



the Good old Days??!

Measure

For the men and women of Hewlett-Packard/JANUARY 1979

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A good forty years...



Dave Packard and Bill Hewlett mark 40 years of Hewlett-Packard service with a handshake. The official starting date of the company's co-founders was January 1, 1939.

No trumpets blew when Dave Packard and Bill Hewlett walked up to receive their 40th year service awards from John Young on December 18. A few reminiscences and they turned to the business at hand: passing out 25-, 30- and 35-year awards to other HP veterans gathered for the annual Bay Area awards luncheon.

Of course, technically speaking, these weren't even the first 40-year awards handed out at Hewlett-Packard— that honor had already gone to a handful of Waltham Division employees who were credited with years spent working for a venerable acquisition, the Sanborn Company.

And yet, those 40-year awards to Dave and Bill last month were clearly something quite special in the history of the company they founded four decades ago.

For a few minutes the co-founders thought back to those early days in Palo Alto when they were beginning to build devices in a garage workshop during spare hours sandwiched between graduate study and work at Stanford University.

The idea of having their own company had occurred to the young men five years earlier when they were engineering undergraduates together at Stanford. By the end of 1938 they were halfway to that goal—Dave Packard and his wife Lucile living in an apartment in downtown Palo Alto, Bill Hewlett batching in a cottage

Cover: After receiving their 40-year service awards last month, HP founders Dave Packard (left) and Bill Hewlett (right) looked over some photographs of the company's earlier days.



This one-car garage behind 367 Addison Avenue in Palo Alto doubled as a workshop for Bill Hewlett and Dave Packard when they started business together. First tools were simple: a bench, vice, drill press, screwdriver, file, soldering iron, hacksaw and some purchased components. By 1940 the partners had outgrown the garage and rented part of a small building on Page Mill Road, hiring their first employees to help with the production of instruments.



In this early photo taken in the garage, Dave Packard (seated) and Bill Hewlett run final production tests on a shipment of 200A audio oscillators, the product that put them in business in 1939.

behind their house, and the garage on the property serving as a simple workshop. Already they had sold a few special instrument orders and now Bill had developed a resistance-tuned oscillator for his thesis project that appeared to have commercial possibilities.

As he stepped up to the podium for his 40-year service award, Dave Packard recalled that Christmas in 1938. "We had a picture of our first oscillator on the fireplace mantle," he smiled. It was early data sheets with those photos that attracted the attention of Walt Disney Productions, leading to a breathtaking order for eight oscillators to use in the

stereophonic sound track of "Fantasia". That landmark order encouraged Bill and Dave to formalize their partnership on January 1, 1939, tossing a coin to see which name would come first.

For his part, Bill Hewlett thought back to those first days working alone together on projects. Tall Dave Packard presented a training problem, Bill teased. "Dave kept hanging everything where I couldn't reach it, and I threatened to have a trench dug in the garage floor for him to work in."

The friendly partnership endured. It has been a good forty years, Dave and

Bill agreed, made possible by the high standard for quality and substance that HP employees have maintained in developing the company's products.

"The standard question we're asked these days is, 'Did you plan to have your company grow this big?'" said Bill. "The answer, really, is that growth was never an objective in itself: All we wanted was to do a good job." □



New products:

1978 was a very good year..



1978 was indeed “a vintage year” for new products, as John Young wrote in last month’s MEASURE letter.

Every one of some 30 product-responsible HP divisions contributed to the harvest which brought in 865 new “mainframe” items including more than 100 major products. At year’s end the company listed 4,796 different and identifiable instruments, and accessories, plus many more options, parts, and software programs.

But above all, “vintage” in reference to the 1978 crop means quality. A sampling of that quality is provided in the following reviews by the six product-group marketing managers:

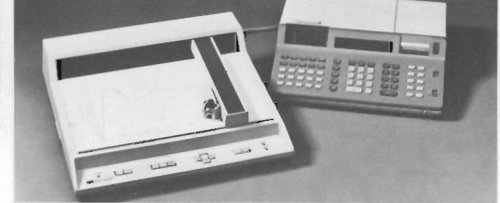
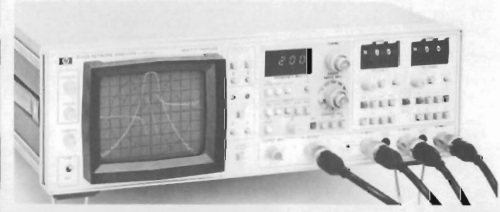
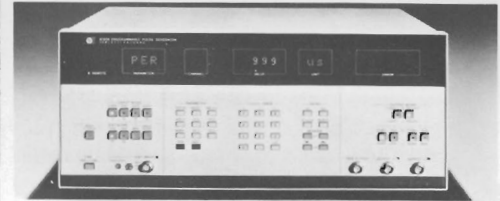
Instrument Group:

Growth beyond the norm...



1978 was another fine year for the Instrument Group. Our 13 divisions introduced over 40 new products. The microprocessor and computer are now well entrenched as simple components or tools in the hands of our design and manufacturing engineers. They have enabled us to develop more new products that greatly improve the productivity of design and manufacturing engineers throughout the industries we serve. These products have helped us sustain our current 25 percent growth rate—well above the industry norm.

