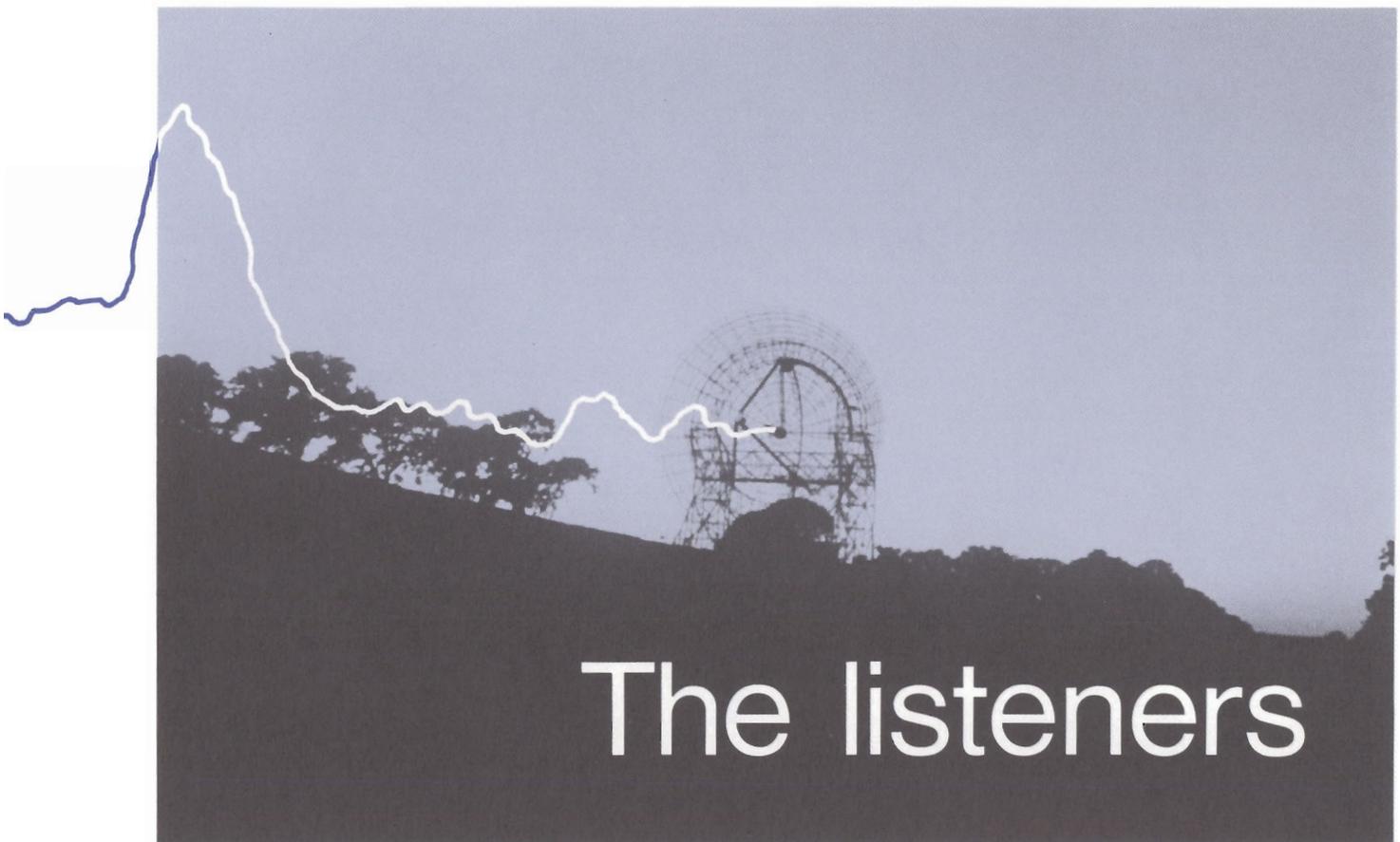




Measure

For the men and women of Hewlett-Packard/JUNE 1968



The listeners

□ In 1932 Karl Jansky began an experiment to find the atmospheric level of shortwave noise. Carefully, he rotated his box-shaped directional antenna only to discover the radio noise level was greater than expected when pointing in certain directions. Further observations revealed this level to vary with the time of day, and to advance in direction from day to day. Jansky concluded the signals were not earth based nor from our solar system. They came from the center of our galaxy, the Milky Way.

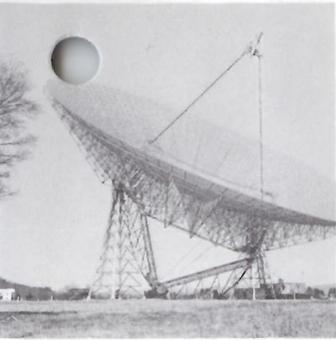
During the years that followed, there were many exciting discoveries and developments. Operating with bigger and better antennas and at shorter and shorter wavelengths,

COVER: Astronomy's search for evidence of life beyond our own system is symbolized in this photo composition. Shown in the Mt. Wilson and Palomar Observatories photo is the Trifid Nebula, while the waveform pattern is based on pulsar signals recorded recently at a number of radio astronomy sites. Some radio astronomers now are theorizing that the beginnings of life may well take place in the dark dust clouds such as indicated by the waveform.

the new practitioners of radio astronomy were able to find and focus on many phenomena invisible to optical telescopes.

