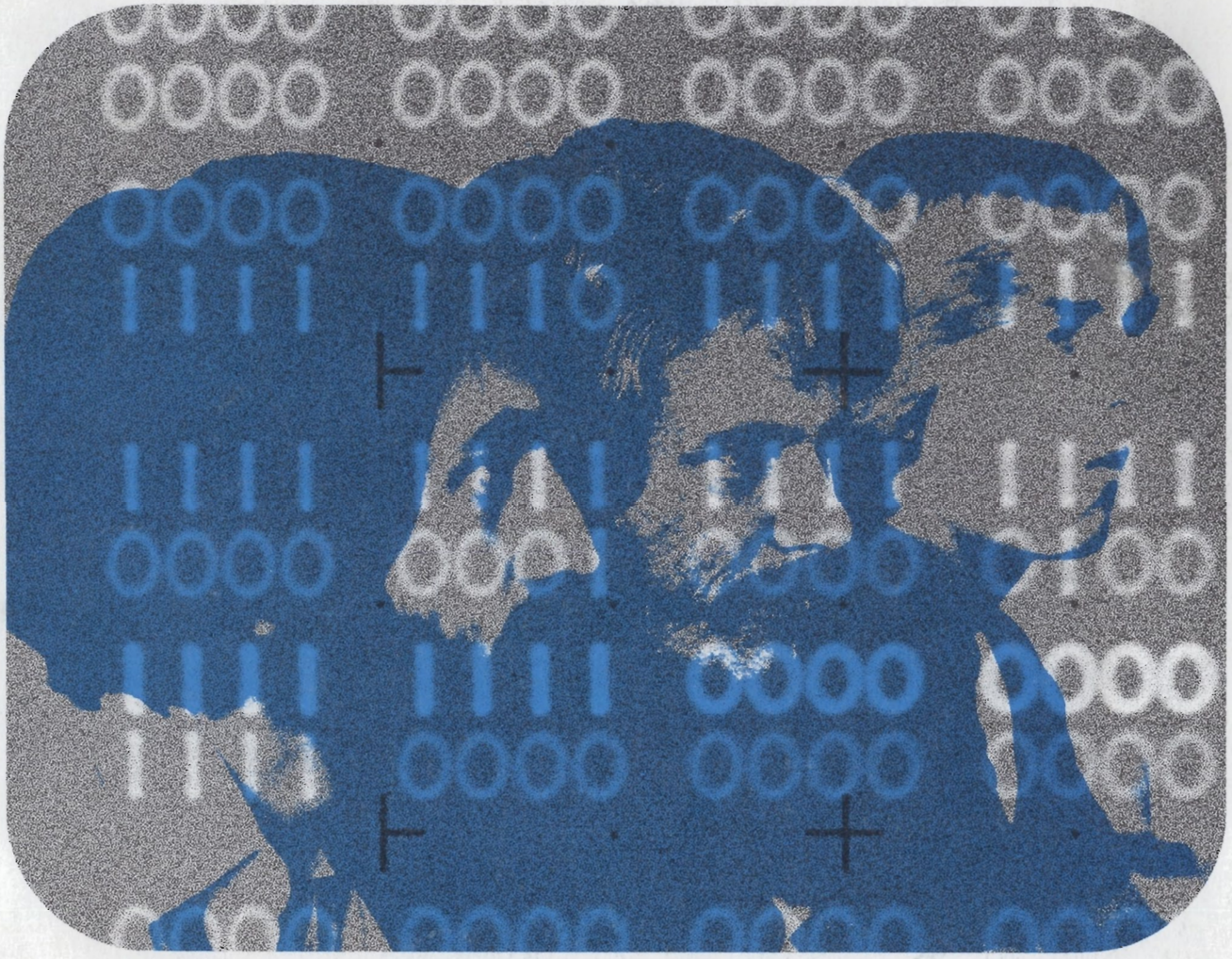
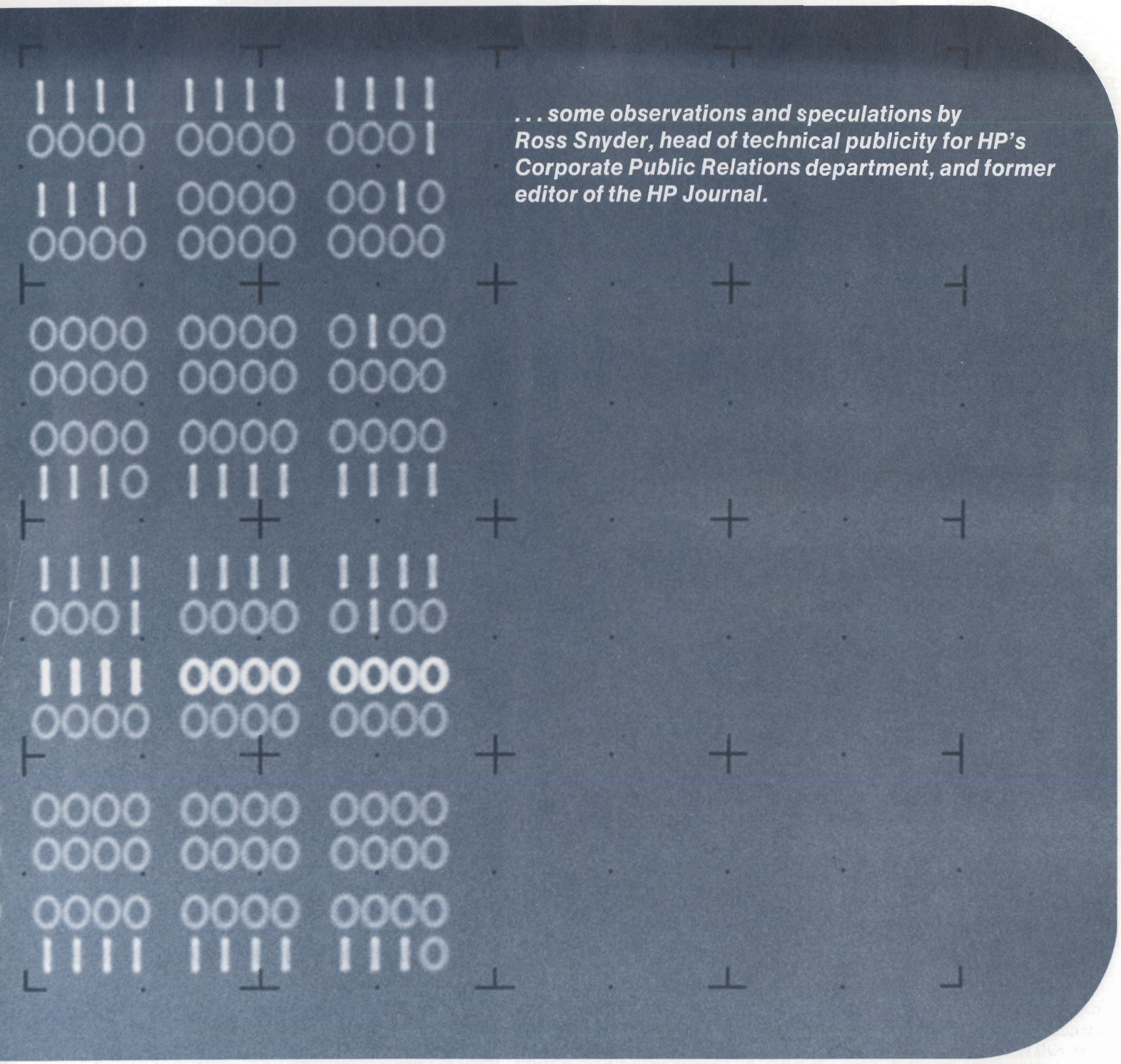
Measure

