

Action, interaction, reaction . . .

Though there is no record of a student presenting an apple to his computer terminal, there is plenty of evidence that the kids really dig computer-assisted instruction (CAI). Let's follow Johnny into his math lab. He sits facing the keyboard of one of the 32 teletypewriters. He activates the HP 2000B timeshare CAI system by pushing one of the keys . . .

Computer (typing fast): "What is your ID number and first name?"

Student (typing): "12345 Johnny."

Computer: "Is your last name Smith?"

Student: "Yes."

Computer: "Hello Johnny. We hope you enjoy today's problems. Here we go?"

The problems presented by the computer during the next 10 minutes or so may be simple or complex. That all depends on how Johnny has progressed during previous sessions. If Johnny enters the right answer, the computer goes to the next problem. If he is wrong, it straightforwardly tells him "Wrong, try again." If he is wrong the second time, it notes "Wrong, the answer is 9. Try again." Or, "Time is up, the answer is 9."

When all problems in the lesson have been answered, the computer tells Johnny: "Lesson over. You answered 15 out of 20 questions correctly. Goodbye Johnny. Please tear off at the dotted line?"



Measure

For the men and women of Hewlett-Packard/AUG-SEP '70

***Instruments and systems
developed by Hewlett-Packard
are leading a new wave
of constructive change
in the classroom.***

Why Johnny can count

□ Hewlett-Packard products that help Johnny learn how to read and count? And spell and subtract? Not long ago such a suggestion would have seemed farfetched. Sure, HP had a role in education, in such fields as research laboratories and engineering studies. But machines and software systems for teaching general classroom subjects? Out of sight!

Well, that has, in fact, come true. Today, HP is quite vigorously committed to the education market. Not just the technical and engineering aspects, but the broader areas of classroom instruction and computer-assisted learning. It is a whole new market for the company, and a potentially big market that reaches into every level of the education system from grade school to graduate school.

But it is far from clear sailing. The education market is tough. Professionals in that field no longer are starry-eyed about the miracles that technology offers them. Behind them is the experience of living through a season of super optimism launched by various experts and institutions who had dreamed grand dreams of the "knowledge industry." It would, they opined, become the biggest growth industry of



them all—a \$190 billion colossus by one estimate. It was going to require the services of a vast corps of technicians manning sophisticated systems for transmitting knowledge of all kinds to a data-dotty public. Machines, especially large, central computer systems operating hundreds of teaching terminals, were to play a key role. Quite a few companies, including some of the giants of industry, bought this vision, and geared for it by adapting off-the-shelf hardware, and by acquiring companies in the related fields of educational publishing and films.

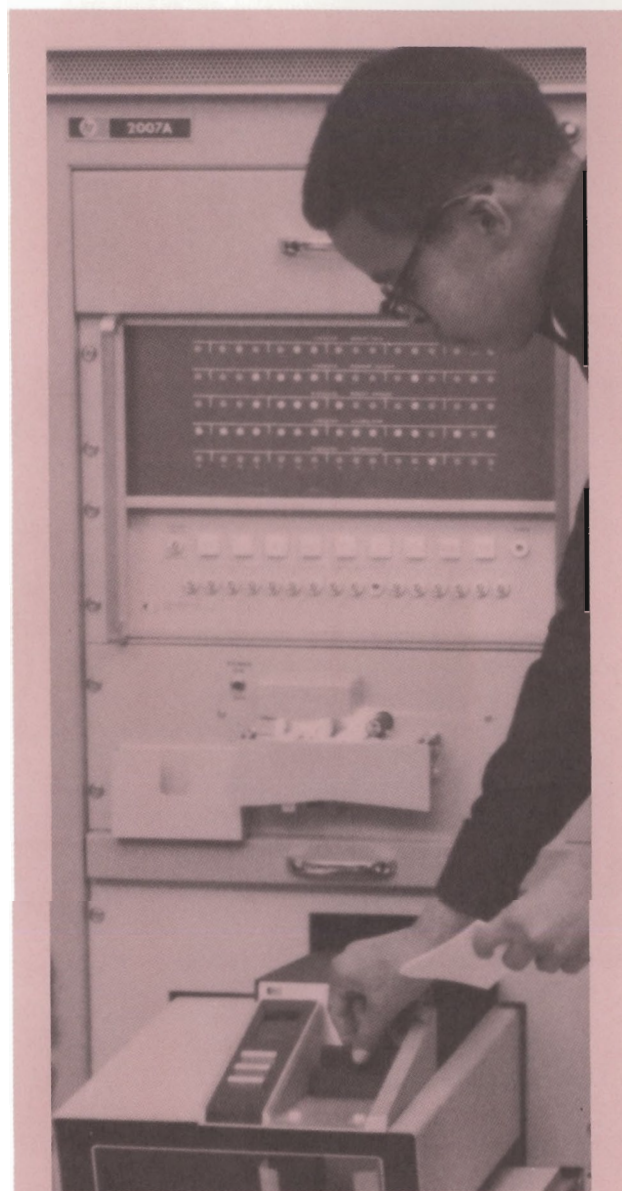
Unfortunately for most of these corporate lashups, the great dream failed to materialize on schedule. For one thing, the taxpayer simply wasn't in the mood for dreams. Actually, the kind of money dreamed about simply wasn't available for many new projects; most school funds are pledged for salaries and classrooms. Moreover, too many of the business organizations approached the market as equipment suppliers with magic boxes for sale, rather than as purveyors of systems that would supplement the teacher. As it turned out, the few big computer systems that got on the air just didn't



perform too well—functionally or in terms of cost per pupil.