With their "big ears", they began mapping the distribution of hydrogen and other gases in our galaxy. These observations established that there is at least as much matter between the stars as in the stars themselves. Also, it was radio astronomy that discovered signals coming from the "quasars", believed to be the most distant objects in the known universe. So distant are these objects that it has taken their light rays and radio signals on the order of 8-billion years to reach the earth. Since this is close to the estimated age of the universe, these quasars may indeed be galaxies in formation, many astronomers believe.

It was with considerable excitement, then, that the world heard news earlier this year of the discovery of new stellar radio sources. Their regular pulsing raised speculation of intelligent origin. Might they not be beacons to space voyagers? Or coded messages between interstellar civilizations? As more data came from radio observatories around the world, the experts settled for a less exotic interpretation: The "pulsars" as they became known are thought by some to be neutron stars, the remnants of burnt-out stars. However, no good theory explains their pulsing.



Four radio observatories recently teamed to obtain unsurpassed directional capability in pinpointing mysterious radio objects. Antenna were pointed simultaneously by National Radio Astronomy Observatory at Green Bank, W. Va., University of Calif. at Hat Creek, M.I.T., and Chalmers Institute of Sweden. At close left is UC's Hat Creek antenna; further left the Green Bank 300-foot giant. Use of HP atomic clocks permitted simultaneous timing of observations. Below is highly-magnified photo of Cygnus A, an intense radio source whose light waves require about 1/2-billion years to reach earth. The collision of two galaxies may provide the vast power needed to transmit so strongly over such a distance.

Through the "window" of the radio spectrum

astronomers are discovering an unseen universe

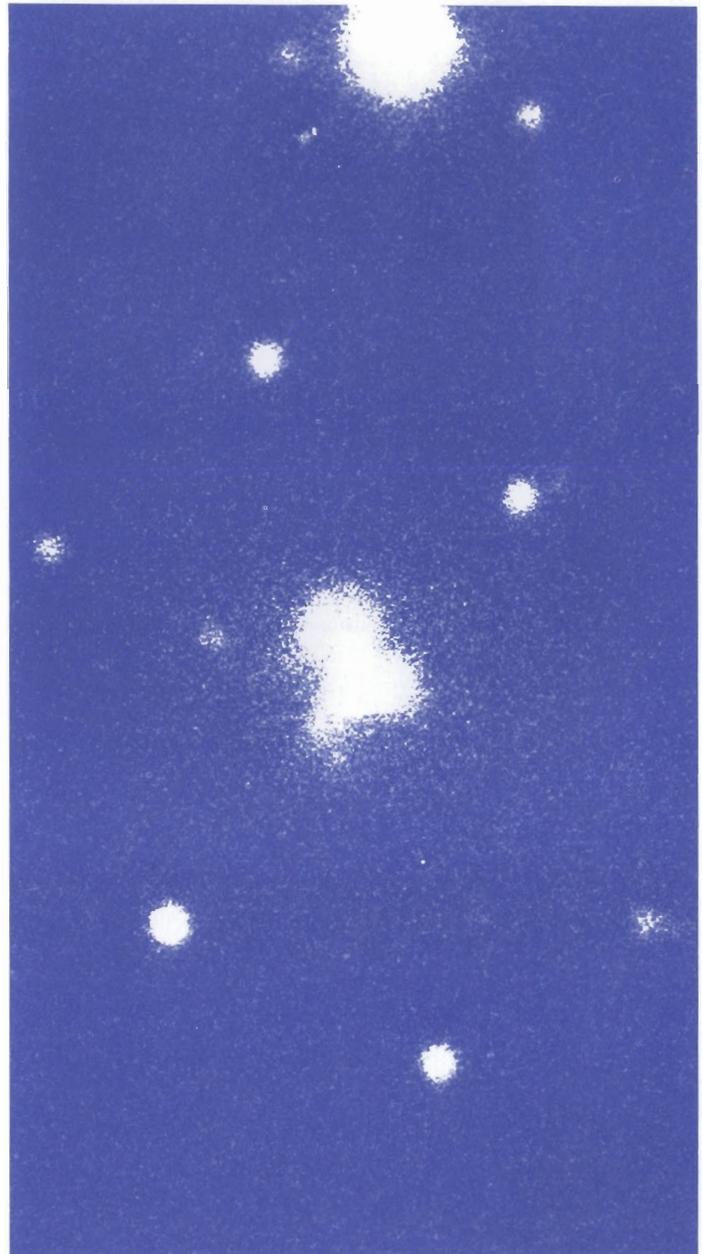
Even if the headline writers lost their "man", the feat of the radio astronomers in pinpointing those invisible radio objects untold billions of miles away was indicative of the great advances that have been made since Jansky.

In turn, the many discoveries by astronomers over recent years have had a revolutionary impact on theories of the beginnings of the universe. Until quite recently, for example, some leading cosmologists theorized that the universe was the product of "continuous creation"; now the prevailing view, based on mounting evidence, including discovery of the quasars, is that some kind of "big bang" launched the cosmos as we know it.

Theories about the beginnings of life are also under revision. Some astronomers now are saying that the place to look for the beginnings of life is not in the bright reaches of the sky but rather in the dark and lonely regions, particularly the dust clouds.