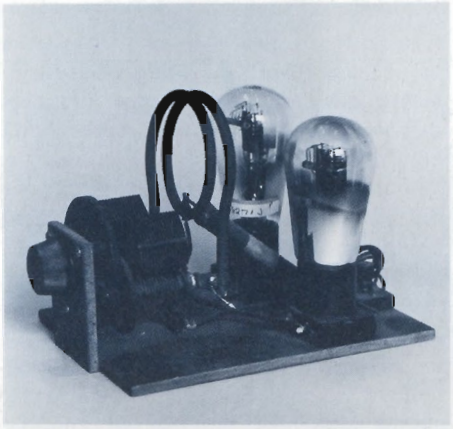
For the men and women of Hewlett-Packard / JUNE 1977



YOUR ELECTRONIC FUTURE....



. . . some observations and speculations by Ross Snyder, head of technical publicity for HP's Corporate Public Relations department, and former editor of the HP Journal.



☐ No one should be surprised that electronics is revolutionizing our lives; it already has. The telephone was invented a hundred years ago. The election of Calvin Coolidge was made known on network radio. Movies began to talk soon thereafter. For better or worse, missiles were guided and detected by electronics 32 years ago. The computer had its 25th anniversary last year. TV was baby-sitter to most Americans now alive. Individually, we have directly experienced the impact of electronics mainly in communications — radio, phonograph records, films, TV, audio-visual learning aids, the telephone. Its indirect effects may have been even greater because of electronics' importance to government, industry, and science. Government today could not possibly look after the details of drivers' licenses, individual taxation, Social Security payments, veterans' benefits, and traffic fines — to mention only things that many of us feel directly — without electronic computers and data communications. Industrial automation, dependent on electronic controls, is one of the few mechanisms now alive and well and working strongly against inflation. As for science, there is hardly a project going that does not rely on electronics one way or another, to measure temperature, pressure, acidity, pulse rate, standard deviation, or price elasticity.

The information revolution

Perhaps electronics' greatest contribution in the next few years will be bringing the information explosion under control. Unique among natural resources, information gains in value and in volume as it is consumed, unless we begin to choke on it. The computer, once considered mainly a solver of complicated logical problems, now is more and more regarded as an information organizer. Since more scientific text is published every year now than in the entire history of science before this century, organization of such information is a necessity if it is to be useful to future researchers.

Already some automated libraries can be quizzed for information by an exchange of communication on a computer terminal. The user specifies the general subject and learns perhaps that there are thousands of references. The particular reference that is needed may quickly be narrowed down by specifying key words or phrases which must be found in association with the subject, until only one reference fits the specification. The automated library may have scanned its entire contents, over and over, in the process.

One kind of information with which all of us are familiar is that contained on a check, whether we see it as a payroll check — or never see it because it is electronically deposited in our account without the use of paper — or as the checks we write to pay the bills. EFTS (electronic funds transfer system) sounded like the answer to the blizzard of checks that threatens to engulf the economy, but it hasn't yet worked out that way; the paying public has not responded nearly so favorably to cash registers that instantly remove money from their bank accounts as it has to instant deposits in those accounts. Besides, if an error should occur, what can one offer to prove it? Still, difficult as these problems may be, and difficult as it may be to assure proper privacy in financial dealings, solve them we must, or our banks will be in the position of the telephone company before it invented the dial system — soon every able person in the country will be employed as a teller, at the rate we're now increasing the use of paper checks.