On a combined basis, our digital design, manufacturing and service products from the Colorado Springs, Santa Clara, Boeblingen and Loveland Divisions are showing a sales growth rate similar to the data processing industry. Last year we added the 1640A Serial Data Analyzer and expanded facilities for the 1611A Logic State Analyzer, the 3060A Printed Circuit Board Test System, the 8170A Logic Pattern Generator and the 5036A Microprocessor Lab. Loveland Instrument Division's 3060A is the flagship of a new product family for HP and will provide substantial growth for us in the future.



Communications and general purpose test and measurement instruments.

In the communications market area, the availability of the new 8901A Modulation Analyzer will greatly improve the ability of communications equipment manufacturers to test their products. Not

only does the 8901A combine modulation, power and frequency measurement capabilities, but it is also compatible with the internationally accepted HP-IB, making automation easier. This gives our customers a definite advantage in improving productivity. The Santa Rosa Division introduced the 8754A Network Analyzer—a self-contained, compact RF vector analyzer that will find wide use in the manufacture of communications equipment.

For the world's telecommunications operating companies, South Queensferry Division unveiled the 3771A/B Data Line

The HP logic-test family.



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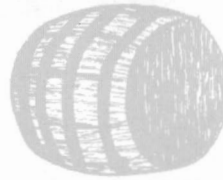
Analizers. These provide quick troubleshooting and measurement of telephone lines used for high speed data transmission. The A and B versions allow simultaneous measurement of four parameters for lines based on Bell System and CCITT Standards. For telephone voice channels, the 3771A/B is a totally new concept in automated measurements of voice channel equipment.

Historically, many of our instruments—oscilloscopes, power supplies, function generators, distortion meters, digital voltmeters, recorders and frequency counters—have served as the basic tools of electronic engineers everywhere. During 1978 this fundamental part of our business was further expanded by the introduction of the 1742A and 1744A Oscilloscopes from Colorado Springs Division; new FET-based power supplies from the New Jersey Division; the 3325A Synthesizer/Function Generator, the 239A Low Distortion Oscillator and the 3467A Logging Digital Multimeter from Loveland Instrument Division; the 214B and 8160A Pulse Generators from Boeblingen Instrument

Division; and the innovative 7225A and 7245A Recorders/Plotters from the San Diego Division. In addition, the Santa Clara Division introduced the new low-cost 5314 and 5315 Frequency Counters. That clearly confirms the company's ability to produce sophisticated quarter-million-dollar business computers, and still be highly innovative in the design and manufacture of low-cost, high-quality, reliable measuring instruments for every engineer's bench.

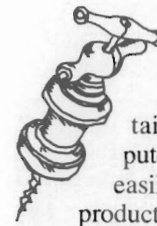
The list of new products is long and comprehensive. They are higher in quality, more reliable and better accepted in our markets than ever before. We fully expect to continue to develop and produce even more exciting new products that will fuel our growth in future years.

—Bob Brunner



Computer Systems Group:

A time of great opportunity...



John Young's statement that 1978 was a vintage year for new products certainly holds true for the Computer Systems Group. It was easily the best year for new products, in terms of quality, since we entered the computer business in 1966.

In just the last few months we introduced four small business computers ranging in price from under \$25,000 to more than \$250,000. These computers give HP perhaps the broadest family of products in price and capability of any company in the fast-growing small-business computer market.

While most recent attention centers on our efforts in business computation, significant developments also emerged in other areas. A new series of extremely fast computers has strengthened our line of technical computers for engineering and scientific applications.

Four new HP computer systems:



HP 250

HP 300

We also announced a number of important peripheral products during the year. These include a low-cost data terminal and another with advanced graphics capability. We feel that graphics—the ability to develop charts, diagrams and graphs—will help computers become even more useful.

Two other peripheral devices, a fast disc drive for storing large amounts of data and a 400 line-per-minute line printer for providing hard copy information, also were announced during the year. Incidentally, we are the first small-computer company to manufacture its own line printer. We now design and manufacture all of the major elements in complete computer systems.

New developments were not limited to hardware. During 1978 we entered an entirely new market with programs that enable manufacturing companies, using one of our computer systems, to improve inventory management, better control costs and obtain more timely and accurate information. This applications software, as it is called, holds considerable interest

and promise for HP.

As you can see, 1978 was indeed a vintage year for product development at CSG. This is the result of a large R&D investment over the last four or five years that is beginning to pay off at the shipping dock.

Our major goal at CSG is to develop tools to help our customers solve their computational problems. No matter how advanced our hardware and how clever our software, the real test of our products is in the marketplace. Our equipment must communicate easily with the user, making it fast and simple to enter and retrieve information. To this end, we are developing data-entry devices that are easy to use, processors that are fast and efficient, and output terminals that give our customers information in an understandable and usable format.

It might be a good idea to explain here HP's role in the computer industry. The Computer Systems Group is involved in two distinct yet related businesses. We develop systems for the technical community to use in research, instrument

control, quality assurance and other industrial and scientific applications. We have another set of computer systems aimed at the small business user and departments of larger organizations. These systems are used for payroll, billing, personnel, inventory control and hundreds of other business applications where the speed and accuracy of computers lead to improved productivity and better decision making. There is a third area of considerable activity, service and support, which is vital to our continued success as a supplier of computer systems.