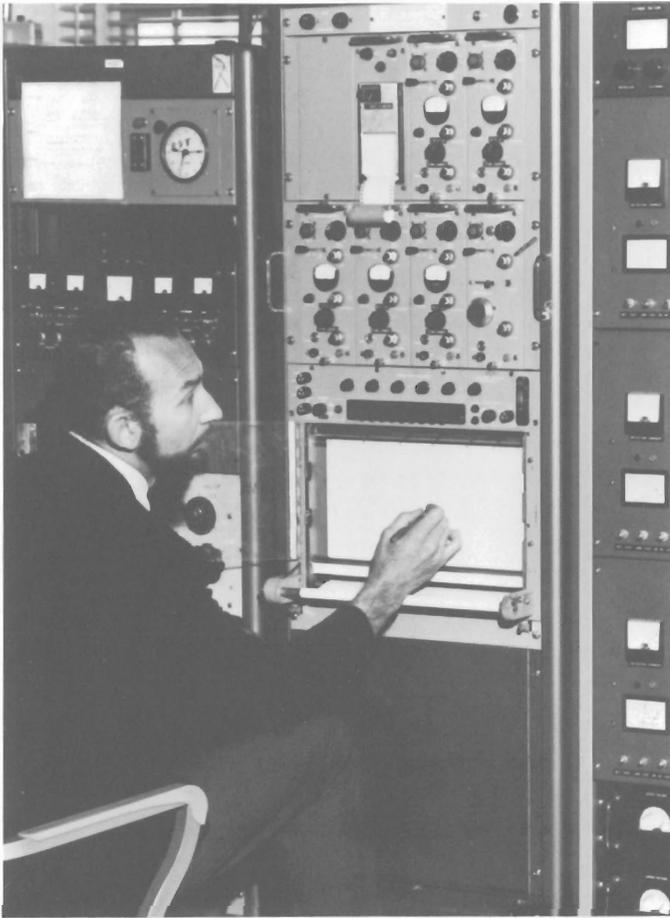
A very recent idea propounded by Dr. David Cudaback, of the University of California Radio Astronomy Laboratory in Berkeley, points directly to those dust clouds—seen as black shadows obscuring and streaking large areas of luminous star fields—as the places to start the search. Cudaback reasons, in the cool depths of space and with dust grains providing the gravitational catalyst, mole-

(continued)

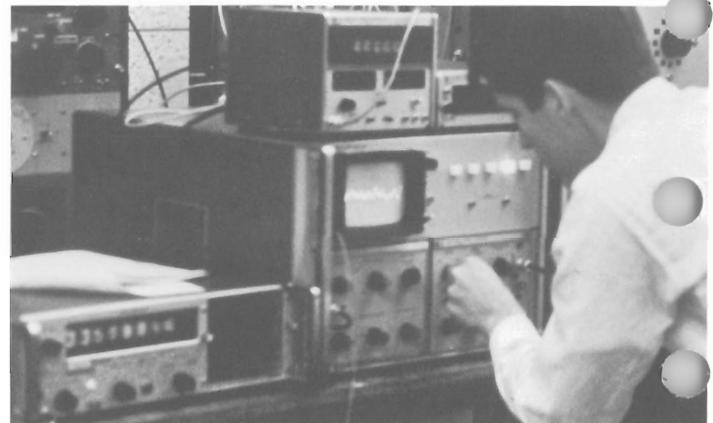




The listeners



Radio signals from the sun are subject of intense study by astronomers at Penn State. Dr. Ray Vogt, above, uses HP 6-channel recording oscillographic system as well as data acquisition system. At right, Stanford University radio astronomer Ned Conklin examines waveform of a pulsar on prototype HP signal averager which served to eliminate unwanted radio noise.



The colder regions of the universe are the places to look in searching for the beginnings of life, according to Dr. David Cudaback, University of California radio astronomer. In such regions, he says, atoms have their best chance of becoming molecules, a vital first step. The "Horse-head" nebula shown here is just such a cold cloud of gas and dust.



Galaxies such as the 'Whirlpool' galaxy viewed here through the 200-inch Hale telescope are made up not only of stars and their planets but also clouds of gas and dust. These clouds emit their own particular range of radio signals, allowing radio astronomers to map them and study their properties.

cules have their best chance of becoming complex. This first step in the upward migration of complex chemical building necessary to life is simply not possible in the warmer regions of the universe where temperatures equal to the center of the sun are classed in the realm of "lukewarm" astronomy. In fact, says Cudaback, the process in these warmer regions is to burn up and break down molecules and even atoms.

The techniques by which radio astronomers obtain the basic data to make such conclusions and theories are just about as complicated as the theories themselves. To begin with, radio waves reaching the earth arrive from all directions and over a wide range of frequencies.

Interestingly enough, normal stars are weak sources of radio waves and among them only our sun has been detected on radio telescopes. This neighbor of ours then is of special interest to radio astronomers. Scientists at Penn State, for example, make solar observations at four frequencies to determine the pattern of energy output and better understand the life cycle of stars.

The detectable radiations from the more distant sources in the Milky Way and the galaxies beyond have been on the move for millions and even billions of years. In the process they have become spread out and enfeebled to the point where their detection is a matter of great difficulty. A radio telescope must be large to capture enough of this spread-out power, and its reflector must have a near-perfect surface and be able to point with extreme accuracy in order to distinguish a selected radiation from the many others hissing in from all directions of space.

Amplifying, detecting and recording these cosmic radiations are jobs in which Hewlett-Packard products have an important role in scores of astronomical laboratories around the world. HP power supplies, printers, voltmeters, electronic counters, oscilloscopes and recorders are among the more widely used instruments.

For the ultra-precise jobs of pointing the big antennas and keeping track of elusive, shifting radiospectral lines, radio scientists call on some of the more specialized HP equipment. Frequency synthesizers, for example, are used to provide automatic doppler-shift frequency corrections to compensate for earth rotation, solar orbit and other movements relative to the areas under scrutiny.