That is, if they're not all needed as postal clerks. We have just read that postal services are to be cut back at the same time postal charges are increased, and it's not the first time. One reason, whatever one thinks of government as entrepreneur, is endemic among all services; it is the remorselessly rising cost of personal service. Electronics offers one immediate answer, although there is more than one question. HP offices intercommunicate mainly by electronic mail, using computers to assemble, condense, and code messages, then to send them as high-speed data over telephone lines at the end of each day. The cost is only a few percent of mailing the equivalent paper, and overnight delivery is assured. Electronic mail has not stopped all inter-office mailings, but the bulk would surely have become appalling without it. Business mail is a large portion of all mail, but publications, advertising, and personal mail also contribute heavily to the barrage post offices must handle. Reading is still the most efficient way to learn, and publications still provide information in the form that makes it easiest to take only what is wanted, while rejecting the rest, including, perhaps, the accompanying commercial. Until most every home has a computer interconnected to others, publications that are printed and mailed will remain vital. Some personal mail, the kind we wouldn't mind being seen by any and all, might be sent no further than the nearest encoding station, then go electronically to another

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your electronic future...

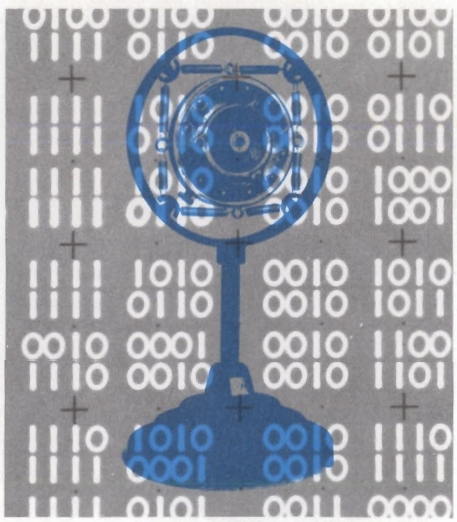
such station for decoding and delivery. But that sounds remarkably like the telegraph system we once had, the one that now delivers its messages by local mail, because of the high cost of personal services.

There are indeed those who see the cost of computers falling so fast that every home will soon have one. It's true that more than 25,000 individuals now possess computers, and the number is growing very fast, but a careful look at what they're being used for doesn't much encourage the notion that every home needs one. Mostly it's games. A few, owned by tireless professionals of one persuasion or another, are used at home to continue the sort of problem-solving they do at work. It seems trivial to assign the home computer no further tasks than remembering birthdays, deciding when to turn on lights, heat, cooling, or the oven, or perhaps taking inventory of the cupboard and recommending a balanced menu from its content. Our sights should be raised much higher, eventually to "interactive" interconnection of computers in business, government, education, and home.

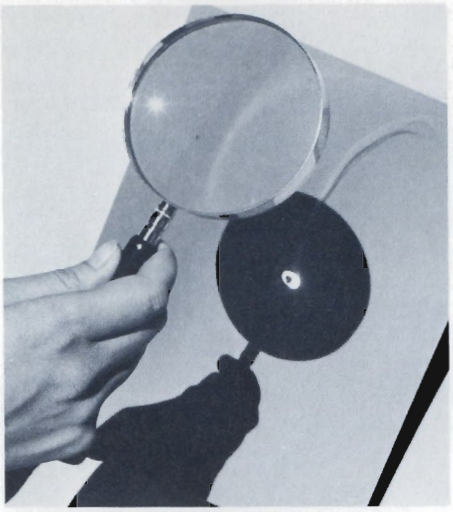
The electronic computer has become the central nervous system of modern organizations, channeling, controlling, preserving and interpreting the information on which they depend. Contrary to almost every other trend in the economy, computers have been dropping in price at a phenomenal 30 percent a year. The General Systems Division's manager, Ed McCracken, gives an example. A typical large warehouse ten years ago might have been managed by nothing smaller than a million-dollar computer of the time; an inventory manager would do the job for $10,000 a year. Today, however, the necessary computer is under $30,000 and the inventory manager is getting close to $20,000 a year. He is now quite likely a member of the generation that grew up with computers, and fears them not at all, so probably he will soon become the data-processing manager of a large number of warehouses, all using computers instead of hand labor! Yes, the question of technological unemployment does arise. So far, it has turned out that the possibilities for better jobs created by technology generally outnumber the jobs it supersedes.

As for the future, HP vice president John Young says that sometime during the 1980s we will offer the business executive a personal desktop computer for $10,000 that's as powerful as the big half-million dollar computer that we now use to run all the financial affairs of the 1,430-employee HP Santa Rosa Division. What is more surprising, perhaps, is that in so short a time this executive will need it and know what to do with it, so fast are his information needs and his understanding growing. Networks of such computers will exist, so the power of all can be placed at the disposal of any one. Because communication among computers has been going on for a good while it may seem surprising that immediate interaction among them is a recent development. It is a new thing that the user of one computer can call for information from another, and get it at once; it is new that such a user can assign part of the job at hand to a machine far away, and get results in time to combine them with work done locally. It is new that computers can be programmed to exchange work automatically, multiplying the usefulness of their various facilities.

