divisions. A bit surprising is the fact that HP got into molding its own plastics as early as 1945.

The original molding shop grew at a moderate rate as the need for faster lead times and high-tolerance plastic parts increased. Then, in 1972, a decision was made in favor of a major expansion of HP's own plastic molding capacity, supplementing that of our outside suppliers. In the next two years, the shop grew from 8 to the present 24 injection molding machines. It now employs 108 people, occupies 29,000 square feet of plant area

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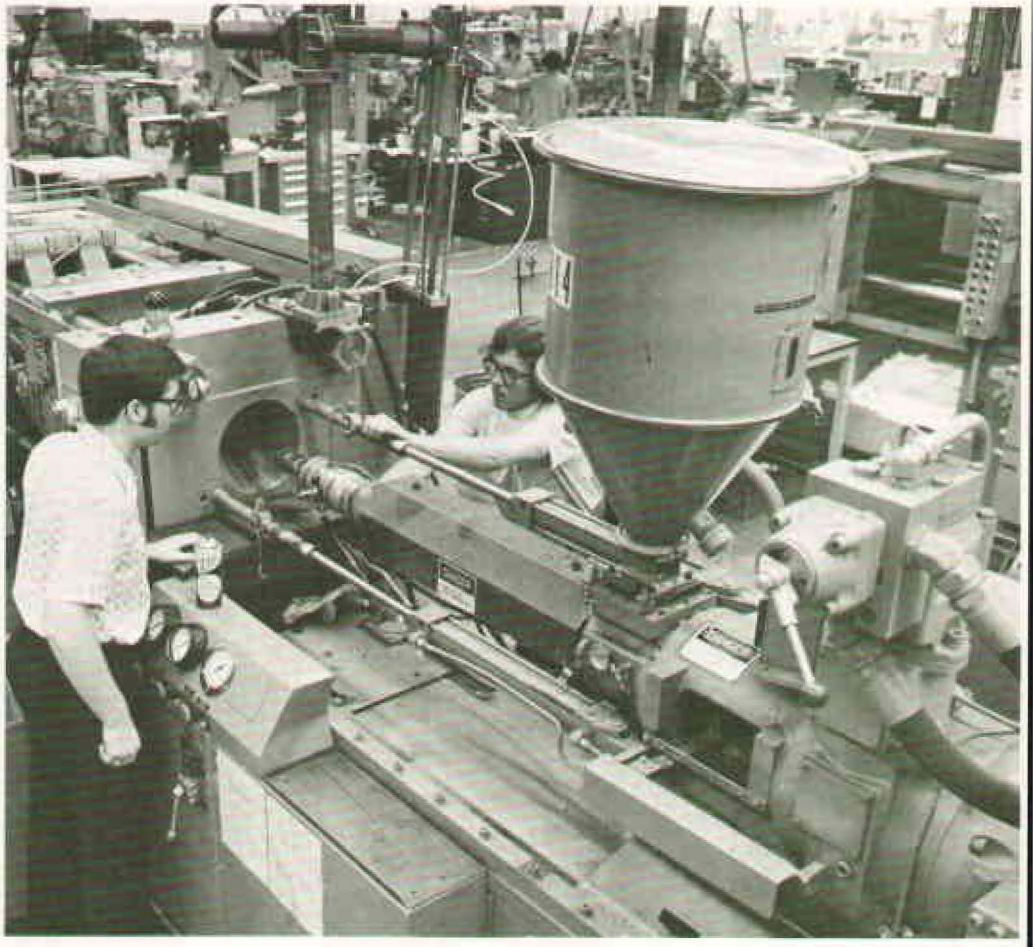


Process engineer John Zielinski (left) and machine operator John Imschweiler prepare an injection molding machine for a run of HP-21 keyboards. Raw material is fed automatically from the hopper above the injection unit.

plastic molding

at 395 Page Mill Road, and operates 24 hours a day.