At observatories that have to contend with excessive local radio noise, the new HP signal averager is of considerable interest and value. At Stanford, for example, there is considerable radio interference within the frequency range in which pulsar signals are received. To overcome this problem, the Stanford astronomers recently made use of an

averager to filter out and confirm contact with a pulsar.

HP's atomic clocks, the cesium-beam standard, new hydrogen maser and new rubidium standard figure prominently in some of the most sophisticated projects and plans of astronomers and physicists. One joint venture of astronomers from Berkeley, the National Radio Astronomy Observatory at Green Bank, M.I.T., and Chalmers Institute of Sweden recently employed HP atomic clocks to get a four-way fix on some very distant and peculiar objects which they have named "mysteria". Through this ability to tune in simultaneously, the team, in effect, converted the directional capability of the antenna at its four locations into the equivalent of an antenna nearly the diameter of the earth.

Handling the data received is another avenue for HP gear. At Penn State the daily record of those four frequencies is made on a Waltham-made 6-channel recording system along with a 2101 data acquisition system.

But astronomy is ideas as well as instruments. According to Barney Oliver, HP's vice president of research who follows the subject as a matter of strong personal interest, it may be time for a new approach in the search for extraterrestrial life signals. That approach, he has proposed in articles and before audiences, is to pick out likely stars that might have planetary systems and listen for signals such as produced by everyday radio communications on earth. To tune in to such unintended signals, Oliver has proposed an antenna array having 100 square miles of receiving surface.

"The feeling that in all this vast cosmos," he wrote, "life must exist somewhere besides on earth is very appealing and plausible, but not scientific. The real questions are: How many stars have planets with the right conditions of temperature, gravity and so forth, and which are rich in the variety of elements necessary to life? Then, given a suitable planet, how likely is life to begin and to evolve?"

Today scientists are seeking answers to both these questions. With each passing year their results make life elsewhere appear more and more probable. Planets are now thought to be necessary to get rid of the large spin of a contracting star, so most stars probably have planets. Stephen Dole, who has studied the matter thoroughly, concludes that about one star in a hundred would have a planet *habitable by man*. The biochemists now feel that, given a suitable planet, life is almost certain to begin and to evolve. If all this be true, the universe is teeming with life, much of it intelligent, but all of it so remote that physical contact (by space travel) is highly unlikely.

Further development of radio astronomy may well provide the answer to the age-old question: Are we alone? □

Just suppose ...



*If you had started your own one-man version
of HP last November,
here's how the money flowed
during the first six months of Fiscal 1968:*

It's November 1, 1967, and you have a sudden urge to see what running your own business would be like. You call the company treasurer and ask him if he would please arrange to have "your share" of the assets transferred to your account so that you can begin operations immediately.



Dreaming further, assume that the treasurer sees it your way. He hands you a note which makes available the equivalent of \$13,400 in assets—your share if the HP assets in land, plants, equipment, inventories, and money had been divided evenly among the more than 12,000 people then on the payroll.

Assets in hand, you are suddenly in business. How do you think your firm would have fared during its first six months of fiscal 1968 if it had paralleled HP's record during that same period?

Well, during that six-month period you sold approximately \$10,000 worth of your Brand-X instruments. Fine! But the balance sheet shows that you had to spend a fair amount of money just to do that much business. Where did those dollars go?



First, of course, you had to live so you paid yourself a salary. You also set up various benefits and you had to pay for payroll taxes. This compensation package covers quite a bit of the costs of manufacturing, marketing, administration, and research and development, but when you toss in a few extra dollars needed in these areas it comes out to \$4,100. This leaves you with \$5,900 for all other purposes.



Next are the monthly bills that have to be paid. During your first six months you've purchased materials from many firms, ranging from transistors to solder and the power to melt it. For all of this, and much more, you paid out some \$2,300. Now you are down to \$3,600.

As a part of your marketing activity you've had to travel, rent sales offices, advertise, publicize, and display your products, as well as train prospective customers. The \$450 you spent here didn't get you many airline tickets, automobiles, sales offices, data sheets, technical journals, catalogs, magazine ads, publicity releases, product films, trade shows, or training seminars, but that's all your target allowed. Balance is now down to \$3,150.



Then there's the \$360 which your accountant said should be set aside to cover the cost of replacing work equipment. He calls it depreciation and amortization. This money actually stays in your safe, but it is shown as a cost because there has to be some allowance made for wear, tear, and obsolescence of facilities and equipment that will have to be replaced later on. On the books, then, the balance is down to \$2,790.



Your product research and development programs not only involve your own time which is accounted for in the area of salary, but it also required the expenditure of \$440 to pay for your lab facilities, tools, materials and other costs. Balance now is \$2,350.

Then of course you've had to pay for rent, utility bills, office supplies, telephone, memberships, dues and subscriptions, publicity, and other items classed as general and administrative expense. The total here came to \$450.

That balance now is down to \$1,900 and it represents your gross profit for the first half of the year. However, you have set up profit sharing and retirement programs and now set aside \$370 for those items.

Corporate income taxes—both Federal as well as foreign—must now be allowed for. The tab for these is \$750. This is in addition to substantial taxes on property, payroll and sales already paid. The remainder is \$750.

Out of \$10,000, there's your net profit—\$750. But, you aren't finished distributing money yet. You have a dividend to pay to your shareowners. This will amount to \$100 during the first half of the year.



When all is said and done, you have \$650 left.

Can you relax now? No, because you've reached that critical point where business experience and instinct come into play. You are faced with the question—"what to do with the earnings?"

