

Measure

For the men and women of Hewlett-Packard / DECEMBER 1970



Have a happy holiday, and then some...

□ OK, cinch up your safety bindings. Tighten your seat belts. Check the tire chains. Test the anti-freeze. It's the season to be jolly well up and about.

Let's see: It's Christmas time and New Year's. But it's also the season for Boxing Day and Berchtoldstag, for Twelfth Day and Twelfth Night, for Epiphany and Adult's Day, for the Day of the Covenant and for Magi, for the Day after Christmas, for the Day before New Year's, Hanukkah and—most forgiving of all—the Day after New Year's.

All of these are holidays officially observed by some HP people somewhere around the world between mid-December and mid-January. And this year let's not forget the special 4-day HP non-paid holiday for some of the U.S. organizations between Christmas and New Years.

The fact is that of the 260 or so weekdays available for work throughout the year, more than 100 will be official holidays somewhere around the HP network of offices and plants. The company's international travelers, of course, go to great lengths to detour around these scheduled events so that their work schedule won't be interrupted. Wouldn't you?

In any case, there are some interesting aspects to HP holidays around the world. The U.S. schedule of 10 days,

including the "floating" holiday, is about average in number. Whereas Argentina enjoys 16 days, while neighboring Brazil takes only 7.

At least two out of three holidays have religious significance or origin—hence the name "holiday" for holy day. But secularism is beginning to have a greater and greater influence on the selection of days. Some ten different HP holidays, for example, are labeled Independence Day. A good many other days celebrate similar nationalistic or patriotic sentiments, such as Revolution Day in Mexico, Victory Day in Italy, Anzac Day in New Zealand and Australia, Flag Day in Argentina, and Signing of the Declaration of Independence—in Venezuela! Japan tops the list with all of its 18 days apparently devoted to secular themes, such as Adult's Day, Vernal Equinox Day, Emperor's Birthday, Children's Day, Old People's Day, National Athletic Day and Culture Day.

In the U.S. there are even a few regional differences in choices of days. The Medical Electronics Division and the Lexington (Mass.) sales office, for example, take a day off April 19 for Patriot's Day in place of Good Friday.

Holidays are not only expressions of culture; they are becoming a major influence in shaping it. Certainly that



Selected photos courtesy
Daman-Nelson Ski Tours,
United Air Lines.



is bound to be one effect of the changed holiday schedule that goes into effect in 1971 in the U.S. Here, as a result of legislation passed by Congress in 1968, five holidays, where recognized, will henceforth be celebrated on Mondays, creating a succession of three-day weekends. Included are Washington's Birthday, Memorial Day, Labor Day, Columbus Day, and Veteran's Day. These are certain to have a lucrative effect on the entire leisure industry.

Noteworthy, too, is the fact that the U.S., unlike most countries, celebrates no national holidays; even the Fourth of July doesn't qualify as such. Though the President may proclaim and Congress may declare, their actions affect only Federal employees and residents of Washington, D.C., and U.S. territories. It's up to the states—and the business organizations in those states—to choose which days they will recognize as holidays.

The world's favorite holiday appears to be New Year. It is the only celebration that is official everywhere. But the New Zealanders, not content with this fare, have backed it up with a Day After New Year. You can see where this is leading, can't you? Have a happy day after the day after the day after . . . □





Radar in a matchbox

□ Silently, invisibly, the eye watched the figure slip into the darkened garden, move through the shrubbery, cross the driveway and approach the building.

Zap! Into the trap.

Unblinking in the blast of landing rockets and upwelling storm of Martian dust, the eye scrutinized the landing zone, telling the navigator precisely how closely the craft was approaching the surface below and whether it was level or cratered.

Touchdown!

Unerringly the eye skimmed the receding rails, noting exactly how relatively far and fast the train had moved; wheel skidding and braking of the computer-controlled caravan were completely eliminated as error factors in measuring speed.

Safe on-time arrival!

Instantly the eye observed the obstacle created by the rapidly slowing vehicle ahead; guided by the eye's continuing view of the situation, coupled with the interpretations of a small computer, the car automatically took evasive action.

Saved!