HP's strategy is to compete for sales in the market for small computer systems, the so-called minicomputers of a few years ago. This market is presently estimated to be \$5.0 billion per year and is growing at a rate of 30 percent per year. By 1983, this market will grow to \$12 billion a year.

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HP 3000 Series 33

HP 3000 Series III

We enter 1979 in a strong position. The products introduced last year have created a strong demand in the marketplace. We have a skilled and trained group of employees to design, build, market and support our computer systems. And we are operating in one of the fastest growing industries in the world. This is obviously a time of great opportunity for HP and CSG.
—Doug Chance

Calculator Group:

Powerful new solutions...



Besides adopting a new name in mid-1978, the Desktop Computer Division (DCD) introduced significant new products in all three of its product lines which will contribute to future growth. The old name of Loveland

Calculator (later, Calculator Products) Division was shed in order to minimize confusion with our consumer handheld calculators in addition to more accurately reflecting the power and capabilities of our desktop systems.

Within the DCD Computational Product Line which introduced our top-of-the-line desktop computer, the System 45, during the latter part of 1978, the major new effort was developing software packages. In fact, 16 separate software packages were introduced in 1978, the most significant categories being in Mathematics/Statistical Analysis and Management Science/Business Administration. These application packages bring computer technology to many people for the first time by making desktop computers more accessible. The combination of hardware and application software will enable us to greatly increase our customer base.

The System 35, introduced by the DCD Controller Product Line in Septem-

ber, will likely have the greatest impact on our revenues during 1979. Besides offering the largest memory capacity of any desktop computer on the market, the System 35, programmed via HP BASIC language, also offers the user the added ability to program by ASSEMBLY language. This significant advantage is beneficial in applications where computational speed and program efficiency are necessary. Positioned for price and performance between the 9825 and System 45 Desktop Computer, the System 35 offers a very powerful alternative in measurement and control applications.

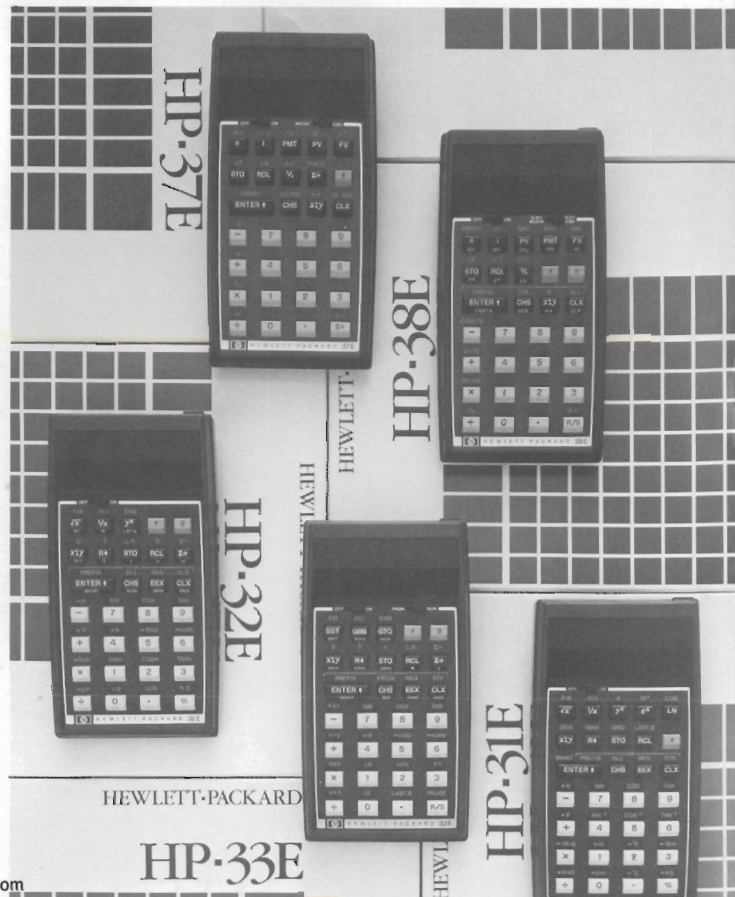
The DCD Peripheral Product Line introduced a highly advanced digitizer, the 9874A. This product is used to derive graphical data from maps, charts, x-rays, etc. and enters the data into desktop computers or other computers. (From this data the computer determines areas, volumes and performs other types of analysis.) The 9874A is the most advanced digitizer available and significantly enhances and extends the usefulness of our desktop computers.

For our consumer markets, the Corvallis Division introduced the Series E family of handheld calculators in 1978. These products will have a significant impact on our consumer business in



HP System 35 in laboratory application.

Series E family of handheld calculators.



1979. The main targets for the three scientific and two business-market oriented calculators are students and professionals in science, engineering and business.