It was against this deflated backdrop that Hewlett-Packard first began looking at the education market several years ago. The plight of the pioneers and the disillusion of the educators were plain to see. Nevertheless, in the several HP organizations concerned, people recognized some important opportunities. In particular, low-cost systems based on HP's minicomputers and desk-top calculators appeared to offer very favorable alternatives to the available systems. In addition, there seemed to be good opportunities for some of the standard electronic test products as peripherals and in special educational applications.

As things now stand, those expectations appear to have been quite realistic. In fact, sales of HP educational computer systems have been going very well this year, not only in dollar volume but even more significantly in the key kinds of field evaluations completed and contracts signed. A look at a few of these projects and programs shows the general direction of the company's approach to this interesting new market:



A big "mini" experiment...

There are plenty of signs that educators think highly of Hewlett-Packard computer-based educational systems. But this one's a landmark: In the Southern Regional Education Board's "three-year experiment on utilizing mini and very small computers for instructional uses," five out of the ten participating small colleges chose HP equipment. Included are 2007's, disc-operating systems, and a 2000A for schools in South Carolina, Illinois, Tennessee and Ohio. Funding is being provided by the National Science Foundation.

(continued)

why Johnny can count

A basic contract for BASIC English . . .

With a number of school districts waiting in the wings for it to happen, HP recently signed a contract allowing the company to develop its BASIC language of a highly successful Elementary English Course. The contract was with Harcourt Brace Jovanovich, Inc., one of the top textbook publishing firms in the U.S. The HP program, covering grades 4 through 6, is expected to undergo tests in two San Francisco Bay Area Schools this Fall. One will most likely be in Berkeley, California, which recently purchased an HP 2000B time-share CAI system for its elementary school program.

The contract is an important landmark. Added to HP's proprietary math package, the Harcourt program will qualify HP's CAI systems for consideration by many interested school districts.

HP-CAI: A system that works . . .

During the lunch break at Willow School in East Palo Alto, California, Principal Donald Weaver can usually be found pulling guard duty outside a small building labeled "Computer Assisted Instruction Lab." It's not vandalism that concerns Weaver. On the contrary, the lab is so popular with students that they won't leave it alone long enough to let the supervisor have a bite of lunch. So Principal Weaver has to take over at noon.

The source of this student enthusiasm is a new computer-assisted instruction (CAI) system developed by Hewlett-Packard. Full-scale testing of the system was completed this July.

"What's so good about it," says Weaver, "is that it works. It's reliable. It does what it sets out to do. The kids like it. Everybody's happy with it."

The system's present mission is teaching math to grades one through six based on the program developed by Stanford University's Institute for Mathematical Studies in the Social Sciences. Each day the 400 pupils spend 10 minutes each in the lab, a room with 32 teleprinter terminals. The kids move at their own pace through the lessons. Studies indicate that some of them have achieved as much as two years of academic growth in math in only seven months through the CAI program.

However, the real key to the HP system is not just this proven performance and reliability but the low cost—one-tenth that of the million-dollar systems previously available to do this kind of job. The 2000B represents a total investment of about \$150,000.

A lot of other school districts have been waiting to study results of the Willow School pilot run. The report is in now. It spells "winner!"





The Philadelphia story...

The education market is "different," HP data products salesmen have found. For one thing, educators don't operate according to the profit motive. So, while they are very enthusiastic about computerized instruction systems, teachers are likely to think in terms of next year, or the year after when it comes to buying. The buying season for school systems also is generally a short one; much of the year may be spent in exhibiting and evaluating. Then, a call will come to the sales office: "Tell us why we should buy your system." That's pretty much what happened in Philadelphia, one of the first large cities to purchase an HP time-share CAI system. For months Lee Frank, of the King of Prussia sales office, tried various approaches to selling: two-week seminars on computer programming as shown in photo above; one-day classes for math students; and a "computer caravan" that attracted teachers and staffs to seven locations in seven days on the road. Each had its success, but the caravan seemed most efficient. Orders for 2007A systems came in from three high schools. Finally, the Instructional Systems Division of Philadelphia called for a review of HP's new 2000B time-share system as a possible replacement for the system they had used in the past. When the order came in for the \$100,000-plus system, Lee Frank and the other data products people concerned saw it as a good omen as well as a good sale.

(continued)

why Johnny can count



Mastering math's mysteries . . .

In hundreds of high schools today, once-timid math students are being turned into tigers by the grace of COM—computer-oriented mathematics. COM, it seems, goes a long way in emancipating students from the frustrations and tedium of complex calculations, encouraging them to venture fearlessly into new concepts.