If you were in the donut business, making the same donuts in the same way and selling them to the same neighborhood, then perhaps you could get away with taking most of the profits out of the business and going out on the town.



But you are in the instrument business. Every day brings changes in products and markets to meet the needs of changing technology and industry. Your competitors are out there hungry for as much of that business as they can get. They'll be happy to have you neglect your planning and fail to add to production capacity, or pass up the opportunity of expanding your sales and customer service programs. It would also please them if you had to borrow most of the money to expand your company, because that would add to your cost of staying in business and reduce your opportunities in the future.

So the decision is to retain the surplus earnings in the business for purposes of expansion and financing more sales. This is a wise move because it means you will have greater assets to work with. If you plan well and work hard you should have new products to sell, more jobs with broader opportunities to offer, increased value and wider ownership of company stock, and bigger profits to share.

Isn't that worth the effort?

Ron Corkum, HP medical sales representative, has almost surely survived more recent hospitalizations and intensive care procedures than anyone else in the states of Maine and Rhode Island, and the South Shore of Massachusetts. He achieves this distinction as a result of the training sessions he gives at the many hospitals in that area that have purchased HP intensive care equipment. It's very much part of Ron's job, after the equipment has been installed, to provide follow-up training of nursing and medical staffs. And invariably in such sessions he becomes his own patient, as in these scenes photographed at Glover Memorial Hospital in Needham, Mass.

At that 110-bed facility Corkum trained almost the entire nursing staff during four sessions lasting the better part of two days. Instruction centered around the combined intensive care and coronary care units installed by HP.

In addition to the local medical sales representatives such as Corkum, HP also offers training specialists from its corporate training group as part of its continuing after-sale service. These specialists, on request from a local office, now go out and conduct a one- or two-day seminar in patient monitoring system operating techniques.

The importance of these training programs is twofold. First, there is as yet no known adequate substitute for person-to-person contact and communication in teaching. In the medical field particularly, with life so often in the balance, the need is for demonstrated and tested experience rather than purely textbook or operating manual instruction.

Then, close contact with the medical people who will be using HP equipment is an important advantage from the point of view of future sales. In this regard, a survey conducted last year by the California State Department of Public Health revealed that among all hospitals in the state with 50 or more general beds, 157 had or planned to have a coronary care unit of some kind installed. Plans of similar scale are also under way in other states.

It's a challenge that goes beyond just the rolling-up of sleeves!

After the sale

Person-to person training is a vital step in putting HP's advanced medical electronics systems to life-saving use



Ron Corkum starts training session with nurses at Glover Memorial Hospital at Needham, Mass., by review of techniques and equipment. Above he describes location of electrodes that connect to HP bedside monitoring system (scope and heart-rate unit); below Ron discusses key equipment in central station, including scope, patient selector and recorder.



Now it's time for the nurses to practice monitoring — on Ron Corkum. At right they affix the electrodes and observe the bedside monitoring instruments displaying Ron's heart behavior. Below, Corkum is able to provide a timely commentary on the recorded results. Obviously Corkum is a healthy specimen. He joined the former Sanborn Company in 1959 as a mechanical assembler, and is studying for a degree in Marketing at Northeastern U.





HP Laugh In

As reported in divisional publications as well as newspapers, the HP scene was enlivened in recent months by the following daffy doings:

SLOUGH, U.K. — What he claims was a thermos of creamed vegetable soup almost got Derek Jones in a pickle at a recent football match. Just as he was about to uncork it for a swig, the jug went POW! That is, half the contents shot up in the air and came to rest on a neighboring spectator. In true British style, all was forgiven until some time later when Jones once more hungered for soup. Lightning struck again. Up soared the second half of the contents, the same chap in its sights.

Just as the big fellow was turning around—this time with somewhat more menace in his look—Derek handed off the thermos to a friend.

MOUNTAIN VIEW—Warren Pugh of Mountain View Division is wondering how many ways there are for a guy to lose. He and three other stalwarts—Gordon Eding, Art Wong, and Ed King—staged a weight-reducing contest some months ago. Each man pledged whatever weight he felt was right. Their total reduction goal was 53 pounds.

Three months later, at weigh-in on the shipping department scales, it was discovered that the group had gained a total of 7¼ pounds. All had gained weight—except Pugh, who was down by 1½ pounds. However, because he had pledged the largest personal goal, Warren was declared the loser.

That cost him a lunch, a big one, worth at least 2,000 calories apiece.

LOVELAND—After driving to work, Loveland Division's Vivian Schroetlin heard a strange noise coming from under the hood of the car. Further investigation—including the partial removal of one wheel and a fender, plus a lot of help from Joyce Horstman, Ed Pennington and Glen Haber—revealed the source of the noise to be one half-grown kitten. It was stretched and tangled around all kinds of engine parts—but plenty of lives left.

Vivian, that's not the way to put a tiger in your tank!

PALO ALTO—It started for Palo Alto Division's Bill Hatch as just another lazy weekend afternoon. A good time for a nap. Hours later Bill's wife tried to rouse him. No luck. Cold towels—no change. Slap, slap—not a peep. On

and on he slept. Call the doctor. Same routine, same results. Call the fire department, apply resuscitation gear.

Finally, he roused himself.

An examination established only one thing — Bill Hatch is a sound sleeper.

PALO ALTO — Long, long ago the Palo Alto Division placed an order with an engraving firm for some new personnel badges. Delivery was due last December. They were given to a college student to deliver. He put them in his car, then decided he would mail them instead. But Christmas came around and he forgot. On vacation in Santa Barbara he had an accident, and the car and all of the contents were impounded pending a trial. Nothing could be done to release the badges. So another order was placed. The badges arrived in April. But inspection showed the clips to be defective. Now, another order has been placed . . .