Last month a development called DS/3000 gave HP 3000 computer users the ability to interconnect their machines so as to function together instantly. Last year HP won an award from Datapro, McGraw-Hill's computer evaluation service, for IMAGE, our information management system. If organizing information flow is the future of electronics, it's not hard to see which way the wind is blowing, or who is behind it.



"Our sights should be raised much higher to 'interactive' interconnection of computers in business, government, education, and home . . ."



"there is some hope semiconductor technology may give us a long-term, inexhaustible source of electric power . . ."

Solutions to energy problems

Although one may think of electronic devices as consumers of energy, they are doing a lot more to save energy than to use it and more to prevent pollution than to cause it. For one thing, new HP instruments that do eight or ten times the job of their predecessors now characteristically use one third as much power. That's mainly because of miniaturization, through the use of the integrated circuits that were discussed here last month. So far as the use of energy is concerned, though, it is more important that electronic sensors and microcomputers very soon will control the performance of every new auto sold in the U.S., to the end that fuel consumption and exhaust pollution shall be cut, even while engine responsiveness is improved.

We haven't yet seen much of the promised electronically-automated automobile servicing machine, but it's on the way. Plug-in check-points, like those found throughout HP electronic products, will begin to appear on make after make. Computer-automated equipment at the repair shop will quickly check all systems, not only finding everything that needs fixing now, but giving an estimate on how long each system will be in "go" condition. At $25 an hour for the repairman's time already, it will be none too soon, but that's the peculiarity of electronics: in service function after service function, where costs seem to rise continually, electronics counters the trend.

Not only is electronics making its contribution to the saving of energy, there is some hope semiconductor technology may give us a long-term, inexhaustible source of electric power, beginning as soon as 1987. Solar cells, like those used to power our communications satellites, today cost far more than they are worth as sources of electricity from the sun. Interestingly, it appears the answer lies either in the use of large numbers of new solar cells that are much less efficient, because they may be very much less costly to manufacture, or in the use of a smaller number of cells of very high efficiency, using a principle called thermo-photo-voltaic conversion. Calculations indicate that a small part of the unoccupied southwest U.S. desert could supply all the electrical needs of the western states, if seeded with these cells.

Electronic aids to health

Medical electronics today is helping physicians to see that many, many people in their most-productive years remain alive. Heart trouble is still the most common killer, especially of younger people, but advances in medical understanding, aided by electronic instrumentation, are making it possible in more and more cases to predict trouble in time to treat it, to define exactly what treatment is best, and sometimes to save the lives of those whose hearts have actually stopped.

Computer-assisted surgical procedures are becoming more common, the physician receiving the result of vital but complex calculations while the information is still useful to him.

And now electronics is taking the first steps toward becoming an integral part of human functioning. The implanted pacemaker seems to have been the first prosthetic device — artificial organ — that was integrated into the human nervous system. The predecessors, such as glasses and hearing aids, were mere physical extensions. Because the fundamental "cells" of electronic integrated circuits now are about the same size as nerve cells, it looks possible to substitute them, as implants, in the human nerve structure. Not bionics in the TV sense, but hope for the severely afflicted.

Now hearing has been restored, although only feebly to at least one person who suffered total destruction of the middle ear. Surgeons implanted a miniaturized transmitter that converts sound into an array of electrical impulses and delivers them directly to the appropriate sonic

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your electronic future...

nerve endings. Once stone deaf, the patient now has interpretable sound sensations. The victory is not whole, but a great barrier has been breached and much promise is ahead.

Far more challenging will be electronic sight for the blind. A hundred times more information must be transmitted for sight than for sound, and the optic nerves, unlike the sonic nerves, rarely survive intact when the organ they serve loses its function. Thus the challenge is to detect light patterns, convert them to electrical patterns, then deliver these directly to the brain's visual center, buried so deeply inside that surgery will be difficult and dangerous. Yet it will be done.

The further future

Further ahead, after some great difficulties are overcome, an advanced kind of computer with terminal will be common in homes, offices, and classrooms. They all will be interconnected like telephones. We may use coaxial cable, as in today's cable TV, but more likely we will use super-transparent strands of glass-like material that can optically transmit enormous numbers of communications and huge volumes of information all at once.

Then, the textbooks and magazines of the time will not be passive sources of material to be read as desired, but interactive programs, which the reader may probe for more detail, or for quick summary. It may sound frivolous, but interactive entertainment seems likely; perhaps we will be able to alter the outcome of a story, surely participate in a coast-to-coast quiz contest.

Our local computer will not only have a TV-like motion picture display, a keyboard and perhaps a camera for outgoing information, it will also have a sort of printer that can produce a paper copy, solving the problems of records for electronic banking and electronic mail, and perhaps satisfying the need for pin-up posters.

In such a civilization, instant voting will be a possibility, and that might or might not be a benefit. Whole populations occasionally have moments of dangerous passion. They are largely muted by the checks and balances of civilizations that are a little slow to respond. The value of sleeping on important decisions might be lost if interaction so vast should be possible too fast.

The further future probably contains things we thought were right around the corner. The computer that can visually recognize its owner, in any light and from any angle, is yet to be developed. Project after project on image recognition has left simple visual recognition, of the kind every baby performs easily, beyond reach. It will come, but it is far ahead. Likewise, while we can teach a computer to speak quite intelligibly, and even determine the accent, no computer can understand any but the simplest spoken expressions. That is why, in the interactive civilization of tomorrow, we will use keyboards for a long while. Speedy comprehension at the six-year-old-child level is still perhaps ten years away.