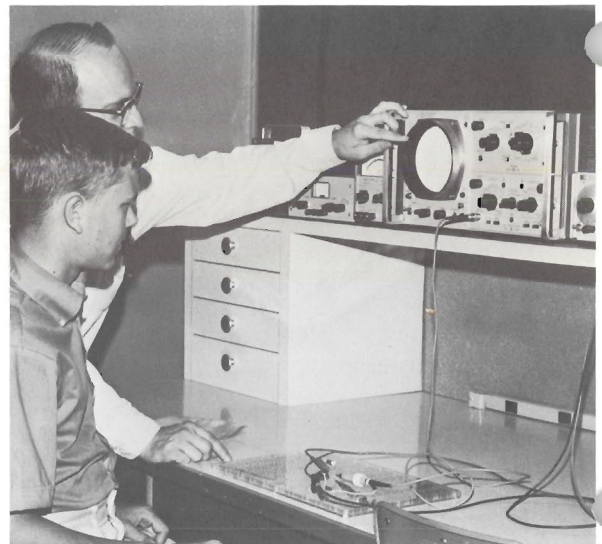
One key to COM's growing popularity is the HP 9100 computing calculator system. Because the 9100 calculator is really a mini-priced minicomputer it puts computerization well within financial reach of almost any school or school system.

An outstanding example of its use takes place at Brooklyn's John Dewey High School, the first entirely experimental high school in a major metropolitan city in the U.S. Here, the basic philosophy is individual progress and independent study. The HP 9100 system, consisting of 9100A calculator, 9120A printer, 9125A plotter, 9150A display screen and 9160A card reader, is located in the math laboratory where it is available for any math student who wants to use it. According to Ira Ewen, chairman of the math department, slower students are learning more about mathematics than ever before because of the HP system. To use the system they have to discover what all those strange symbols on the keyboard are— $\sin x$, $\cos x$, $\log x$, and so on. This process brings them a functional understanding of the math concepts represented by the symbols. Soon they are employing these concepts in problem solving—and enjoying it, and taking pride in their new-found skill.

Teachers are also very receptive to COM and the HP system, according to Ewen. This is in contrast to their resistance of years past to the introduction of the "new math." To many teachers, in fact, COM looks like the new new math.

The relevance of quality . . .

The nation's 1,000 or more two-year schools—junior colleges, community colleges, vocational schools—are no strangers to the idea of "relevant" education. It's their bread and butter. However, in the teaching of electronics a great many of them in the past have opted for bargain-basement instrumentation. Unfortunately, their students on graduation have found themselves unfamiliar with the high accuracy measurements required by industry. El Paso Community College in Colorado Springs was aware of this problem when it opened its doors a year ago. It decided to equip its electronics laboratory with 12 sets of the best, each set made up of an HP 140A oscilloscope, 1450A vertical plug-in and 1422 time-base plug-in, 3310A function generator, 427A multi-function meter, and 6201B power supply. Although it is too early to evaluate the success of this program, electronics instructor Dennis Shawl notes that the El Paso students are quite reluctant to use less accurate equipment. Moreover, other community colleges in Colorado are reported to be interested—did someone say envious?



No more waiting . . .

It used to be that a university researcher would have to wait his turn for computer time. At UCLA's Psychology Department, the new HP system has been expanded by its users to handle 100 complex experiments at one time. The system also grades tests using the HP mark sense card reader—an important saving now that many graders have had to be dropped due to budget restrictions. Then, with all tests graded, the system provides the professor with a complete tabulation and analysis of results.

The heart of this system is a central Hewlett-Packard computer with associated teleprinter, disc and magnetic tape storage, line printer, plotters and oscilloscope displays. Cables tie it into laboratories throughout the building, including a large classroom where 120 students can be tested at one time.

"Extremely favorable reaction" in Europe . . .

AMSTERDAM, The Netherlands—On the eve of the World Conference on Computer Education here, Hewlett-Packard has announced its formal entry into the European education market. For the August 24–28 conference, the company plans to show the computer industry's most complete line of educationally oriented data products.

Actually, the company has a variety of products and systems already in educational uses in Europe and other worldwide markets. However, according to Alfredo Zingale, HP data products marketing services manager for Europe, the announcement marked the start of a coordinated marketing program in the education field. Zingale said the program was based on "the extremely favorable reaction to our products by the European educational community. The broad line of low-cost, compatible systems has a wide variety of applications in these markets."

Included are:

- The HP9100 Classroom Calculating System, with computing calculator and math programs, plus X-Y plotter, mark-sense card reader and video display.
- The HP Educational BASIC System—a general purpose, single-terminal minicomputer generally used in secondary level problem solving classes and computer programming instruction.
- The HP Disc Operating System—for scientific computation, student problem solving, business and accounting, school administration and information retrieval.
- The new Time-Shared BASIC System for simultaneous use by 32 (or 16) users at one-tenth the cost of comparable time-share installations.

HP's new European Data Centers will be in active support of the program.