Last year, about 400,000 pounds of raw thermoplastics belonging to chemical families such as the polycarbonates, polyphenylene oxides, polytetrafluoro ethylenes, polyesters and styrenes passed through Manufacturing Division's molding machines. Under heat and pressure, hard plastic in the form of pellets becomes soft as toothpaste and is injected with a pressure of 20,000 pounds per square inch into a mold. In just a few seconds, it comes out in the familiar shape of calculator keys clustered on a "sprue," perhaps the not-so-familiar shape of a keyboard housing for HP's new computer terminal, or the outside shell of the brand-new HP-21.

One of the many things HP does to build quality into its products is two-color molding. It's the reason that the number or symbol on an HP pocket calculator key will never wear off—it's not just printed on, but molded into the key with a different color of plastic. Two-color molding requires some complex molds and a special machine that has two injection units.

Achieving economies and improving products through molded plastics involves close cooperation among several disciplines. According to Thompson, "There's a lot of interface between the design engineer, the manufacturing engineer, the tool engineer, and the process engineer." Together they try to integrate as many parts as possible into one mold to save assembly time. They attempt to keep the weight down without sacrificing strength—and, of course, determine the proper material or combination of materials for the particular purpose. "Some plastics tend to absorb water," Thompson explains. "Others shrink, but we can give them a high glass content in the form of fibers or beads to achieve strength and close tolerances, or sometimes we add Teflon or other fillers. We're pushing the state-of-the-art, and sometimes we design parts that really stretch the capabilities of the plastics process."

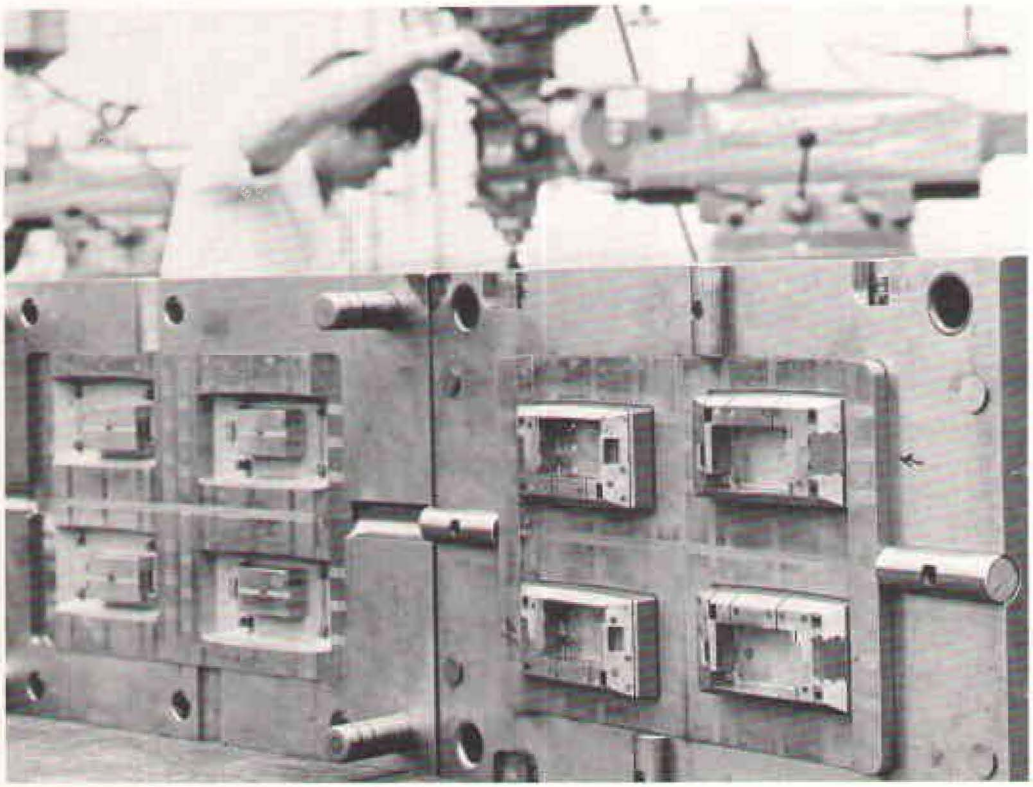
Very little is left to chance or guesswork, however. Businesslike analysis of all cost factors has replaced the "gut feeling" methods, as Thompson calls them, that used to sometimes determine how a part or tool would be made. Multi-cavity molds, for instance, turn out parts faster—but they cost more. "There's a trade-off between the tool cost and the cost of each part. Many of our molds cost over $50,000. So we consider the marketing forecast and the life of the product, and we use discounted cash flow analysis to find out if we'll get an adequate return on our investment."