The popular HP-67 and HP-97 fully programmable models are expected to continue to be strong contributors to our order volume. These products have established wide acceptance in HP's traditional markets plus finding acceptance in business applications as well. The introduction of 10 software applications pacs, 40 software solution books and a growing library of contributed programs provides ready-to-use software solutions to an ever-growing variety of problems.

—Bob Rogers

Medical Group:

A very healthy year...



In the face of rising health-care costs and carefully considered equipment purchasing decisions by hospitals, I'm happy to report medical sales were 28 percent ahead of last year—with many products exceeding sales forecasts. Two of the primary reasons for this success are summed up in the words "medical computer systems" and "contributions."

Increasingly, hospitals are demonstrating the clinical value of more complete and more rapid management of patient data with HP computer systems—in medical intensive care units, in more sophisticated arrhythmia detection and warning in coronary care units, and in better interpretive analyses of very large volumes of electrocardiograms. HP-78, for example, the ECG Analysis Program introduced early in FY78, has enjoyed excellent professional acceptance (substantial improvements in measuring ECG waveforms, and flexibility which allows physicians to adapt the interpretations to their own local situations, are the key reasons).

"Contributions"—HP's term for providing the user with products that are better answers to his needs—are clearly exemplified in the greater diagnostic information, cost-effectiveness, or consistent quality of results delivered by these typical new medical products.

Our new Vital Signs Monitor (code-named "Rifleshot") for the critical-care bedside and the operating room not only shows the doctor and nurse the key information they need at a glance, but helps

the hospital hold down equipment costs as well. These monitors afford significant savings over previous HP instruments with comparable capabilities, and allow the hospital to choose the specific combination of monitoring parameters that it needs. This Boeblingen-designed and developed instrument has consistently sold beyond targets.

A valuable companion product, developed by Waltham Division in cooperation with Boeblingen Medical Division, puts more information on the patient's ECG chart recording than the medical staff had before. Our new Annotating Recorder prints the date, time, bed number and vital signs in the margin of the ECG chart—on new chemical-thermal paper that's smudge-proof and easier to handle.

We're also applying computational technology to more and more HP medical products, to save time for the user and improve the consistency and quality of the data delivered. McMinnville Division's new mobile Chest X-Ray System for use at the critical-care patient's bedside includes a microprocessor controller. On pushbutton command, it automatically computes the correct exposure, matches the system to the processing method used, detects operator errors, and even helps

check the system for service or maintenance which may be needed. The end results are consistent quality chest x-rays day in and day out, fewer retakes, and improved cost-effectiveness for hospitals.

With the new products we are now developing and testing for the health care field, I'm confident that we will make significant and needed contributions to our medical customers during 1979.

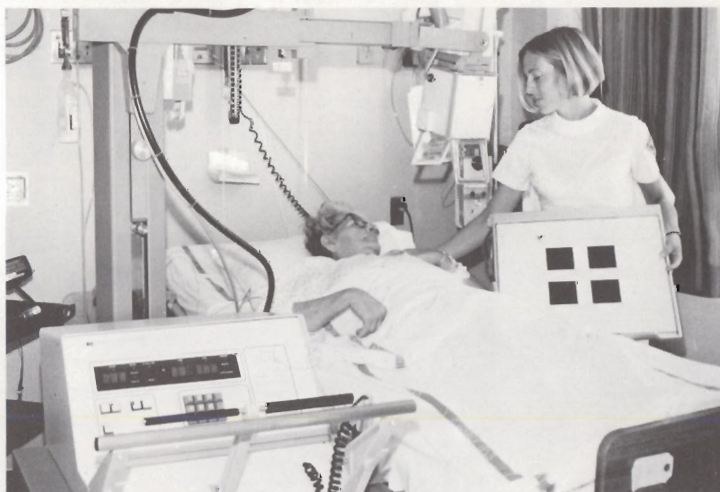
—Ben Holmes

Analytical Group:

The right chemistry...



Basically, all of our analytical products are involved in maintaining the quality of life—chemically testing the standards that are set for such things as the foods we eat, the water we drink, the air we breathe, the fuels that transport us, the materials that shelter us, the pharmaceutical products that heal us, and even the drugs that may harm us. Somewhere in all of these processes is an HP-type analytical instrument which, broadly, is made up of two parts: one, the chemical end



Mobile chest X-ray system above, and vital-signs monitor—code-named "Rifleshot"—at left.