***** HERE WE GO !!!!! *****

$$\begin{array}{r} 2 \overline{) 1400} \\ \underline{1400} \\ 0 \end{array} \quad \begin{array}{l} 7 \\ \text{WRONG, TRY AGAIN} \end{array}$$

$$\begin{array}{r} 2 \overline{) 1400} \\ \underline{1400} \\ 0 \end{array} \quad \begin{array}{l} 700 \\ 2 \times 700 = 1400 \end{array}$$

$$\begin{array}{r} 7 \overline{) 5449} \\ \underline{4900} \\ 549 \\ \underline{490} \\ 59 \\ \underline{56} \\ 3 \end{array} \quad \begin{array}{l} 700 \\ 70 \\ 8 \end{array}$$

$$\begin{array}{r} 700 \\ 70 \\ + 8 \\ \hline 778 \end{array}$$

$$(7 \times 778) + 3 = 5449$$

$$\begin{array}{r} 4 \overline{) 2382} \\ \underline{2000} \\ 382 \\ \underline{360} \\ 22 \\ \underline{20} \\ 2 \end{array} \quad \begin{array}{l} 500 \\ 90 \\ 5 \end{array}$$

$$\begin{array}{r} 500 \\ 90 \\ + 5 \\ \hline 595 \end{array}$$

$$(4 \times 595) + 2 = 2382$$

$$\begin{array}{r} 8 \overline{) 3684} \\ \underline{\hspace{1cm}} \end{array} \quad \text{STOP}$$

GOODBYE. PLEASE TEAR OFF ON THE DOTTED LINE.

Johnny's computer . . .

At the end of the day the computer prints out a summary of all the 400 or more lessons completed. Among other things, it tells the teacher just what new concepts he should teach Johnny next. The teacher can thus devote time where it is needed most. If Johnny is a bit of a math whiz, he can zoom ahead at his own pace and not be held back by the slow learners. Likewise, Johnny's speed will not be so apparent as to inhibit or overwhelm the slow learners.

One reason the students enjoy the computer system is that it is consistent, impartial and never becomes angry. After a while, the student realizes that the machine is not going to admonish him for making a mistake, so he is far more willing to take a chance in tackling a problem. Furthermore, when the pupil begins to run into repeated errors, the computer is programmed to adjust the level of difficulty of succeeding problems.

Actually, compared with the way most subjects are taught, CAI is a lot of fun—the best environment there is for learning.

Avondale art

Who, you might well ask, are these statuesque people in front of HP's Avondale plant? It turns out they are the creations of Charles and Christopher Parks, father and son sculptors of international standing and neighbors of the analytical products division. The July-long exhibit of more than 60 works by the Parks' extended into reception and administrative areas of the plant. Opening night attracted well over 300 people, with later twice-weekly showings bringing in a steady flow of visitors from Wilmington, Philadelphia, and nearby communities. It was unquestionably the most ambitious art exhibit ever presented by any HP organization. The *Philadelphia Inquirer*, which covered the event, called it "a splendid show."

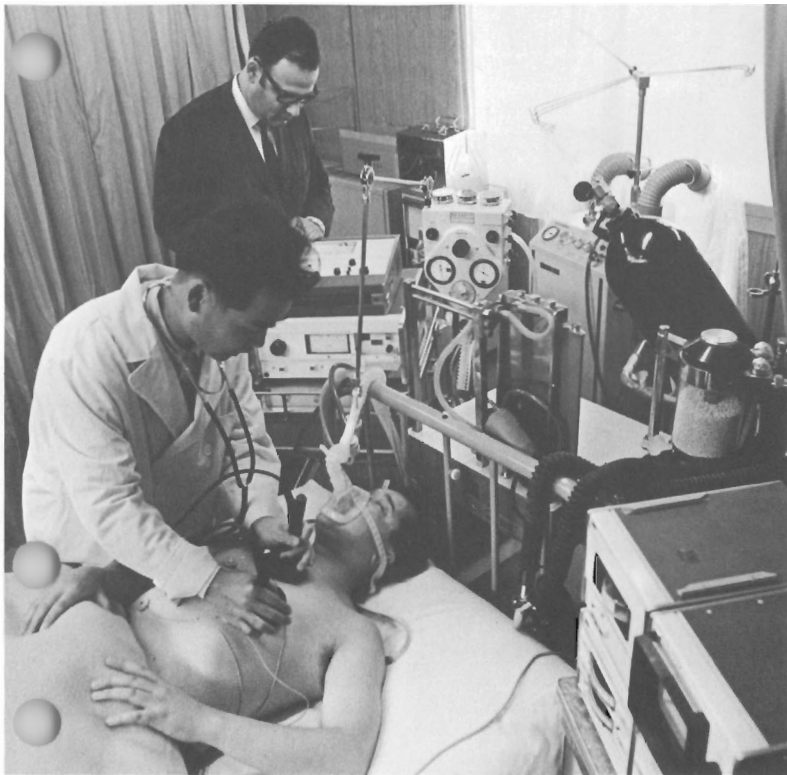


HP Pictorial ...



Diplomats' day

Something old and something new were in store for eight diplomats representing Austria, France, West Germany, Iran, Ireland, Mexico, Sweden and Switzerland when they visited Scotland recently. The old was an on-the-spot appreciation of the venerable whisky industry. The new, as chosen by the Scottish Council for Development and Industry, was HP's South Queensferry plant representing the 20th Century. Here, HP's Dennis Taylor, center, guides the diplomats through the assembly area of the Queen's Award-winning micro-link analyzer.



Expo '70 life savers

The ability to learn from others—and to improve on the knowledge gained—is a recognized characteristic of Japan's highly successful industrial economy. But it doesn't stop there. It extends into just about every field of Japan's international endeavor, including the medical preparations for the super, summer-long Expo 70 show now nearing its close in Osaka.