More precise control over variables in the molding process—such things as temperature, pressure, viscosity, and injection rate—allows more sophisticated design features. Studies of heat transfer and the thermodynamics of flow are helping HP engineers understand and control the processes better.

Many of the newest techniques in molding are being used for the first time with the new HP-21 pocket calculator. Fewer molded parts, multi-cavity molds and a new method call "hot-tip" molding, which leaves no excess plastic to be recycled, contribute to making it the lowest-priced calculator in the HP line. And still, HP quality is built into every part. □

Mary Frantz operates this machine that separates calculator keys into groups. HP-21 assembly time is reduced by handling the keys in rows, as they appear on the calculator, rather than individually.

Geoff Ainscow, process manager of Manufacturing Division's plastics facility, shows a molding machine's injection screw—the part that "plasticizes" (melts) the material to be molded.



This multi-cavity mold weighing several hundred pounds makes four calculator bodies with each cycle of the molding machine. An adjacent machine shop does much of the repair and maintenance work on the tools.

News in Brief

Sao Paulo, Brazil – Hewlett-Packard is expanding its operations in Brazil to include manufacturing, it was announced by Bill Doolittle, HP vice president–International.

Hewlett-Packard do Brasil, Ltda, will begin manufacturing early this year in a rented 18,000-square-foot building in Campinas, State of Sao Paulo. Initial products to be manufactured are calculators and medical electronics equipment for Brazil and other Latin American countries.

HP do Brasil also has acquired about 50 acres of land in Campinas as the site for a permanent manufacturing plant.

In addition, HP do Brasil has purchased about five acres of land in Barueri, State of Sao Paulo. It will erect a building of about 60,000 square feet to house its Brazilian sales headquarters. The company also has branch sales offices in Rio de Janeiro and Porto Alegre.

"Hewlett-Packard has been a member of the Brazilian community since 1967," Doolittle said. "The expansion program reflects HP's confidence in the growing Brazilian economy."

Hewlett-Packard do Brasil presently has about 130 employees and is headquartered in Sao Paulo.

Palo Alto – More than $700,000 of surplus parts held by HP divisions have been resold to other divisions via the company's new Timeshare Excess Stock System.

The system was created last June by the Purchasing Managers Council. Managed by Corporate Manufacturing Systems, the system provides a current central list of more than 11,000 different purchased parts. Using time-share terminals, divisions automatically update their own listings, readily query the list about needed parts, and purchase available parts they need. When logged in, such purchases constitute firm orders.

It is now company policy for purchasers to check the list prior to making an outside purchase of parts. Some 5,000 purchases have been made from the list at a current rate of $25,000 per week.

Not only does the system provide a convenient shopping center for a great many parts, particularly small-quantity purchases, but it also has helped reduce cash flow from the company by reducing outside purchases.

A similar system listing surplus equipment was launched in mid-February by the Materials Managers Council. This will list excess equipment in five categories, including electronic equipment (HP), electronic equipment (non-HP), machinery and equipment, office furniture and equipment, and data processing equipment.

Inquiries should be directed to Larry Roth or Bev Murphy of Corporate Manufacturing Systems in Palo Alto.

Palo Alto – Hewlett-Packard reported a 12 percent increase in sales and a 27 percent increase in earnings for the first quarter of the company's 1975 fiscal year.

Sales for the quarter ended January 31 totaled $212,019,000 compared with $189,168,000 for the first quarter of fiscal 1974. Net earnings amounted to $18,413,000, equal to 67 cents per share on 27,405,179 shares of common stock outstanding. This compares with earnings of $14,530,000, equal to 54 cents a share on 26,914,772 shares, during the corresponding period last year.