SKOKIE, ILL. — It's not usual for buyers to just walk in on HP sales offices and pay cash for an instrument then and there. But that's what happened here a few months ago. The buyer knew exactly what he wanted—a 428B milliammeter with probe that allows testing of direct current without interrupting the circuit.

Well, the next thing you know the FBI is on the phone to Loveland Division's Elsa Morrison who was able to furnish the name of the buyer. Seems that the instrument was found ownerless in the middle of a big marble floor in New York. The floor belonged to a bank, and someone had tried to break in, using the 428B to test the alarm system. But something spooked the burglars anyway. And so far they haven't bothered to put in a claim for the \$600 instrument.

NEW YORK — Two crates labeled as "used household goods and personal effects" valued at \$750 were seized here last March by authorities. Then they went out and picked up a Belgian exporter and charged him with attempting illegal export of U.S. products. Those "used household goods" turned out to be mostly HP gear—"four oscillators, one digital unit, one sampling sweep unit, one sampling timing unit, one programmer and two times bases," said the report.



TARGET FOR '68

sharpen
the competitive
edge

HP

engineers

and

marketeers

test new

approaches...

Have you heard of “manufacturability”? Has anyone explained “economies of scale” to you? Does the word “serviceability” ring a bell? Are you wired in on “Dataspeed”?

It happens that all of these are keys or clues to some of the concepts in engineering and marketing that have been adopted or emphasized recently with the aim of improving Hewlett-Packard’s abilities to compete and to build profits.

●
Engineering groups throughout the company are hearing more and more discussion of “manufacturability.” It’s used to describe, for example, the profit-minded planning that went into the development of the new 1200 series of oscilloscope products. Each of these six instruments was engineered to use the same design in chassis and baseplate. Only in the latter stages of assembly does the distinctive character and function of each product begin to show itself. Because these scopes are high-volume sales items, the result is a substantial reduction in manufacturing costs with a corresponding improvement in profitability. It’s easy to see, too, that the ability to service these 1200 series products is benefited.

The “manufacturability” approach is actually just part of the new emphasis with which HP engineers define the total goals of a product before hard cash is spent on it.

“It’s not new,” said Bob Brunner of Corporate Engineering, “just better.

“The divisions now don’t commit to a product until it has been fully defined, complete with an analysis of objectives, estimated costs, timetable, probable price, markets, after-sale service, and potential profit.

(continued)



Design engineers Ralph Jensen, left, and Bob Jones of Colorado Springs exhibit cabinet and castings of new 1200 series low-frequency scopes. Modular design permits several instruments to use same cabinet, CRT and power supplies. Same main frame can be used in future instruments. Since many modules are common to various models, production quantities are large enough to justify automatic testing as shown above.

Some new approaches ...

"This approach gives everybody concerned a better view of priorities and progress. It stimulates a better interchange between the engineering and marketing groups.

"One of the main objectives is to compress the lead time required to move a product off the drawing board and into the hands of the marketing force—but without sacrificing quality."

"Serviceability" is the heart of a concept that comes right from the heart of Customer Service. Known as the New Product Support Program, the concept is now being adopted by divisional engineering staffs throughout the company. Basically, it represents a carefully formulated method of step-by-step communications between Customer Service representatives and their service engineering counterparts in the divisions, with the ultimate aim of achieving more efficient instrument repair and service in the field.

Jim Hodel, Customer Service planning manager, said the program takes the view that service needs to be considered right from the very conception of a new product.

"If the field service people are to function properly," Hodel noted, "they need to know well in advance what new products are coming along, what the training and equipment requirements are, what provision to make for stocking of parts, whether the volume will be sufficient to require new people, when the service information will be ready, and so on.

"Our check list of essential elements in new product support is designed to bring out just such information.

"The key element is the cooperation between the division service engineers and our group leaders who are assigned as contacts to the divisions.

"From now on, U.S. and international regional service managers will be receiving a monthly report from the New Product Support review board summarizing the data on each product under development."

A further dimension is seen by John Walling, Customer Service repair manager. "Our job is not to check up on the divisions, but to flag our people when things are happening—or not happening.

"But real serviceability goes beyond this. With product warranties costing the company several million dollars each year, and with products becoming more complex, serviceability needs to be built right into each instrument.

"The new desktop calculator is probably the classic model. Serviceability has been completely thought out in advance. When the product is available to customers soon, our men will answer service calls equipped with complete kits of replacement items. Even the keyboard is designed in three modular sections for easy replacement. The service rep will be able to locate and replace a defective item in a matter of minutes.

"Total product thinking along these lines is bound to

Significant operating economies are targets for the HP marketing organization. Introduction last month of Dataspeed network to service entire domestic marketing network was most recent example. Dataspeed machines are ten times faster than TWX so transmission time charges are reduced by thousands of dollars monthly. Here Valerie Goodell operates machine at Stanford complex.



Early establishment of service procedures for this new second-generation HP spectrum analyzer is the goal of the team shown here—Bill Downs (left) and Jim Shea, Microwave service engineers, and Ray White of Corporate Service Center. Specifically, they are discussing data on successful calibration of the instrument for inclusion in operating manual.



make life easier for everybody and reduce the rate of service costs."

"Economies of scale—that's what we are looking for now throughout the marketing organization."

Speaking was Noel Eldred, HP's vice president of marketing.