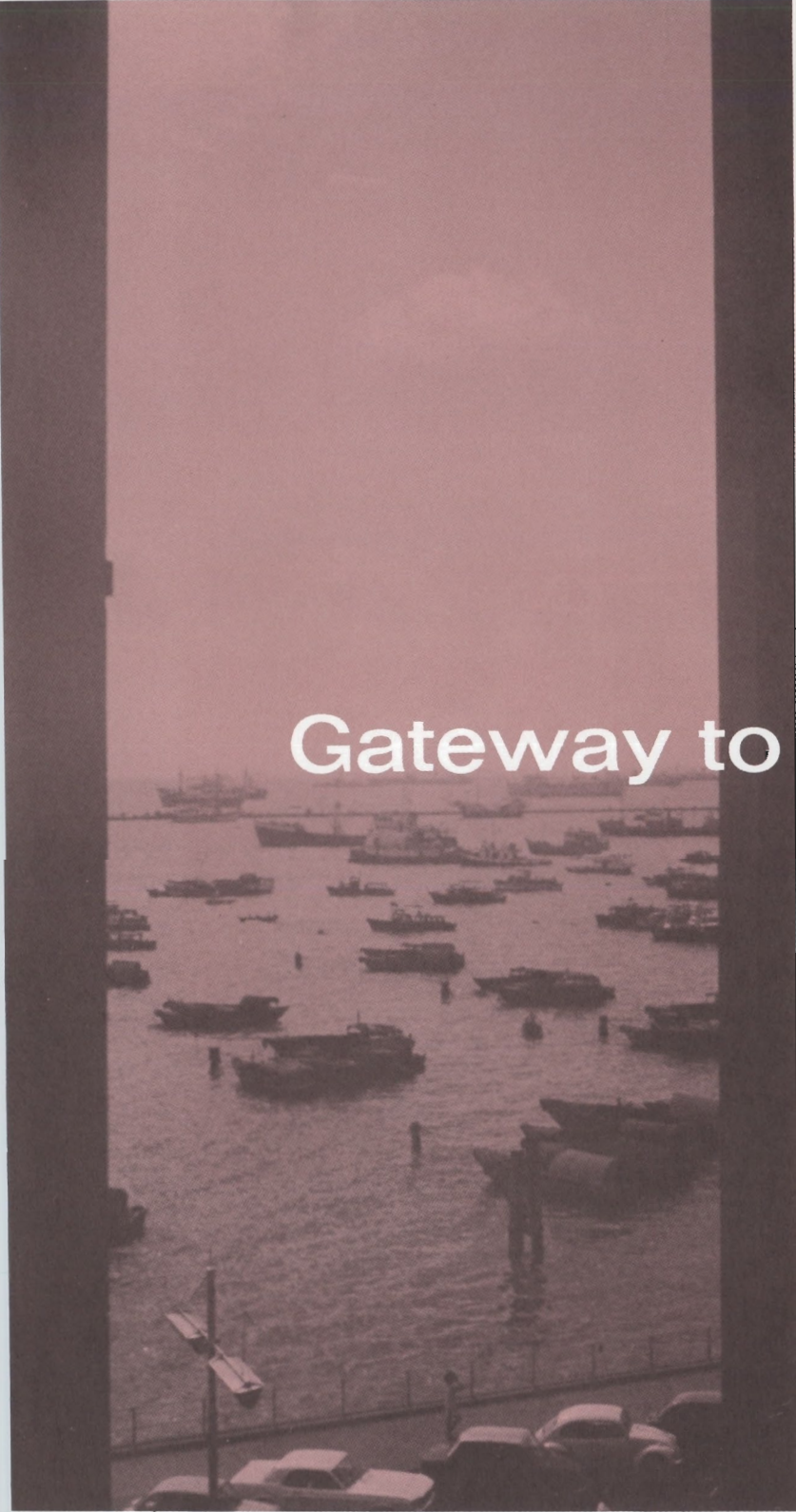
In studying the previous Expo at Montreal, Expo 70 officials learned that 20 visitors had died following heart attack at the site. Unfortunately, doctors were not in residence, and had to be called in from outside. Certain that they faced similar medical emergencies among 50 million visitors to Osaka, the Japan Medical Doctors' Association took no chances. The best of medical services and equipment would be available throughout the show. The result was a Central Medical Clinic that included the loan of a complete HP patient monitoring system backed up by thorough training from YHP medical specialists.

According to reports from the Medical Clinic, the HP Coronary care unit has been instrumental in saving a number of lives so far, including that of a nine-year-old boy. In a strictly 21st Century type accident, he was seriously injured on a moving corridor.

Everybody wins

HP's calculator salesmen in the four U.S. regions recently staged a convincing demonstration of the benefits of "extra effort." During a two-month contest staged by the Loveland marketing team, the calculator specialists set out to make one extra sales call a day each, with the goal of obtaining at least one extra order a month. Prizes were to be awarded to anyone going ten percent over their usual quota for the contest period. Even working against the economic slowdown, the contest was an unqualified success. Using the "extra effort" approach, for example, Houston's Randy Foster, seen at right with Tom Kelley, Loveland calculator general manager, exceeded the quota figure by more than three times. His smile tells it all.





Gateway to growth

Sampans, junks, tugboats and freighters are what Singapore is all about — the biggest and busiest port in Southeast Asia and a key crossroad for world trade. HP Singapore, the company's new venture there, has great significance for HP's international role.