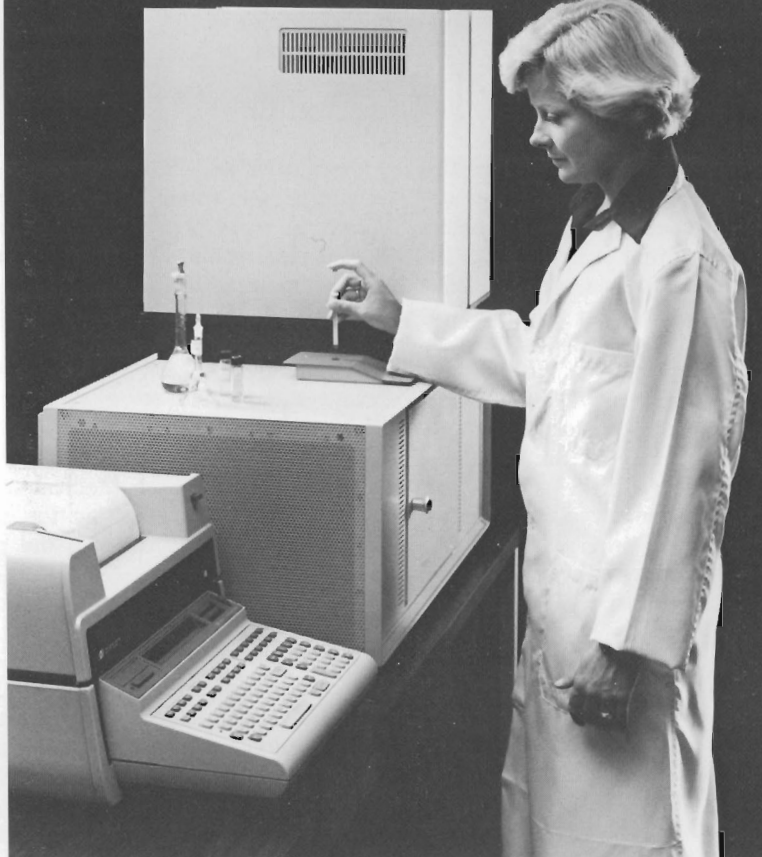
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which detects a chemical presence and, two, the electronic portion which stems from HP's basic state-of-the-art technology in electronics.

In 1978, our sales in these markets topped \$100 million and achieved an excellent level of profitability. 1979 looks like another fine year for us both in terms of sales growth and new products to sustain that growth.

For all of our product lines including gas chromatographs, liquid chromatographs, and GC/mass spectrometer systems, the important trend has been toward automation that provides automatic sampling and data reduction at much higher speeds and greater accuracy, all at reduced cost.

The new purge and trap sampler that we introduced in 1978 is an example here. This accessory, which fits on our GCs and GC/MS, greatly expands our capability for water-quality testing. It can detect dissolved organics on the order of one part per billion, identify the compound and print out its name and concentration. It can do this over and over again for hundreds of samples without the intervention of a technician once the water samples are brought to the instrument. The summer Olympics scheduled for Moscow in 1980 represent another example. More than



Entering sample in an HP 5992B GC/mass spectrometer.

2,000 athletes will be tested by HP analytical instruments for some 200 different drugs during the course of the games, and the top four finishers in each event will be tested also.

However, the most important evidence of our recent R&D efforts will be unveiled on March 1 at the 'Pittsburgh Conference' in Cleveland. This is the U.S. analytical chemists' big gathering, and we're going to have some very powerful new products to show them. These will include not only new representatives or replacements of our existing product lines but also a new technology which will take us into the life-sciences market as well as our regular chemical markets.

—Dave Nelson

Components Group:

New links to the future...