We have all heard the apocryphal story about the computer-translation system that gave "water goat" as the English translation for the Russian equivalent of "hydraulic ram." We don't hear such stories much anymore, because serious efforts at making computer translation systems have been largely postponed until larger, cheaper, faster equipment is available and, even more important, easier to program. Dr. Egon Loebner of HP Labs says it may be 2015 before we can dial Paris, speak in English, and be heard there in French. Nonetheless it will happen, as will many a thing entirely unpredicted here, all because HP people and others apply ever-greater ingenuity to exploit the scientific principles behind electronic technology. □

At Neely Santa Clara, COMSYS operator Glenda Haroldson demonstrates the new 2026 System for field engineer Ron Westergren (seated). This was the first stop in a three-week introductory tour of HP sales offices for GSD's Rich Nielsen (right) and Larry Hartge (left). The basic system includes an HP 21MX Series-E computer and HP 7905A disc drive in attractive desktop cabinet, and HP 2645A CRT terminal.

Comsys goes to market...

What is this 2026 System that was introduced in May as one of the General Systems Division's new products?

Why, it's none other than HP's own hard-working COMSYS — short for "communication system" — all dressed up and ready to go to the marketplace.

COMSYS — or the HP 2026 System, to use the new designation — is probably the first brainchild of Corporate to end up in a division for outside sale.

As a product, it opens up a new area for HP: the sale of a data entry and communications system. With an HP 2026 System in each of a number of geographically separated locations, a company can have a network for exchanging business information over telephone lines with great speed and economy.

It was just such a need at HP which prompted Corporate Marketing Services to begin developing COMSYS seven years

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Comsys...

ago. HP's internal communications system proved so efficient that other companies heard about it and began asking to take a look.

Long before the formal decision to market COMSYS, visitors were frequent at the COMSYS center in Palo Alto. Bill Taylor, manager of COMSYS/telecommunications activity at CMS, estimates that one person could have been kept busy full-time last year just demonstrating the system.

The story that Bill, Gene Doucette and others in the group could tell about the performance of COMSYS at HP was remarkable. In just six years, the volume of data handled increased a whopping 80 times (50 million characters go through Corporate EDP each day) with a net decrease in transmission costs. COMSYS operation has been steadily improved until today it costs less than 7 cents to send a 500-character message (the equivalent of about 80 words) within the U.S. and only 15 to 20 cents to HP locations in Europe, Canada, Latin America, and across the Pacific. Messages are delivered no later than the following morning to any of the 94 COMSYS locations in the HP world.

The success story of COMSYS goes back to the 1960s when HP's sales offices and factories were connected by a hodgepodge of commercial TWX networks. Order-processing activities were snarled in paper tape, particularly when an order had to be split and sent to several supplying divisions.

Data System Division's Bob Puette, who headed Corporate Marketing Services at the time, saw the need to automate the processing of orders. In 1968, he hired Bill R. Johnson (also now with DSD) to work with him on the project. It soon became clear that the first step was to devise a good method for handling data communication.

As Bill recalls, "Bob looked at me and said, 'Have you ever done anything in data processing?' When I said no, Bob laughed and said, 'Well, the job's all yours.' "

Bill mapped out a network in which Corporate would serve as the hub for transmission of order and shipment information to and from sales regions and factories. Branch sales offices would communicate only with region headquarters rather than by direct lines to certain factories with which they dealt frequently.

At the same time, work was underway in CMS on the HEART automated order processing system for which the network was intended. Plans called for the consolidation of the data on an IBM computer at Corporate EDP. Corporate would prepare order acknowledgments and invoices for mailing to customers, and also produce various reports and statistics from the data.

A key decision was made to use an HP minicomputer driving a magnetic tape to handle the traffic in and out of the mainframe computer. Minicomputers in the 2100 series, designed to handle inputs from scientific measuring devices, turned out to be exceptionally well-suited for the COMSYS application. Their flexibility makes it easy to add improvements that come along.

When Bill Johnson became manager of Corporate Marketing Services in 1970, he brought in Paul Storaasli (now with Corporate Accounting) as system designer and project manager, while Rich Nielsen of Corporate EDP took over programming.

HP minicomputers were soon installed in most of the region offices and factories to rescue them from the frustration of paper-tape equipment that kept breaking down. Teletypes still linked region offices with branch offices.

The next question was how to speed up the transmission of data. Computers don't talk together over phone lines without some help. Digital signals must be converted to electrical signals and back by a modem at each end of the line. And computers agree to communicate according to a certain protocol, which might be likened to a handshake.

The HP mini was using a start-stop protocol in which the line was reversed momentarily for an acknowledgment at intervals. Paul wanted to shift to a far faster non-stop protocol which would per-

mit the stream of bits to flow through uninterrupted. A faster modem with a built-in secondary channel provided the answer.

"By programming the minicomputer, we could check whether the receiving computer had found an error and turned off the secondary channel," Paul says. "Rich Nielsen could tweek all kinds of savings in transmission time, such as removing blanks and putting two characters in the space of one."