□ What answers might you have given had you been asked—a little over a year ago—the following questions:

- What can HP do to reduce the costs of, and become self-sufficient in, the assembly of computer memory cores?
- What kind of step does the company need to take to become established in the highly competitive international market for low-cost electronic components?
- How should HP go about improving its ability to serve the fast-growing markets and 750 million people of Southeast Asia?
- By what means can HP adapt its product lines and technology to the needs of all the emerging nations throughout the world?
- Finally, can these questions be answered in such a way that they not only increase HP's participation abroad, but also contribute substantially to business and employment in the company's U.S. plants?

HP's answer, as researched and recommended by a team of its manufacturing and marketing managers in 1969, was to set up a new international subsidiary in Singapore.

HP-Singapore, as it is named, opened its doors for business last April. Its home is the leased top two floors of a seven-story building in the Redhill Industrial Estate in Southeast Asia's most important port city.

In this air-conditioned, sound-proofed space, some 60 HP girls in blue uniforms skillfully and patiently string tiny discs of ferrite onto wispy threads of copper. Back and forth, across and through—they delicately create the complex geometric patterns that go into one of HP's computer memory-core stacks. When completed, the units are shipped back to Cupertino or Loveland divisions for use in HP computers and electronic memory devices.

Previous to the Singapore operation, HP purchased its core memories from various manufacturers in Taiwan, Hong Kong, or the West Indies. The average price for one type of core memory, for example, was about \$1,700; HP-Singapore now provides this same unit to Cupertino for around \$1,200. Thus, at one stroke HP has overcome a severe price disadvantage as well as the necessity of relying on outside suppliers for a critical component (the HP core facility at Cupertino doesn't attempt to compete on a commercial basis: it is basically a prototype and repair operation).

But as those earlier questions indicated, HP-Singapore will become much more than a core memory facility. Al-



From HP Singapore's 6th and 7th floor quarters (seen above), the contrast of old and new Singapore is strikingly apparent. In foreground of photo at left is a remnant of the old Asian village or kampong; above it are some of the many new blocks of high-rise, low-cost housing that are displacing the kampongs.

ready it has begun assembly of low-cost hot carrier diodes for HPA Division in Palo Alto. This will add a new dimension to HPA's marketing program which previously was devoted solely to premium components of a custom nature. The Singapore products, using IC chips produced at HPA, will put HP diodes into a much wider range of electronic products such as home television sets and other solid-state consumer products. In no sense does this take work away from HPA; in fact, the components division will most likely have to boost its production effort because of HP-Singapore.

A similar approach is planned for other types of components. In each case it will represent entry into a market for high volume, low priced applications never before attempted by HP. High technology elements will be produced in the U.S. plants, labor-intense phases in Singapore.

As at all of the other HP product divisions around the world, HP-Singapore will gradually evolve into a fully integrated division with its own product lines, R&D capabilities and marketing organization.

One of its special missions will be to help discover ways in which HP product lines can be adapted to the needs of the developing nations for low-cost, durable and efficient instruments of many kinds. To speed this role, the new division will seek the support of the U.S. divisions and enlist the thinking of engineers and scientists at the local universities of Singapore and Nanyang.

Still another role for HP-Singapore will be to provide a center for various customer services such as parts, repair

and training. The surrounding market, though not big in sales volume by international standards, is still among the fastest growing for the company. Its distributors in the area need increasing levels of support, particularly where the more complex products and systems are involved.

Why Singapore? The map shows it to be very strategically located both for Southeast Asia and world trade. It's a free port, so that goods can come and go with minimum restriction. The island state's administration, under Prime Minister Lee Kuan Yew, is enlightened and receptive to industry, yet insistent on high standards. Labor costs are definitely low in relation to the U.S. or Europe, but very much in line with living costs and standards in that part of the world.

At HP-Singapore, for example, the assembly girls generally live within easy walking distance of the plant. Their work conditions and benefits are very similar in kind to those at the other HP locations. Their ethnic background is predominantly Chinese, followed by Malay and Indian. But for the most part, they like to think of themselves as Singaporeans. Some of them continue to live in the old tropical villages—the "kampongs." But increasingly these areas are giving way to modern high-rise, low-cost apartment complexes.

In fact, Singapore and its two-million people are very much in the mood for constructive change. They see a need to bring the knowhow of the world's economic leaders closer to the emerging nations of Asia and Africa—in the marketplace. Singapore, they are certain, will provide the gateway.

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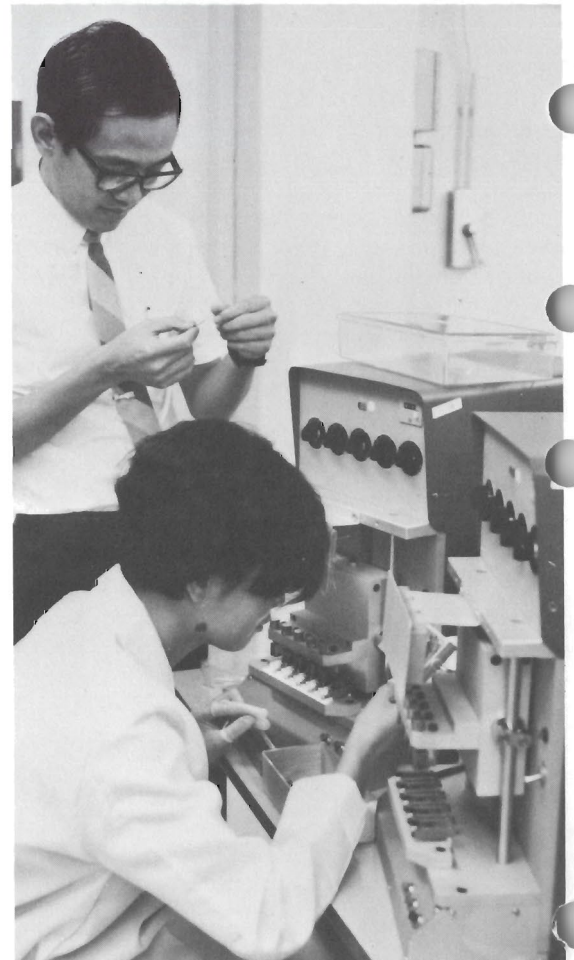