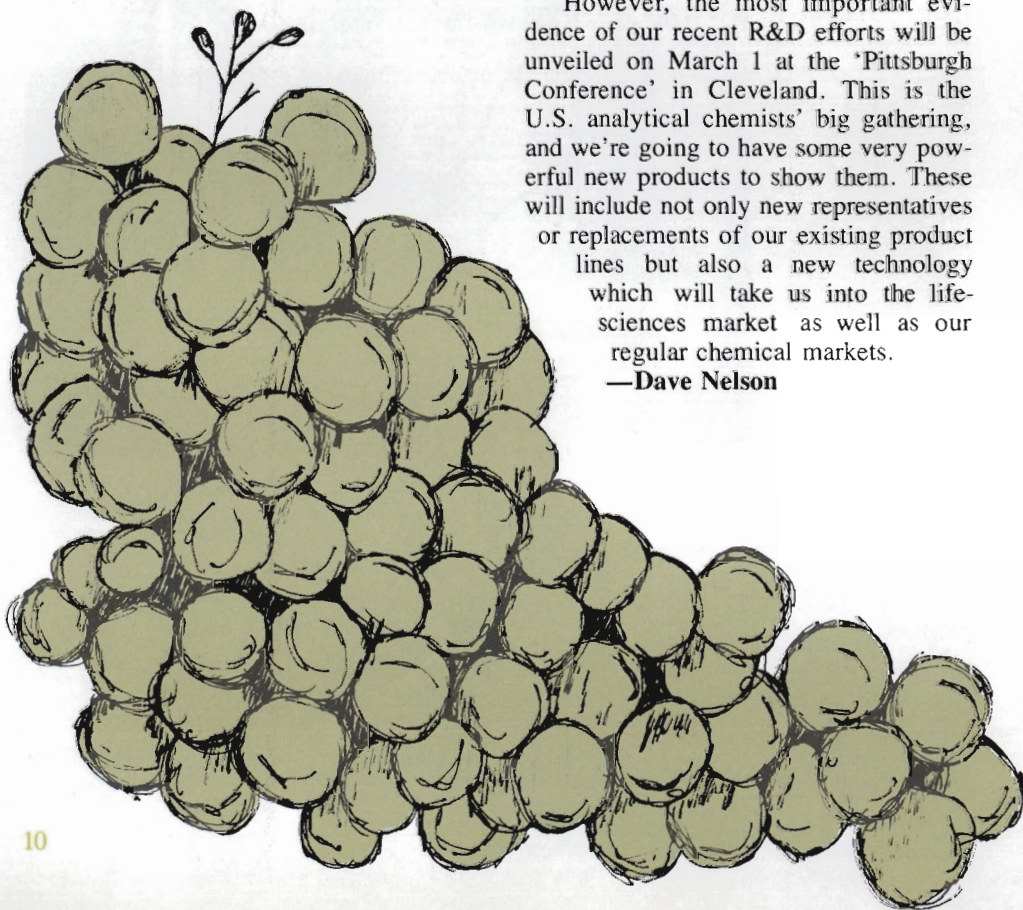


While the traditional HP Components product lines continued their strong growth patterns in fiscal 1978, two new product categories were introduced that promise growth in two entirely new market areas.

The two new categories, fiber optic communication systems from the Optoelectronics Division, and microwave field-effect transistors from the Microwave Semiconductor Division, are solid outgrowths of proven HP technology.

Fiber optic systems offer opportunities for us in the area of data communications, providing transmission links that are impervious to electrical or magnetic interference and, in turn, generate no electrical or magnetic noise. This makes them ideal for linking computers or control devices and their peripherals in difficult environments such as those found in factories, aircraft, hospitals and large power plants.

A fiber optic link system consists of a transmitter, a receiver and a length of



hair-thin glass or plastic cable that carries optical signals.

Currently, we are able to send and receive signals over distances of up to 100 meters, and in the future as far as one kilometer. HP technology is most evident in the transmitters and receivers which use gallium arsenide (transmitters) and silicon (receivers).

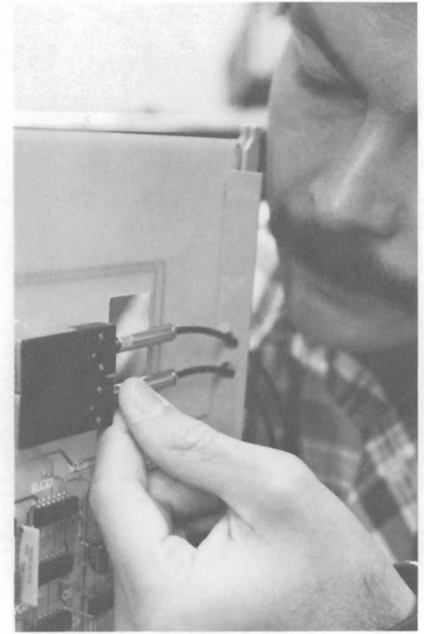
In the microwave area, our new field effect transistors (FETs) have opened new horizons for HP in the 10 GHz range of solid-state receivers. Customers who build miniature radar sets and microwave communications equipment have, in the past, used bi-polar transistors for their applications. These new FETs, however, will allow them to receive much fainter signals than before.

A wide range of customers who produce military and commercial microwave amplifiers should find our new products

quite attractive. Our leadership in gallium arsenide technology has enabled us to enter these markets with confidence.

In all, fiscal 1979 should be an exciting year for the Components Group as we exploit our position in our existing markets and push into growing new ones.

—Milt Liebhaber □



Fiber Optic data link (HFBR-0010) in computer application.

Setting a common direction...

In spite of the fact that they are all involved in producing electronic products, manufacturing managers at HP comprise a very diverse group. Some supervise organizations that are mostly assembly and test operations, some have materials and fabrication shop responsibilities, or integrated circuit facilities, or printed circuit production, or any of a dozen other exotic operations. Nevertheless, the 50 managers have much more than their job title in common, as they rediscovered at the worldwide gathering of their clan for a two-day exchange at Pajaro Dunes, California, in mid-November.

Ray Deméré, vice president of Corporate Manufacturing Services, pointed out the scope of their responsibilities: jointly they manage approximately two-thirds of the company's total dollar assets, and supervise two-thirds of the employee population. Similarly, the considerable growth in assets and people projected for HP will be largely concentrated in their sphere of responsibility. They also share a view of the future which includes environmental restrictions, questions of division size and autonomy, a common interest in HP's computerized factory management system, and a common concern for maintaining the HP work environment.

Several factors came into sharp focus at the meeting:

- As the various sectors of the company compete for growth funds, there will be a great deal more emphasis on asset management—making more efficient and productive use of facilities and equipment—than ever before. This will include a higher degree of performance measurement, and more standardization of equipment and processes to permit more interchange of manufacturing services between divisions.

- Seeking out HP people and coaching them to take on new responsibilities will become a bigger challenge than ever for manufacturing departments.

All in all, the meeting brought out some of the important ways by which HP maintains a common sense of direction in the face of expanding product lines, new markets and widely dispersed manufacturing operations. □



Doug Penrose, representing Stanford Park, was one of a number of speakers at the manufacturing managers meeting who discussed how HP divisions are using and sharing information systems.

The world's best

All the best packaging designs were there at Chicago for Pack Expo '78, the biggest gathering of the worldwide packaging and material handling industry. From among the hundreds of examples entered in the annual design contest, an HP design was chosen both as best in the general packaging category and "best in show." In other words, it won title to being the world's best packaging design concept in 1978!