By September 1972, Paul could show HP's top management some convincing figures to justify installing 55 additional HP computer systems in the remaining sites, including branch offices. Transmission savings were already obvious, and experiments using terminals hooked to minicomputers suggested that major improvements could also be made in entering data. Before he joined in approving the investment, Bill Hewlett assured himself that an order processor would like working with the system.

With HP minis in place as standard hardware throughout the network by 1973, data entry and editing were improved. The minicomputer was instructed to reject certain errors such as a letter entered in a field where a number would be expected. Video display terminals were used for data entry with entry formats that were the same for all users. Information going into COMSYS was now much cleaner than before, and the long-distance transmission was essentially flawless.

A number of Corporate people helped in the early years as COMSYS grew from a project to a fully developed worldwide system. At Corporate Marketing Services, Hank Taylor was project manager for COMSYS before replacing Bill Johnson as department manager in 1974; Terry Eastham became system analyst that year. Matt Schmutz of GSD was a strong proponent of the data communications system while BAEDP manager. Among the earlier programmers assigned by EDP to the COMSYS activity were Howard Morris (now with GSD), Han Park (Stanford Park), Jim Overman (Avondale) and Glen Lowry (Boise).

As the use of COMSYS messages — often called "Comgrams" — increased, some of the Corporate team working most closely with the system became convinced that COMSYS had commercial possibilities. Selling the idea to a division took some time.

Finally, in the fall of 1975, Nev Griffin of GSD and Rich Nielsen of Corporate made some tests of the possible market for a data entry and communications system. Their research bore out what the stream of visitors had indicated: getting information back and forth between facilities was a problem for most large companies. The flexibility of HP's COMSYS network had great appeal, since new locations could be added easily. Nor was a large central computer necessarily required, since any of the COMSYS locations could act as the collection point.

General Systems Division decided to accept COMSYS into its line and named Nev Griffin as product marketing manager. Some old COMSYS hands transferred from Corporate to the division: Terry Eastham took on the training and support role in marketing, while Rich Nielsen, Dave Kaplan and Ron Niedrauer became part of the engineering lab effort.

The usual steps for bringing out a new product — assigning a product number, product assurance, sales literature and a user's manual — were completed, and System 2026 was officially added to the Corporate Price List on May 1. (It will be offered for sale only in North America and Europe at this time.)

Some sales have already been made of the 2026 System even before the official introduction — a promising beginning for this Corporate-born product. □

Operators from Intercon, Neely Santa Clara, Microwave Semiconductor Division and the Customer Parts Center enter information simultaneously into 16 terminals in a test at the Corporate COMSYS center.

As part of its bi-monthly meeting and in the course of visiting major HP facilities in Europe last month, the HP board of directors joined with European subsidiary directors in a special meeting at Boeblingen.

The HP board of directors:

Portrait of a highly talented, hard-working

☐ Corporate boards of directors have always had broad, basic responsibilities. These include overseeing the interests of stockholders and the welfare of employees, as well as ultimate responsibility for the legal and ethical conduct of a corporation and its officers.

As President Bill Hewlett pointed out in his message in the recent April issue of MEASURE, many of these responsibilities have been intensified in just the past few years by legislative as well as self-imposed requirements. The net effect has been to make it more important than ever that a board be selected for ability rather than "window dressing," and that it be willing to work at fulfilling its responsibilities.

The HP board has been carefully composed to provide the highest possible level of ability in a wide range of professional and business experience. The "inside" directors, of course, provide strong managerial experience and in-depth understanding of the company's policies, products, people and practices. The "outside" members bring specialized strengths (see listing on page 13) as well as broad abilities and experience.

The board's most visible activities take place at the six meetings held each year. Here, members discuss current activities of the company, and act on matters requiring their decision. Such decisions are, in effect, legal instructions to the corporate management which is responsible for carrying them out.

Between meetings, it is necessary to keep directors — particularly the outside members — informed and consulted on important activities and developments. Also, almost all members have committee assignments that involve reports and studies in such areas as employee benefits, executive compensation, audit, and investment.

Last month, the board took time to visit HP Europe. It was a busy tour, beginning at the Winnersh headquarters for United Kingdom sales, where the accompanying photographs were taken. The directors then visited the Edinburgh area with a review of the South Queensferry Division, held a joint board meeting at Boeblingen with the board of HP GmbH, stopped at the HPSA office near Geneva for a presentation on European operations, and then proceeded to the Grenoble Division for meetings with local managers and government officials. In all, it was a busy and valuable trip, one that gave the board a much better understanding of, and respect for, HP in Europe — and vice versa.

Meeting and talking with employees was an important part of the directors' European visit. Here Dave Packard addresses German employees in Boeblingen Site II, with Walter Stahlecker, Instrument marketing manager for Boeblingen, providing the interpretation.

Visiting United Kingdom sales headquarters at Winnersh, near London, Ed van Bronkhorst, vice president-Treasurer (center), and Dick Alberding, managing director of HPSA (at right), meet with Tony Mayes, European operations audit manager.

team—

A birthday surprise awaited Bill Hewlett when the Lord Mayor of Boeblingen (at left) presented Bill with a gold medal of honor of Boeblingen. Barney Oliver, vice president-R&D (at right), led the applause. The mayor compared the Hewlett and Packard business personality to "our own Schwabian industrial pioneers such as Robert Bosch and Gottlieb Daimler who were well known outside our country and belong to a long line of similar pioneers. You all have similar qualities of high technical intelligence and innovative talent, combined with a large portion of business acumen. It would not surprise us to find a Schwabian ancestor somewhere in your family tree."