"The cost of marketing our products has moved upward at a faster rate than our sales. So we can't be content with only proportional or percentage savings.

"At the same time we need good people to call on customers, and we need enough of them to do the job.

"This means the main thrust of our effort has got to be toward new methods and systems that will eliminate major areas of administrative expense."

Two such economies of scale were described for MEASURE by Bob Puette of Corporate Marketing:

"The most recent development was the installation last month of a Dataspeed network to service the entire domestic marketing organization. This replaces TWX lines in order handling.

"It's ten times faster, and estimates are that it will save well over \$2,000 per month in transmission charges, and will permit other important savings in the communications area in the near future."

Another innovation representing considerable potential value is the "order statistics" program. As its raw mate-

rial, this program uses the information that comes in to Corporate Marketing from all HP sales organizations, summarizing every instrument sale throughout the world.

"Right now we are using it to help straighten out some of the accounting complexities that arise in the area of split commissions and quota credit," said Puette. "This should significantly reduce interdivision paperwork and telecommunications.

"However, the big potential for order statistics is in market analysis. With computer programming, the company could analyze a customer's purchasing record, develop instrument sales profiles by customer category, make regional comparisons, and make available marketing intelligence information not possible to easily obtain in the past.

"Microwave Division is already working with a program that produces customer profile reports for products, helping them to evaluate a given product's market penetration. It's but one example of what can be done with available information and a computer."

The above examples represent just several of the important ways in which Hewlett-Packard people and organizations are responding to the challenge of sharpening the company's competitive edge in 1968. Future issues of MEASURE will present still other approaches by which all employees can contribute to improvements in profits—and profit sharing. □

Avondale—Charlie Euston has been appointed secretary of HP's Analytical Instrumentation Council. His responsibilities include the publication *Analytical Advances* and advance liaison with HP Labs and other divisions on analytical instrumentation projects. He succeeds Gene Bennett, who is on leave.

Palo Alto — HP's annual U.S. savings bond drive is under way. Last year 2,368 employees — 22.5 percent of the work force — signed up to buy savings bonds and freedom shares through the payroll-deduction plan. Neely led the sales regions in sign ups with 59.7 percent participation, and Rockaway was tops among the manufacturing divisions, with a 41.5 percent sign up. This year's two-week campaign in Palo Alto began June 10. Other locations are following similar schedules.

Austin — The University of Texas honored HP at engineering commencement exercises on June 1. A citation was read and a plaque presented to HP Labs' John Cage, commemorating the company's outstanding support of the college of engineering. In 1966 the company donated a truck-and-trailer "travelab" that had been used by the Southern Sales Region's Dallas office. Outfitted by the university with 10 booths representing the various engineering disciplines, the unit has visited virtually every high school in Texas to recruit engineering students.

Glen Iris, Victoria, Australia — HP Australia's exhibits of company instruments were well received last month at four professional society shows attended by several thousand engineers and scientists. Electronic, data processing, medical, and analytical instruments were shown at the CETIA (Control Electronics Telecommunications Instruments Automation) national exhibition in Sydney, at meetings of the Australian Biochemical Society and the Australian Physiological and Pharmacological Society in Canberra, and at the Royal Australian College of Surgeons' annual meeting in Adelaide.

San Francisco—On May 14, Chairman Dave Packard and President Bill Hewlett addressed the San Francisco security analysts. Hewlett spoke about the company's new calculator and the computer time-sharing system. Packard discussed anticipated sales and earnings for the first half of fiscal 1968, and called a 10-percent income tax surcharge and sharp reduction in federal spending "absolutely necessary if we are to stem inflation and restore the economic stability that is essential to the nation's long-term growth and prosperity."

Palo Alto—Following a disappointing first quarter, the second quarter of HP's fiscal year was brightened by record earnings—\$5,764,000, or 46 cents per common share. Shipments were \$68,393,000, and orders were \$66,825,000. For the first half, earnings totaled \$9,600,000, or 77 cents a share. Shipments were \$127,513,000, and orders were \$133,291,000. For the first time, HP's sales (shipments) passed a quarter-billion dollars for a one-year period, with sales reaching \$251,-819,000 during the four fiscal quarters just ended.

Palo Alto — Cash profit-sharing for the first half of fiscal 1968 totaled \$2,325,000, distributed to a record 10,677 employees on the basis of 6.24 percent of eligible earnings.

Pasadena — In September, Moseley Division plans to establish a small engineering and manufacturing operation in the Rancho Bernardo Industrial Park near Highway 395 north of San Diego. The division's engineering activity and part of its administrative and manufacturing operations, including the production of strip-chart recorders, will be housed in a 20,000-square-foot, leased building now under construction. Other manufacturing operations, including that of x-y recorders, and a majority of division employees will remain at the present facility in Pasadena. The Pasadena site has proved to be inadequate for the plant expansion required to keep pace with the division's steady growth. The San Diego facility will become HP's 18th plant.

People on the move

Corporate—John Cage, to HP Labs staff, from college relations manager, corporate Marketing; Bob Hawkins, to advertising and sales promotion staff, from product training staff, corporate Marketing; Howard Poulter, to physical electronics, HP Labs, from R&D staff, Microwave; Dick Reynolds, to HP systems manager, from managing director, HPSA; Dick Schorer, to government relations staff, from government sales staff, corporate Marketing.

F&T—Ted Blomquist, to cost accounting, F&T, from same position, Palo Alto Division.

HP Associates—Gil Woolley, to microwave product engineer, HPA, from R&D staff, Microwave.