"When we sent our entry into the Society of Packaging and Handling Engineers in October," said Bill Kropf of Computer Systems Group, "we had no idea at all we would win the top award, but that four-foot trophy they sent us is pretty convincing."

The immediate members of "us" include Bill and Pat Wright, a process engi-



Pat Wright, left, and Bill Kropf review features of the design which won top world packaging-design honors last year.

neer at General Systems Division, whose names appeared on the entry. There were others: Jack Kordich of Data Systems Division, who provided some ideas; and Bob Schaeffer and Tony Napolitan of

GSD's manufacturing department who helped define the project during the early phases of setting up for production of Amigo (HP 300) computer, for which the package was designed.

It is indeed a very neat package. First, it provides a mobile platform on which to move HP 300 computers from station to station during assembly. With castor wheels removed, ramp up, and plastic dust cover secured, it becomes a shipping container complete with its own shock-absorbent pallet. On delivery at a user destination, the HP 300 can be rolled down the hinged ramp and plugged in for operation within five minutes of arrival. Moreover, the cost of fabricating the HP 300 transport module is still comfortably within the \$100 limit originally set by the designers. □

On wheels into a heat test...



...almost ready for shipping...



...and fast unloading by customer.



The great Cupertino tent event...



For almost two months late last year, that “big top” tent on Data Systems Divisions’s parking lot served as a very busy business arena. Its chief visitors were Computer Systems field engineers, systems engineers, sales managers and other marketing people from around the HP world. In all during a series of seven weekly sessions, 980 of them came to see and study the division’s new product offerings, get hands-on experience, and receive briefings from Data Systems and General Systems people on the strategy for representing them to customers.

The tent filled in handily as temporary space for meetings, exhibits and even dining area while construction continued on new facilities at the Cupertino site. It also encouraged an informality which many of the HP visitors found a relaxing contrast to the business environments in the parts of the world they served. Rides in a hot-air balloon tended to emphasize that view.

Near the end, someone came up with the idea of staging children’s parties in the tent as a friendly neighborhood gesture. The idea took hold, and before you knew it, more than a hundred HP people were all over the place after work creating a county fair atmosphere. The 400 youngsters from a local school and the County Children’s Shelter who came to the parties had a great time. DSD manager Dick Anderson also took advantage of the tent to hold an all-division breakfast meeting where, after riding in on a horse, he discussed the upbeat state of the division’s business. Too bad that tent had to come down. □



33,600 share profits

PALO ALTO—The company distributed some \$24 million in December to more than 33,600 employees under the HP cash profit-sharing plan.

It was the second profit-sharing cash disbursement in 1978, bringing the year's total to approximately \$44 million.

HP employees eligible to participate receive two profit-sharing checks a year, one at the midpoint and the other at the end of the year.

Cupertino, Sunnyvale construction

Rapid growth in Computer Systems Group divisions has resulted in new construction at both Cupertino and Sunnyvale sites.

Completion of two buildings now underway at the Cupertino site will bring to six the major numbered buildings. Also under construction is a large cafeteria which will be used in addition to the present cafeteria. All buildings are interlinked.

Construction also is underway on the first of two new buildings planned for the Sunnyvale site, with first priority given to an additional printed circuit shop scheduled to be fully operational in January, 1980.

Planning/PR in Europe

GENEVA—Alfredo Zingale rejoins HP in Geneva in December in the newly created function of European manager for Planning/Public Relations. His role combines duties formerly assigned to Toni Polsterer, now heading HP's Vienna office, and Ed Towbin, who has left HPSA for a position in London. Zingale's planning function also includes coordination for Corporate construction activity in Europe. During 12 years with HP he held regional marketing, sales management, factory and country-related assignments in Europe.

New Kuala Lumpur office

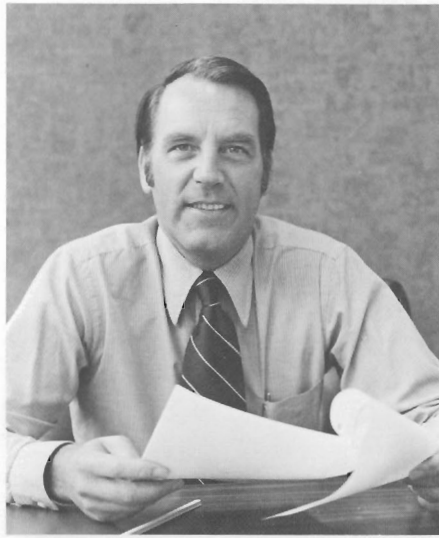
HP MALAYSIA—Intercontinental Region has opened a new sales subsidiary in Kuala Lumpur, Malaysia, which officially began business on December 1. The new sales subsidiary in Malaysia will be managed as a branch office of HP Singapore.

HP in MIT program

ANDOVER—Hewlett-Packard has been granted a one-year membership in the Industrial Liaison Program of Massachusetts Institute of Technology in Cambridge, Massachusetts. The program gives HP, along with other member companies, special access to MIT's faculty, publications and research information in all fields of science, engineering and management.