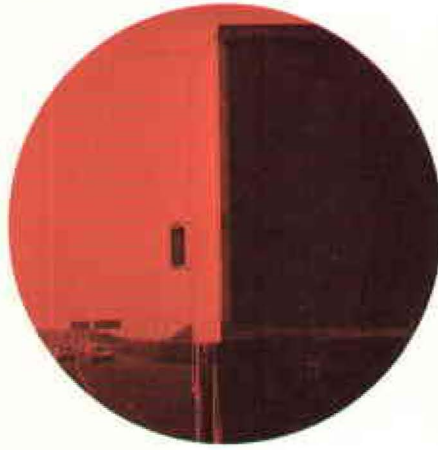
These short scenarios may seem futuristic, but actually they are nearer to happening or to the possible than

most people think. In fact, George Bodway and his microcircuit team in Microwave Division are quite prepared to see them happen now. They have the basic hardware—the “eye”—and they are in close touch with potential customers who are very interested in applying it in ways very similar to those imagined above.

The so-called eye is technically known as a “doppler radar module.” It starts its process of observation by broadcasting a continuous microwave signal. Traveling at billions of cycles per second, these microwaves bounce off of any solid object they meet. The module then picks up the reflected microwaves. Finally, it compares the outgoing and incoming signals for the Doppler shift—the increasing or decreasing frequency—that occurs if the returning signal has come from a moving object. The difference is translated into an audio signal whose frequency is directly proportional to velocity.

Scientifically there is nothing new about the HP doppler module. But technically and economically it represents a whole new ball game in the measurement and monitoring of moving objects.

The 35200A, as the module is numbered in the panoply of HP products, is a solid-state device that weighs but six ounces and measures 2½ x 1¼ inches in size. Its source of microwave energy is a GUNN diode that provides 50 Mw of output power at a frequency of 10.525 Gigahertz, effective at ranges from 1,500 to 2,000 feet. It



is also a very rugged and reliable device. All of this was made possible by the unique thin-film hybrid IC microcircuit technology HP has developed over the past four years.

In contrast, other doppler devices presently on the market are at least ten times larger, and much less reliable. They are also at least several times more costly; estimates are that the 35200A could be produced for automobile radar at well under \$100 each.

The low cost of the HP module is a key factor in making it a real contender for automobile radar as well as intrusion alarm systems. In such applications the likelihood is that it would be sold as original equipment to companies already operating or qualified in these fields. They could hook it up to a suitable antenna, power it to 10 volts, then connect it to their system for reading or utilizing the audio output.

Commercial, industrial and military organizations could use such systems as intrusion alarms. The movements of burglars or unauthorized visitors coming into the microwave field are readily detected.

This same principle of motion detection makes the doppler module a candidate for traffic control systems. According to Doug Spreng, marketing manager for microwave components, "These might include sensing traffic and then using lights to control moving vehicles on streets and highways, freeway entries and exits, or at intersections. It could be used at school crossings, flashing slow-down lights

to vehicles when children are going to or from schools.

"Railroads also are looking for an accurate 'train speedometer,' as a method of detecting and correcting wheel slippage when starting up and slowing down.

"Other categories of use are small aircraft and small boat radar and navigation systems, and rate-of-descent instruments and automatic landing systems for commercial airlines.

"In essence, the doppler radar module can be used anywhere that small size, reliability, low-power consumption and—most important—low cost are key requirements for detecting motion."

But already the microwave component people in HP are looking beyond the doppler module to many other applications of microwave technology: "In communications alone," said Spreng, "unclogging the world's saturated information channels for voice, teletype, television and computer data is an absolute necessity. This can best be done by moving to the higher and relatively uncrowded frequencies of microwaves.

"We also expect to find growing uses in heating, drying, curing and pasteurization of industrial and agricultural products. Flaw detection, measuring the dimensions and contours of materials, and vibration testing are some other ways microwaves can be used.

"The only limit is our ability to combine technology with imagination." □

Where we live:

Concord ●

● Lexington

Waltham ●

Boston

Massachusetts Bay

● Marblehead

Let's hear it for...