Only the classic dress of Southeast Asia makes administrative area of HP Singapore look different from other HP offices around the world. The new organization is a wholly owned subsidiary of HP and is headed by Joe Barr as managing director. All office and factory areas are air conditioned and soundproofed.

gateway to growth



Latest additions to HP Singapore product lines are diodes, under contract to HPA. Above, Quek Kin Leigh assembles one of the new low-cost diodes; at right, Jeffery Ho checks diode tests made by Doris Tan. HP Singapore enables the company to compete for the first time in markets for low-cost high-volume components.



Sandra Milovina, who supervises HP Singapore core-memory production under Clyde Coombs, stops at inspection station to check with Soh Goh Kalsom. Some 60 Singaporean girls are presently employed here.



Donna Field, left, and Donna Mize, customer contact girls of the Atlanta area sales office, collaborate in checking the records for a customer. Each may answer as many as 30 customer phone calls on a busy day, and handle other orders that come in by mail. They are also in regular contact with the manufacturing divisions and the field sales engineers.

When customers call

□ When little old ladies call up HP sales offices and ask to have someone come by and check “the Hewlett,” or the “Packard,” or the “Hewlett-Packard,” the operators know instinctively what to do. And that is to put the lady directly in touch with one of the customer contact girls. With their training and tact they are sure to find out soon enough whether their dear caller is referring to a radio, a TV set, a phonograph, a car she’s been driving since 1952—or possibly an electronic instrument manufactured by HP.

Few if any people in the company are better equipped to handle such situations. Without question they have more direct dealings with more customers than anyone else—even if they seldom see a product or meet a buyer. The girls, of course, make their contacts via phone and mail.

Donna Mize of the Atlanta area sales office, for example, will average about 30 phone calls on a busy day, and handle whatever orders for parts come in by the postman. Her associate, who takes the orders for instruments, is Donna Field. They and their supervisor Frances Willard, who handles orders for repairs, quotations and government business, make up the offices’ customer contact team. It’s a go-go organization, especially on Mondays and Fridays, and at the end of fiscal years when buyers seek to finish spending their annual budgets.

“There’s no doubt we’re right in the middle,” says Donna Mize. “We’re here because the salesmen have to be out making new calls and need someone to handle the routine inquiries and follow-up with customers. To many of these customers, particularly the buyers, we are the voice of Hewlett-Packard.

“On the other hand, where the factory organizations are concerned, we have to look on ourselves as the representatives of the customer. We have to make it clear to the factory what he wants and when he wants it.”

Not just anyone who knows how to dial a phone can take on this kind of work. A certain outgoing quality, a bit of a gift for gab, the ability to empathize over problems, plus an executive grasp of deadlines and details seem to be general characteristics of the order desk girls.

The Donnas of Atlanta, for example, have found themselves becoming quite knowledgeable about the various HP product lines. They often put this knowledge to good use when directing a customer’s attention to certain alternatives when he is uncertain, or to various features he might be overlooking. But for the most part, questions of a technical nature are referred to the staff engineers or the field man on the account.

The girls also get to know many of their customer contacts fairly well, or as well as phone conversation permits. Actually, quite a few of the parts customers come calling in person, fully expecting the HP sales office to serve as some kind of appliance center. It’s the order girl’s job to greet him and fill the order if it’s available in stock. Even if it isn’t, he should leave thinking that it is indeed a store—and a friendly and efficient place to do business. □

News in brief

Palo Alto — For the nine-month period ended July 31, the company reported a 12 percent gain in sales and a 3 percent decline in earnings. Sales totaled \$262,144,000, compared with \$234,686,000 for the first nine months of fiscal 1969. Net earnings amounted to \$17,251,000, equal to 68 cents a share on 25,534,000 shares of common stock outstanding. This compares with earnings of \$17,814,000, equal to 71 cents a share on 25,259,000 shares, during the corresponding period last year. The 1969 figures relating to number of shares and per-share earnings were restated to reflect the company's two-for-one stock split that occurred February 25, 1970.

President Bill Hewlett said that HP's 1970 earnings "continue to be adversely affected by a general softness in our domestic markets. In the third quarter, for example, incoming orders from U.S. customers amounted to \$60,720,000, down 14 percent from the corresponding quarter of 1969.

"International orders, on the other hand, totaled \$36,441,000, up 19 percent from last year's third quarter. For the full-nine-month period, international orders amounted to \$104,918,000, representing 39 percent of the corporate total of \$271,207,000." Third-quarter sales amounted to \$88,075,000, compared with sales of \$82,727,000 in the corresponding period of 1969.