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board of directors...

Bill Doolittle, vice president-International (center), and executive vice president Bob Boniface at right, discuss U.K. order processing system with manager Malcolm Murray during Winnersh visit.

Directors Tom Pike (standing), Luis Alvarez and executive vice president Ralph Lee (seated), observe product demo by Walter Stahlecker, Boeblingen Instrument marketing manager. Just beyond are David Rose, Boeblingen Instrument Division manager (left), and executive vice president John Young.

Product demo of medical equipment by Karl Grund, manager of Boeblingen Medical Products Division, draws the involvement of directors Tom Pike, Antonie Knoppers, and Dave Packard, as well as Peter Schoeltzel, Computer Systems regional sales manager, and HP GmbH director Dr. Herriger.

Plant tour at Boeblingen brings group of directors to Calculator Operations area. At left, manager Srini Nageshwar reviews program for executive vice president Bob Boniface, and fellow directors Ernie Arbuckle, Antonie Knoppers, Bob Brown and James Hodgson.

After a day of busy HP visits, directors George Bennett (left, in photo above), and Francis Moseley enjoy some relaxed conversation. Another after-hours gathering brings together Harold Buttner, director emeritus (left), and Robert Glaser, director.

The following presents brief highlights of the qualifications and experience of HP's outside directors:

Luis Alvarez: Professor of physics, University of California; winner of Nobel Prize in Physics (1968); field of concentration — physical sciences; Collier Trophy for developing ground-controlled aircraft landing system; director since 1957.

Ernest Arbuckle: Chairman of the board, Wells Fargo & Co.; former dean of Stanford Graduate School of Business; field of concentration — business organization; director of various major corporations; active in many public, civic and business organizations; director since 1959.

George Bennett: President, State Street Investment Corp.; field of concentration — economics; director of major corporations; trustee of various educational institutions; director since 1969.

Robert Minge Brown: Partner in McCutchen, Doyle, Brown and Enersen; field of concentration — business law; Rhodes scholar; trustee of Stanford University; director since 1962.

Robert Glaser, M.D.: President, Henry J. Kaiser Family Foundation; field of concentration — medicine, medical education and health care; director of various medical organizations and business corporations; HP director since 1971.

James Hodgson: Consultant and lecturer; field of concentration — industrial relations; former U.S. ambassador to Japan; former Secretary of Labor; former senior executive of major aircraft company; many public service activities; director since 1977.

Antonie Knoppers, M.D.: Retired vice chairman of the board of Merck & Co., Inc.; field of concentration — pharmacology; director of various corporations and associations, and trustee of various educational institutions; director since 1974.

Francis Moseley: Technical consultant; field of concentration — engineering; founder of F. L. Moseley Company (acquired by HP, now San Diego Division); active in various engineering and scientific organizations; director since 1966.

Thomas Pike: Honorary vice chairman, Fluor Corporation; field of concentration — economics; held a number of key federal government posts including special assistant to the President; chairman of the National Council on Alcoholism; director since 1958.

Emeritus directors

Harold Buttner: Retired vice president of IT&T Corporation; field of concentration — electrical engineering; wide international experience; director of various companies; trustee of Hope for Hearing Institute; HP director 1957-70.

Frederick Terman: Vice president and Provost Emeritus, Stanford University; field of concentration — electronics engineering and education; highly influential regarding development of electronics industry; many government, scientific and industrial posts and honors; HP director 1957-73. □

HP News

Record 1st-half earnings

PALO ALTO — The company reported a 22 percent increase in sales and a 35 percent increase in earnings for the second quarter of fiscal 1977.

Sales for the second quarter ended April 30 totaled $341,546,000, compared with $279,764,000, for the corresponding quarter of fiscal 1976. Net earnings amounted to $32,084,000, equal to $1.13 per share on 28,220,433 shares of common stock outstanding. This compares with earnings of $23,771,000, equal to 86 cents per share on 27,821,990 shares, during last year's second quarter.

Sales for the first six months of the fiscal year amounted to $639,880,000, a 24 percent increase over the first half of 1976. Net earnings increased 50 percent to $58,142,000, equal to $2.06 a share. This compares with earnings of $38,847,000, equal to $1.40 a share, during the corresponding period last year.

"We had an excellent first half," President Bill Hewlett said, "reflecting, in part, the improved domestic economy. A major factor in the gains, however, was the strong product-development programs that have been in effect throughout the company. Over the past year, we have introduced a number of important new products to the market, and this has contributed to substantial increases in both our domestic and international business."

First-half profit sharing

PALO ALTO — The company distributed more than $16,000,000 to more than 28,400 employees under the company's cash profit sharing plan. The distribution represented profit sharing for the first half of the 1977 fiscal year, and amounted to 8 percent of eligible employees' base pay. It was the highest profit-sharing percentage paid in five years.

HP scientists honored

PALO ALTO — Major honors and awards have been received recently by four HP executive scientists.

President Bill Hewlett was elected to membership in the National Academy of Sciences "in recognition of distinguished and continuing achievements in original research."

Barney Oliver, HP vice president-R&D, was awarded the 1977 Lamme Medal by the IEEE "for his contributions to the theory and practice of electrical instrumentation and measurements."

Eb Rechtin, HP chief engineer, received the 1977 Alexander Graham Bell Medal at IEEE "for pioneering and lasting contributions to deep-space-vehicle communications technology and for leadership in defense communications."