Incoming orders totaled $240,937,000, up 11 percent from orders of $217,252,000 in the first quarter of fiscal 1974.

"The order rate is encouraging following a disappointing order pattern during the fourth quarter of fiscal 1974," said Bill Hewlett, HP president. "In that quarter, orders totaled only $203.4 million, down slightly from the fourth quarter in 1973."

He noted that international orders during the first quarter of 1975 amounted to $121,891,000, up 13 percent from last year's first quarter. Domestic orders were up 9 percent to $119,046,000.

"While the first quarter results are satisfactory, we remain cautious about the remainder of the fiscal year due to the uncertain economic outlook," Hewlett added.

Boise, Idaho – Bill Murphy has been named marketing manager of Hewlett-Packard Company's Boise Division, according to Ray Smelek, general manager. The position was newly created, Smelek said, as the Boise operation assumed full divisional status.

Murphy has moved from HP's San Diego Division, where he was product marketing manager.

Cupertino, Calif. – Hewlett-Packard Company's 10,000th minicomputer was shipped at mid-February to General Electric Company's Re-entry and Environmental Systems Division, Philadelphia, Pa.

The HP-21MX semiconductor memory minicomputer will be incorporated into a Hewlett-Packard 9640A data acquisition system being installed by GE. The system will be used to help increase quality and productivity in the testing of aerospace components. It will be located in GE's new Central Control and Data Acquisition Test Facility, which is a part of the Operations & Evaluation Department.

Cupertino, Calif. – An agreement to provide educational institutions with minicomputer systems, administrative software, training and support has been signed by Hewlett-Packard and ARIES Corporation.

The agreement calls for ARIES to provide 10 days of on-site training to purchasers of Hewlett-Packard Terminal Oriented Administrative Data Systems (TOADS) packages. The training program is covered in the price of TOADS software.

ARIES, founded in 1962, is an independent educational consulting and data processing firm with facilities in Minneapolis, Minnesota, and Washington, D.C.

Cupertino, Calif. – Hewlett-Packard began deliveries of its new Model 2640A CRT computer terminal against an order backlog of more than $1 million.

"Initial customer response to the 2640A has been outstanding," said Ed McCracken, marketing manager of Data Systems Division. "Since beginning to accept orders on December 1, we have received twice as many orders as we had projected."

McCracken noted that early customers represented a wide variety of applications in industry, business, government and education, with a strong trend toward on-line data entry and order entry applications. In addition, several major OEM customers have purchased evaluation units.

The new Model 2640A is an intelligent CRT terminal with semiconductor processor and memory, and is for use in data access, timesharing and data entry applications.

From the president's desk

We have now had a chance to see the results of the first quarter of 1975 and they were surprisingly good. The encouraging factor was that orders were within one percent of our targeted number. This, of course, is an average figure, and as far as individual product lines are concerned there may be appreciable departures from targets. But, all in all, coming this close to our targeted order figure is reassuring, particularly when viewed in the light of recent trends—orders being 11 percent ahead of the first quarter last year and 18.4 percent ahead of last year's fourth quarter.

One drop does not make a rainstorm, but you can't have a rainstorm without the first drop. That is to say, we don't know how the rest of the year will turn out, but the first quarter results were certainly a step in the right direction.

There were several other encouraging aspects about our first quarter. One was that despite the fact that shipments were below target, our profit was above target. This is particularly noteworthy since we appreciably increased R&D expenditures over those of the first quarter last year. Also, I have mentioned in the past our effort to finance our own growth. To that end, as you know, particular emphasis was placed on reducing both our accounts receivable and our inventories. These efforts are still continuing, with most encouraging results. This is best seen in our short-term borrowing position. At the end of fiscal 1974, our short-term borrowings exceeded our cash and equivalent by $30 million. This figure dropped to less than one million dollars at the end of the first quarter. I just want to commend each of you for a great job well done.