□ Paul Revere. Scrod. Route 128. Fenway Park. Bunker Hill. Concord. Harvard Yard. The Celtics. Mayor Curley. The Cradle of Liberty. MIT. Beacon Hill. Lexington. Walden Pond. Benjamin Franklin. The Tea Party. Charles River. Old Ironsides. The Minuteman. Thoreau. Longfellow. Baked beans. Mary Baker Eddy. The Back Bay. Clam chowder . . .

By now you must know that you are in the vicinity of Boston. Possibly just a few miles to the west, at Waltham. Hundreds of electronic and scientific firms have settled out this way. The HP Medical Electronics Division is among them, the plant overlooking a north-south stretch of Route 128 a couple of miles from the intersection with the Massachusetts Turnpike running east and west. The HP people are in reach of it all from Waltham—the history, the scenery, the recreation, the universities, the city, the country, the food, the climate, the mountains and the forests, and the ocean. Let's hear from some of these HP people themselves what these places and things mean to them:

● Plymouth

Provincetown ●

Cape Cod Bay

Hyannis ●



Walt Henry, MED plant engineer, regards the whole Boston scene with considerable, but still discriminating favor: "It's very cosmopolitan in appeal, not physically big and not overwhelming, but not small. If you want to see one of the plays that come here, you can generally get in—eventually.

"I particularly like the fact that many people here enjoy the things that are here. For example, I'm interested in history—and there's a lot of it. That is something I do, visiting the historic places and read about their history.

"This is a good bachelor area, too, with lots of interesting girls from the universities and many foreign visitors.

"I also like to sail, usually in my own Balboa 20, a small cruising sailboat, or other boats belonging to friends.

"Then this last winter I discovered skiing. It's only three hours to many of the resorts, and a couple more to the big ones.

"Another thing I like about this area is the dynamism of the engineering profession. There is plenty of encouragement to broaden, contribute and improve professionally. In my own case, I've been working toward an MBA at Boston College. The universities really flavor this area."



(continued)

where we live



Moe Sullivan, night maintenance supervisor, and Eleanor Sullivan, materials inspector, met quite a few years ago when he was an usher in the Metropolitan Theatre of Boston and she was the cashier.

"I was 18 to 19 then," Moe recalls, "and that was the first job I had. But I left when they wouldn't let us go together."

Nobody and nothing has come between them since.

"We do just about everything together, including work."

The thing they do most besides work at the medical division is spend their weekends and vacations along Cape Cod, in their Cape Cod-style cottage at Mashpee.

"You know, we built this ourselves," says Moe.

"I did the building—with my own hands. All except the foundation. Eleanor supervised, and was the chef."

Now, in the summer days at the Cape, they like to sit around the yard, go swimming, plant flowers, make bird houses, stop at the stores, go for rides on the Nantucket Ferry, pick cranberries, or dig clams.

"When the tide is out we dig about 18 inches deep in a two-foot square. Might pull out three quarts of clams. We steam the young ones, make chowder of the big fellows.

"We even have an Indian pow-wow once a year. The Mashpee tribe—that's a real Indian name—comes here for three days to visit their ancestors in the burial ground. About 50 or 60 of them come from all over the country. The children come too, and learn the dances and traditions. Tradition is very real here?"



"Here in the Boston area we have one of the greatest cultural centers in the world," Keivan Towfigh, MED engineering section leader, is not only aware of this blessing, he lives it.

"When I first came to Boston from Teheran in 1957, to attend Tufts University, I was faced with some problems. Being away from home for the first time and having to learn English in a hurry were rather upsetting to say the least. However, the abundance of cultural activities made me forget about my nostalgia to the extent that I made Boston my home. I had studied violin back in Iran and continued my practice and interest in music here.

"My wife, whom I met after college, comes from England and plays the piano well and is also a classical music enthusiast. One of our prime musical interests is the Boston Symphony. We know some of the musicians and attend concerts frequently; I think it is the world's best.

"But there is so much in this area—the museums and university collections, the recitals and Tanglewood concerts. Earlier this year, for example, we had a week-long festival celebrating Beethoven's 200th anniversary, while the Boston Museum of Fine Arts celebrated its 100th anniversary with a special exhibition.