Earnings for the quarter totaled \$5,547,000, equal to 22 cents a share. This compares with earnings of \$6,126,000, or 24 cents a share in the third quarter of 1969.

Palo Alto — Glenn Affleck has been named to the newly-created post of environment control coordinator for Hewlett-Packard. According to President Bill Hewlett: "We have always felt that we have a basic responsibility to our plant communities to work to enhance rather than diminish the local environment. The establishment of this position provides a formal focus to our continuing efforts in this direction.

"Pollution is expensive in both human and fiscal terms. We have been working toward its reduction on three levels; Interaction with governmental agencies to establish community controls and limits on waste levels; stringent internal control of effluents; and development of precision instruments to measure a variety of pollutants."

As part of his responsibilities, Affleck will seek opportunities for further HP contributions to the important, growing field of pollution measurement.

Affleck joined HP in 1965 as a process engineer, and was formerly manager of printed circuits for the Manufacturing Division. He holds a chemical engineering degree from the University of Utah and an

M.B.A. from Stanford University.

Waltham — The Medical Electronics Division has received its largest single order for patient monitoring systems. The \$425,000 order came from the Mayaguez Medical Center, Puerto Rico. A total of 60 beds and certain special-purpose rooms in the 500-bed hospital will be equipped with HP systems and accessories. The systems will keep constant electronic watch on such factors as a patient's temperature, respiration rate, arterial pressure and heart rate, and warn hospital attendants of changes. They also will serve as diagnostic tools. When completed later this year, the Mayaguez center will serve the medical and mental health needs of more than 80,000 Puerto Rican people in the island's Southwestern region.

Los Angeles — A WESCON Award of Excellence for industrial design has been announced for HP's ingenious new AC power line module. The award was one of only five made at the 1970 Western Electronic Show and Convention in Los Angeles. The HP design was by the corporate Industrial Design team headed by Al Inhelder. The power line module is intended to promote safety and long life in the power connections of electrical instruments, and is now being used with a number of HP products.

People on the move

Corporate — Kay Allen, to executive secretary, vice president-marketing, from secretary, Neely, North Hollywood; Jack Armstrong, to systems programmer/computer development, HP Labs/computer architecture, from same position, Cupertino; Patrick Barrett, to corporate legal staff, from member, technical staff, Microwave; David Bentley, to accountant, HP Labs/finance, from same position, corporate Finance; Ken Martinez, to exhibits planning coordinator, corporate sales promotion, from service engineer, San Diego; Duane Schar, to systems programmer, corporate management services from same position, San Diego.

Delcon — Gene Parry, to manufacturing manager, from Q.A. supervisor, Microwave.

Electronic Products Group

Loveland — Dick Lubinski, to production manager, components, from product manager, marketing.

Manufacturing — Sherman Davis, to manager, printed circuits, from manager, quality assurance; Don Higgins, to plant maintenance manager, facilities engineering, from product manager, Manufacturing; Gaylan Larson, to new products manager, from product development manager.

Microwave — Doug Carnahan, to plant engineering manager, from facilities engineering manager, Manufacturing.

Data Products Group

Mountain View — Dave Young, to manufacturing engineer, from same position, Manufacturing.

International

Clyde Coombs, to production manager, HP Singapore, from manufacturing supervisor, Cupertino; Alex Woodtly, to commercial manager, European Sales Region, Geneva, from manager, International Commercial Services East.

Sales Regions

Eastern — Cleve Brooks, to manager, International Commercial Services East, from assistant manager, ICSE.

From the president's desk



There has been a great deal of discussion about the state of the domestic economy and its effect on U.S. business. In earlier "letters from the president" I have made reference to these factors and their anticipated effect on HP business. I would now estimate that we are very close to the low point of the business cycle and I think that at this time we should stand back and look at the company objectively.

First, a glance at our balance sheet will tell you that the company is in a very healthy financial position. We have no long-term debt to load us down with interest charges, and although our short-term borrowing is considerably larger than usual, it is still well within the limits for a company of our size. Much of this short-term borrowing is needed to cover the substantial increase in inventory that has accumulated in the last 12 months. Incidentally, it was our ability to overproduce compared to our incoming order rate that necessitated the reduction in the work week. I would hope that by the start of the new fiscal year in November that we all can return to a full-time schedule.

A second factor of importance is the degree to which our overseas business continues to grow and to a considerable extent compensate for lagging domestic orders. International now accounts for almost 40 percent of our business and is continuing to expand.

A third factor is our very solid position in R&D. As I visit with the various divisions, and with HP Labs, I continue to be impressed with the imagination, vitality, and sophistication of their R&D activities. These R&D programs are the strength of the company tomorrow.

Finally, there is the very strong and seasoned management team that is running the company at the group and divisional levels. Not only is the caliber of these managers excellent, but also most of them have now been in their current positions long enough to thoroughly understand their jobs as well as local conditions.

A period of economic slowdown is a time when one can catch up and get one's house in order. This we have been doing. I do not see a sudden upturn in business during the next 12 months, but I do feel that we will see a gradual and steady improvement in the general economic climate and an HP that will be in a position to take full advantage of such improvements.

Bill Hewlett



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Measure

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