In January, I made my annual visit to attend the HP European management meeting in Switzerland. But, I also made a couple of side visits. One was to the dedication of our new office headquarters in Winnersh, England, which is not too far from the main international airport of London. This very attractive 84,000-square-foot building will serve as both the corporate headquarters of HP Ltd., and as the central marketing offices for the United Kingdom.

The dedication was attended by about 100 or so people from the local community and from town, county, and district governments as well as good customers and representatives of the other members of the electronics-industry community. It was a very pleasant and well organized program.

My other side visit was to our operations in Grenoble, France, where we are assembling computers and some peripherals. Following a brief management review, we drove out to our new plant which will be ready for occupancy in the next several months. The city of Grenoble had helped us acquire a most attractive parcel of land for our plant, located on the old site of the Winter Olympics Village of 1968.

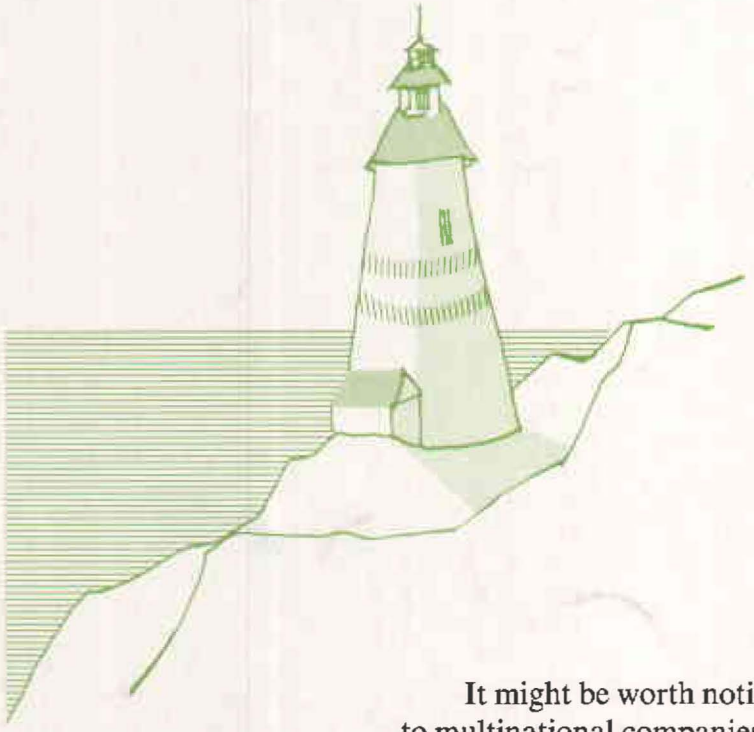
Ted Moore, who was one of the architects of our Colorado Springs plant, has designed a handsome building that, after some plantings, will blend in very well with the beauty of the location.

The European management meeting in Switzerland was held in the city of Montreux on the shores of Lake Geneva. As always, I found this meeting to be of real interest, with a very excellent exchange of views, plus a greatly improved understanding of the European market which now represents almost one-third of our total business.

This visit to Europe reconfirmed my great confidence in the qualifications and caliber of the HP people who represent us in that very important market.

Bill Hewlett

International orders: more than half...



With hardly a bump, HP recently sailed right over a landmark. Specifically, the company's international orders exceeded its U.S. orders over a full fiscal quarter for the first time. The passage occurred during the quarter extending from November 1, 1974 to January 31, 1975, with international orders amounting to $121,891,000 compared with $119,046,000 in the U.S. At that, there is no assurance the ratio will hold a steady course or shift back and forth for a while. But it clearly indicated the major importance to the company of international sales.

It might be worth noting at this time of mounting challenge to multinational companies that HP's international activity strongly reinforces its employment in the U.S.: Many jobs in the U.S. organizations are directly dependent on the export program which is substantial and growing.

At the same time, new jobs are created in the countries where HP has established manufacturing and marketing operations. Without such operations our ability to market products internationally would be seriously reduced. So there is a mutual dependence here that benefits all concerned—as it should.

Measure

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