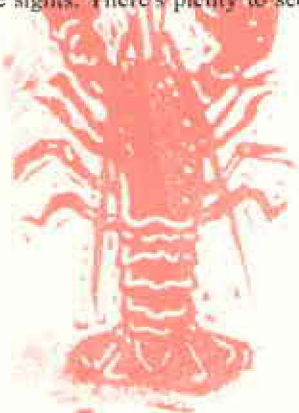
"I like my job at HP. I come from a medical family and enjoy the association of medicine and engineering. I enjoy the weather, its variety and the beauty of the four seasons. All told, I find Boston an exciting city—more so than any others that I have seen."



Paul Gilfeather, an MED program analyst, enjoys interesting and exotic food. But he likes to go about discovering it in an unprogrammed way: "There are so many different nationalities and their restaurants around Boston, that the fun is just to go out and find them.

"I was brought up on the New England standards—boiled beef, scrod, baked beans. When we went to Chicago (I was seven then) we took the baked-beans-on-Saturday-night tradition back with us. Now that I'm back here, I find that I really enjoy the native New England foods, like the shellfish. And scrod, which is a boiled white fish, is a lot better than it sounds. But it doesn't seem to matter what you have in mind in the way of food, there is usually a good restaurant serving it—Irish pubs, English steak and kidney pie. Italian pasta, plus French, Greek, Armenian and even Mexican cafes.

"I've found this a great area for family enjoyment. Just off the highways there are always places to stop—parks and playgrounds and historic sites. With friends coming from Chicago so much we've been forced to get out and see the sights. There's plenty to see."



For Doris Hough, MED coil winder, what started out in 1950 as a modest adventure in out-of-doors living has matured into something of a way of life. The small tent she and her husband pitched near Niagara Falls became a tent trailer, a 15-foot trailer and now a full-grown 20-foot trailer.

"Originally, we did a lot of traveling around. We even got as far as Las Vegas and San Francisco. And we took in all the local camps. But lately we're more content to park the trailer up near the White Mountains during the summer and just enjoy ourselves there during the weekends.

"It's very comfortable for my husband and I. We go up late Fridays. It's about a two-hour drive. There's always plenty to do—cooking, sewing, gardening, sightseeing and visiting.

"The only problem is that camping is becoming so popular it's hard getting into some of the campgrounds. Thousands and thousands of people are taking it up. But where we stay there are just ten of us. Not like camps with 100 or more sites. But they enjoy it too."



NOEL ELDRED, 1907-1970

W. Noel Eldred, executive vice president and director of Hewlett-Packard, died of a heart attack at his home in Portola Valley, California, on November 30.

Following news of Mr. Eldred's sudden passing, President Bill Hewlett said: "Noel's death comes as a deep personal loss to me, both in his capacity as a friend of more than 25 years and as one of the cornerstones of the HP management team. He has had a long and distinguished career in the electronics industry and was as much respected outside the company as within."

Eldred's career with Hewlett-Packard began in 1944 as a development engineer. He became general sales manager in 1947, vice president for marketing in 1957, and executive vice president in January, 1969. He was elected a director in February, 1969.

Born in Hillsborough, California, in 1907, Eldred majored in electrical engineering at Stanford University, earning a bachelor's degree in 1931 and the degree of engineer in 1933. He is survived by his wife, Frances, three children, a stepdaughter, and two grandchildren.



News in brief

Palo Alto — Preliminary figures released November 20 indicate that HP had a 7 percent increase in sales and an 11 percent decline in earnings for the 1970 fiscal year ended October 31.

Sales totaled \$347.9 million, compared with 1969 sales of \$323.8 million. Net earnings amounted to \$22.8 million, equal to 89 cents a share on 25,649,111 shares of common stock outstanding. This compares with earnings of \$25.6 million, equal to \$1.01 a share on 25,299,462 shares, in fiscal 1969.

President Bill Hewlett noted that 1969 figures relating to number of shares and per-share earnings have been restated to reflect the company's two-for-one-stock split that occurred last February.

A full audit is expected to be completed in mid-December and final figures reported at that time.

Hewlett said the company's incoming orders totaled \$350.4 million in 1970, a gain of 2 percent over orders of \$344.4 million booked in 1969.