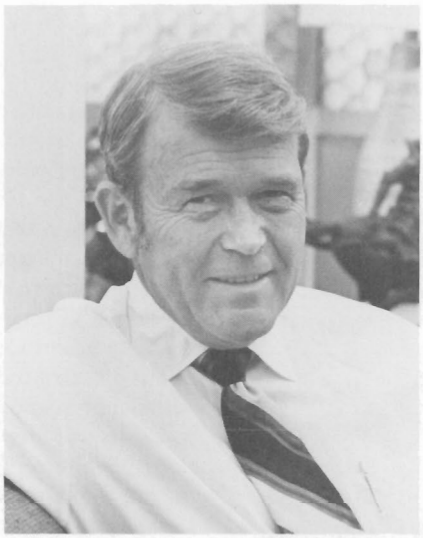
Don Hammond, director of the Physical Electronics Laboratory of HP Labs, was selected a Fellow of the Institute by IEEE. The honor was given for Don's "contributions to the technology of quartz crystals and their applications to transducers."

New MSD building begun

SAN JOSE, Calif. — Construction started here this month on a new headquarters for the Microwave Semiconductor Division.

First-phase development is scheduled for completion in the fall of 1978. The site initially will contain a 172,000 square foot engineering laboratory and manufacturing plant with a 64,000 square foot utility basement, an 18,000 square foot service building, and a 12,000 square foot cafeteria. Cost of construction will be approximately $16 million.

The division is now located in several buildings in Palo Alto and has about 500 employees.



From the president's desk

As I have said before, and will probably say again, it's a pleasure to report good news. I am, of course, talking about the earnings report for the first half of our fiscal year.

Starting with the most significant facts, our earnings were $2.06 per share, compared with $1.40 per share last year. In total dollars, net earnings were up 50 percent on a 24 percent increase in shipments. Why the favorable disparity?

First of all, costs tend to rise more slowly than shipments. So, in an improving market we do very well, just as when shipments are slow we have a tough time making a proper return on sales. But that is only part of it. One of the most important factors affecting profits is cost of shipments as a percent of our total income. A year ago this cost was 43.1 percent; this year 40.9 percent — a major improvement. This tells me that we are really doing a good job in our manufacturing areas. Better planning, more efficient operations, and a lot of hard work.

A second major area of improvement was in expense control — R&D, marketing, and the general costs of administering the company. Here again we made substantial gains with expenses for this year being 32.3 percent, compared with 35.6 percent last year.

The net result was that our operating profit rose from 16.2 percent of sales to 21.8 percent, or in total dollars, a 67 percent improvement over last year. It is on this operating profit, of course, that the cash profit sharing is calculated. This is why there was such a very substantial increase in the cash profit sharing payment, despite the fact that there were about 2,000 more people eligible to receive the bonus.

While on the subject of profit sharing, for some time now we have realized that the deferred profit sharing retirement program for U.S. employees, which had been adequate in our early years to provide retirement benefits, might prove inadequate for some of our people in the future.

John Doyle, our vice president for personnel, in conjunction with a consulting specialist, made a very careful study of the problem, and they concurred that a supplemental plan to assure a more equitable distribution of benefits at retirement for HP employees in the U.S. would be necessary.

Although the study showed conclusively that such a plan would need additional funding, there remained several choices as to the best method of actually providing retirement benefits in such a fashion that would permit equitable distribution, as well as comply with Federal regulations. Rather than wait until all the details could be worked out, it seemed worthwhile to begin accruing some of this additional expense so that it would not appear as a sudden and unexpected charge at the end of the year.

Accordingly, in addition to the normal deferred profit sharing amount, $6 million was set aside for this purpose and charged to the first half operations of the company. Although equivalent to an 11 cents per-share charge against earnings (that is, without it earnings would have been $2.17), it did not affect profit sharing which is calculated prior to deduction of this type of expenditure.

When we have worked out all the aspects of the improved plan, I will give you the full details.

Thank you for a great first half.

Bill Hewlett

Medical training by mail order...

In the realm of the unusual in jobs around HP, Sally Britton's mail-order study course in electrocardiography surely is one of them. Each year on behalf of Andover Division's marketing department, Sally trains and certifies some 300 ECG operators. Her graduates — nurses, technicians and doctors' assistants — can be found in hospitals and clinics not only in North America but also in such locations as Saudi Arabia and Central Africa.

Sally actually performs another function on behalf of another division — that of receptionist at the Waltham Division. When that activity quiets down, as it does from time to time, she swivels her chair to the piles of incoming and outgoing correspondence involved in the HP ECG program.

Sally brings some sound credentials to this phase of the job. Her association with Sanborn and HP began in 1946 when she was hired to do final test inspection of Sanborn ECGs. She worked on the first "direct writer" ECG machine. In time, there was very little Sally did not understand about the operation of electrocardiograph machines.

When the job of ECG instructor and correspondence course operator came up in 1968, there was the question of the administrative skills that would be needed. Sally had some polishing to do here — billing, accounting and correspondence — but she did it and won the assignment. She and the HP course now are licensed by the Commonwealth of Massachusetts, Department of Education.

Students taking the $50, three-month course receive a set of ten lessons and workbook. They must have access to an ECG and a friend or patient willing to submit to practice. Sally grades their replies and ECG tracings, and keeps after them by mail until they get it right. For that they receive an HP certificate of completion and an HP lapel pin — emblems of a very useful and vital training program.

Measure

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