International—Mike Meara, to marketing manager, HP Ltd. (Scotland), from Export Marketing, International Operations. HP Canada: George Dickens, to manager, Vancouver, from sales engineer, Montreal; John Featherstone, to manager, Halifax, from sales engineer, Ottawa; Dave Gibbs, to manager, Winnipeg, from sales engineer, Montreal; Tony Johnson, to manager, Ottawa, from manager, Halifax; Mike Reilly, to sales engineer, Montreal, from staff engineer, Montreal.

Microwave—Pete Brink, to marketing services manager, from information systems; Bill Brown, to engineering staff, R&D, from environmental test, quality assurance; Doug Chance, to product manager (signal generators), from production engineering; Jeff Thomas, to supervisor, from engineer, environmental test; Steve Vitkovits, to R&D staff, Microwave, from engineering manager, Rockaway; Bill Wolfbarger, to manufacturing production engineer, from publications staff, Customer Service Center.

Mountain View—Arnold Mjatveit, to cost accounting, Mountain View, from same position, Paeco.

Waltham—Craig McClendon, to master scheduling, from production engineering; Richard O'Brien, to materials engineering, from special products; Walter Savell III, to production engineering, from engineering (R&D).

Eastern Sales—Carl Schultz, to chemical field salesman, West Conshohocken, from staff engineer, Paramus.

CORRECTION to May issue of MEASURE: Greg Jordan, to marketing statistics, corporate Marketing, from marketing systems, corporate Management Services; Bob Puette, to marketing services manager, corporate Marketing, from marketing systems, corporate Management Services.



from the chairman's desk

At no other time in the history of our company has the dynamic and changing nature of our business been so apparent. We are in a period where some of our traditional product areas are not doing quite as well as they have in the past, and where some of our newer areas are showing good strength and growth.

To accommodate these changes in our product mix and in our markets, we need to continually evaluate and adjust our methods of doing business. For example, we have been doing some realigning within our marketing programs over the past year or so, and there will be additional adjustments in the future. We have also been making changes in our product assignments, and this will continue as the need arises.

Adjustments such as these not only benefit the company as a whole, but the individual divisions as well. The initial acceptance of the desk top calculator looks extremely good, and the assignment of this instrument to Loveland has changed the outlook there in a very substantial way. Likewise, the transfer of the quartz thermometer and the integrator to Avondale will improve that division's overall position.

The changing nature of our business also demands careful attention to the details of our day-to-day operations. The fact that we didn't do as good a job in this respect in the latter half of 1967, and during the first quarter of 1968, adversely affected our total performance—particularly in the area of earnings.

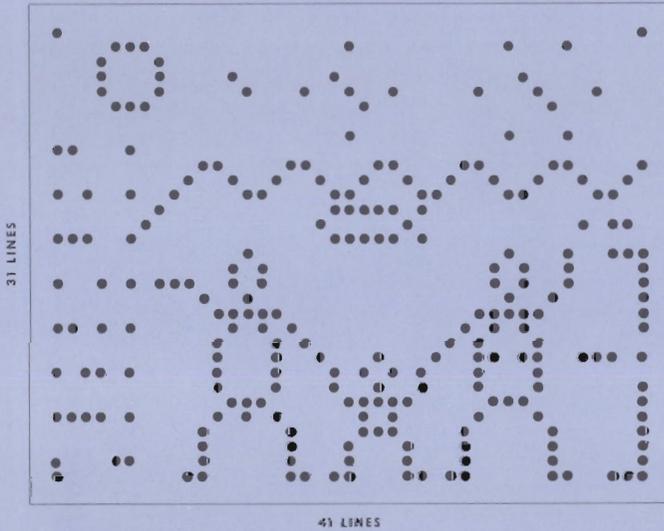
However, I am very happy to see that we are beginning to reverse this trend. Everyone has pitched in during the past few months, and as a result we did substantially better during the second quarter (February, March, April). As a matter of fact, in several ways this is the best quarter the company has ever had.

Our task now is to keep things going in this direction. To do it, we will have to keep in mind that the way we did things in the past won't necessarily work in the future. Each of us will have to be on the lookout for new ways to do our work more efficiently and for new ways to reduce the costs of doing business.

This type of effort, coupled with continuing assessment of the assignments of our people and our products, is vital to the long range outlook for both individual and company growth. The company we knew yesterday cannot be the HP of tomorrow if we are to meet the challenges of the future and take advantage of the opportunities that will surely come our way.

David Packard

Hello from Epsilon Eridani



Radio astronomers have recently had a field day gathering in strange radio pulses from interstellar sources (see pages 2-5). However, the scientists have concluded that intelligent beings are probably not originating these signals. The question remains: How would a technically advanced extraterrestrial people send communications across space in the hope of contacting neighbors a hundred billion miles away? They might, wrote HP's Barney Oliver in a now famous proposal, prepare a mathematical code based on pulses and pauses, representing one and zero respectively. Any sharp math type in the universe should be able to decode it. First clue is the 1,271 "bits." Since this figure is the product of the prime numbers 41 and 31, lay out the message accordingly. Leaving out the zeroes, this would yield the pictogram shown here. The message, says HP's research vice president, describes a race of sexually reproducing bipeds. Its star and planets are shown along the left; the man is pointing to the fourth planet, his home. The symbols for hydrogen, carbon and oxygen show at the right of the sun. The idea of water on the third planet is conveyed by the wavy lines originating here. Below it, a fish-like figure appears. Finally, a computation based on digits at lower right and the wavelength of the transmission tells us that these hypothetical adult inhabitants of Epsilon Eridani are between six and seven feet tall.

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