Publications HP will receive as a result of this membership include the annual Directory of Current Research, a 300-page listing of all MIT research projects by department and subject, plus a monthly list of theses, reports and patents applied for, and announcements of symposia to be held in various parts of the country.

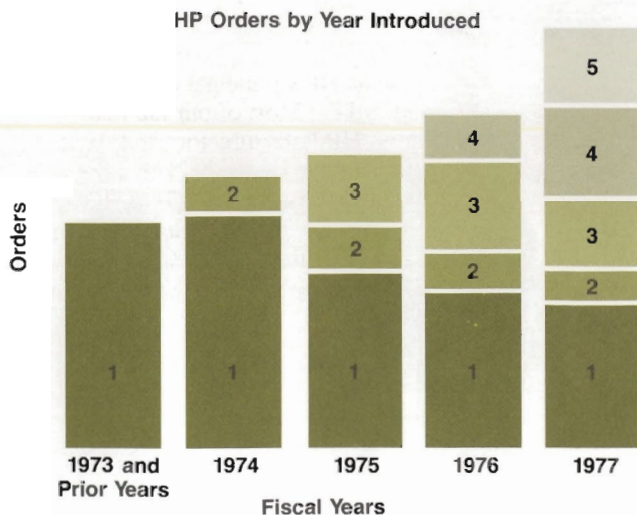
Tom Horth of HP's Andover Division in Massachusetts will serve as HP's principal contact with MIT. "Most of our lab managers, HP Labs directors and some librarians are on the MIT mailing list and have copies of all the information," Tom explained, adding that the annual directory of MIT research projects will be mailed in February.



From the president's desk

This issue of MEASURE has a major feature story on the “vintage crop” of new products introduced by our divisions in 1978. I know all of you frequently hear about the importance of new products to HP—during orientation sessions, when scheduling the speed up of a tooling job, completing a pilot run, or introducing new products to our customers. New products really are the life blood of the company, and a fuller explanation of this point might serve to put this story in a helpful perspective.

My first job at HP covered sales planning: forecasting the sales of old and new products for use by production and product development. I was introduced to a marvelously simple chart that portrays a great deal about the dynamics of our business on one sheet of paper. Here we see it for the years 1973 through 1977:



Each of the bars represents total sales for one year. The shaded sections represent the volume of orders received based on the year the products were introduced. 1973 represents the accumulation of products introduced in that year plus all products developed over the previous years; these are shown as “1” throughout the chart. The point I wish to illustrate starts in 1974: The sales of older “1” products again are at the bottom, but new products introduced in 1974 have been added. In 1975, the old “1” products drop off somewhat, the “2” products introduced in 1974 show some growth, while the new 1975 products (“3”) show a big new increment in sales.

The chart reveals a great deal about our new-product strategies: We do *not* grow by selling ever-increasing volumes of the same products. On the contrary, new products such as those introduced in 1974, for instance, generally reach mature levels two or three years later, and by five or six years out many of them can be expected to have reached or neared the end of their product lives.

The growth in total sales results from new products introduced each year that—layer on layer—build up the total. This cumulation of layers is dramatic; in the five-year span shown, more than one half of total company sales in 1977 resulted from products developed after 1973.

The significance of this is that we create our own growth from the innovation and contribution of our product-development programs. This is so important to HP that our company ranks among the top five of all companies in the FORTUNE 500 ranking of industrial organizations in the proportion of the sales dollar we invest in product development. This growth component does not mean we are immune to the influence of general economic conditions on sales, but we do have a very important factor which can help offset some or all of the effects of a recession. Thus, a strong new-product program helps protect jobs on the downside and provides the dynamics of growth on the upside leading to personal development opportunities in our expanding organization.

We are very proud of the many important products described in this issue and the many, many others (over 100 in 1978) there won't be room to mention. Our challenge now is to capitalize on the \$150 million+ in product-development funds represented by all of these developments and get them solidly into production and in the hands of our customers.

Living it like it was...

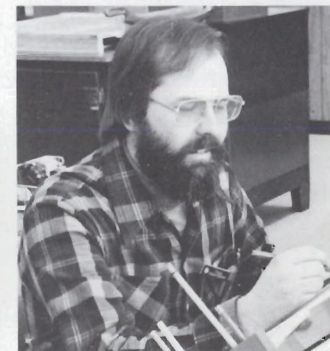
The days of America's rough and rugged mountain men are over, you say? Not so, friends! A small band of modern day "buckskinners" still roams the backwoods of the Rocky Mountains. Three of the group—Dwain Thompson, Paul Cackowski and Dick Whitmore—are from HP's Loveland facility. They and others who share an interest in the lives of America's early mountain men frequently don their homemade buckskin clothes and get together to swap stories and relive those colorful days of the early 1800s. So authentic do the three HP men look in their 'skins, in fact, that they were selected to appear as extras in the television version of James Michener's best-seller, *Centennial*. By the way, you ask, why doesn't MEASURE have a photo of Dick Whitmore? Unfortunately, Dick was away when MEASURE called—hunting in the mountains, of course! □



Dwain Thompson—by preference a mountainman, by profession a supervisor in Loveland's molding shop.



Paul Cackowski works at marketing (LID), plays at mountaineering.



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