"Reflecting the general softness in our domestic markets, orders from U.S. customers amounted to \$211.8 million in 1970, down 12 percent from the previous year. On the other hand, international orders were up 32 percent to \$138.6 million. Our international business now represents about 40 percent of our total business, and we expect this percentage to continue to rise during the coming year."

Hewlett said in view of the current economic recession in the U.S., "it is unlikely that we will experience any substantial growth in our total business in 1971. We are hopeful, however, that through the various cost-reduction programs already in effect we can achieve some improvement in our profit margins and in our overall operating performance."

Waltham — Two important new products have been introduced by the Medical Electronics Division. One is a computerized cardiac catheterization laboratory system which

automates time-consuming laboratory procedures and analyses. Known as HP Model 5690, it is the first completely integrated system ever developed to centralize and automate the processing of patient monitoring during a catheterization. In this process a doctor inserts a small tube into a patient's blood vessel and pushes it toward his heart; the tube (a catheter) senses blood pressure, flow rate and other physiological factors. With the aid of an HP 2114C computer, the MED system interprets the information and prints it out immediately on a display screen in front of the doctor.

The other new MED product is a compact cardiac monitor with an all-in-one display. The Model 7830A is a complete basic bedside cardiac monitoring instrument that presents ECG, heart rate and heart rate alarm limits clearly displayed simultaneously on one visible oscilloscope screen. It is also capable of presenting arterial pressure waveforms or pulse wave in place of ECG.

Cupertino — Three important computer product developments have been announced by the Cupertino Division.

The new 2000C is a 32-terminal BASIC-language time-shared system noted especially for its mammoth data storage facilities, with a choice of number and type of moving-head disc memories. The 2000C doesn't make the earlier 16-terminal 2000A and 32-terminal 2000B obsolete. All three systems are available, and the smaller systems can be upgraded as the customer's needs grow.

The division has also introduced two new computers having twice as much memory capacity as their predecessors had in the same mainframes. This was made possible by HP's development of a new high-density core memory.

The larger of the two new computers is the 2116C with an 8K core memory expandable in 8K increments up to 32K without requiring an extender. The smaller 2114C starts with a 4K memory that can be built up to 16K within the mainframe of the computer. Lower manufacturing costs and elimination of external memory extenders mean substantial cost reductions for customers, especially when they employ more than the minimum amount of core.

From the president's desk



Most of you have probably seen the tentative financial results of our fiscal year, 1970. Although our shipments were up slightly, our profits were down about 11 percent. These results were not surprising and they came out about where I had expected them to.

1970 has been a very difficult year for us and, although I am not overly proud of our results, we have done as well or better than most people in our field. We are now just getting into our new fiscal year with a set of targets that are probably the most carefully thought out that we have had in some time. The process of establishing these targets involved a detailed analysis of the various activities of our operating divisions. While we are not anticipating any substantial growth during 1971, I am extremely optimistic about the general outlook for the company.

As most of you realize, we are going through a profound change in the U.S. economy—from one that was heavily oriented to defense spending toward one that is more concerned with the social and economic climate of this country. There are in HP a considerable number of projects that will be coming on stream in the latter part of the year that reflect this change in emphasis, and although they may not have much effect on the current fiscal year, they should provide an exceptionally strong start for 1972.

My thanks to all of you for your help during a most critical period, and let me close by wishing you and your families the very warmest greeting for the Holiday Season.

Bill Hewlett



"We made it!" General Manager John Brown and his San Diego Division associates are now very much at home in their new plant on the northern limit of their namesake city. Behind them is the smog and crowding of the original location, the problems of headquartering in temporary facilities for two years, and the logistics of moving 350 people and 1,000,000 pounds of production equipment into a brand new building. Their new plant is fully equipped to live in harmony with an attractive environment: Waste water is purified and re-circulated. Fume scrubbers cleanse the air used in industrial processes. Acoustical ceilings in lower-floor fabrication areas create quieter and lighter working conditions. Spraying and sanding operations are conducted in closed areas. Four separate piping systems are available for handling industrial wastes. And outside, acres of grass and hundreds of young trees are taking root. Permanence amidst the tumbleweeds!

Measure

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