

Measure

For the men and women of Hewlett-Packard/JANUARY 1972

The big parade of new products

If new products are the lifeblood of HP's economic growth—and that's been proved time and time again—then 1972 should be a very healthy year.

Shown on the following half-dozen pages is a representative sampling of new products that are expected to have an important bearing on the company's well-being by year's end.

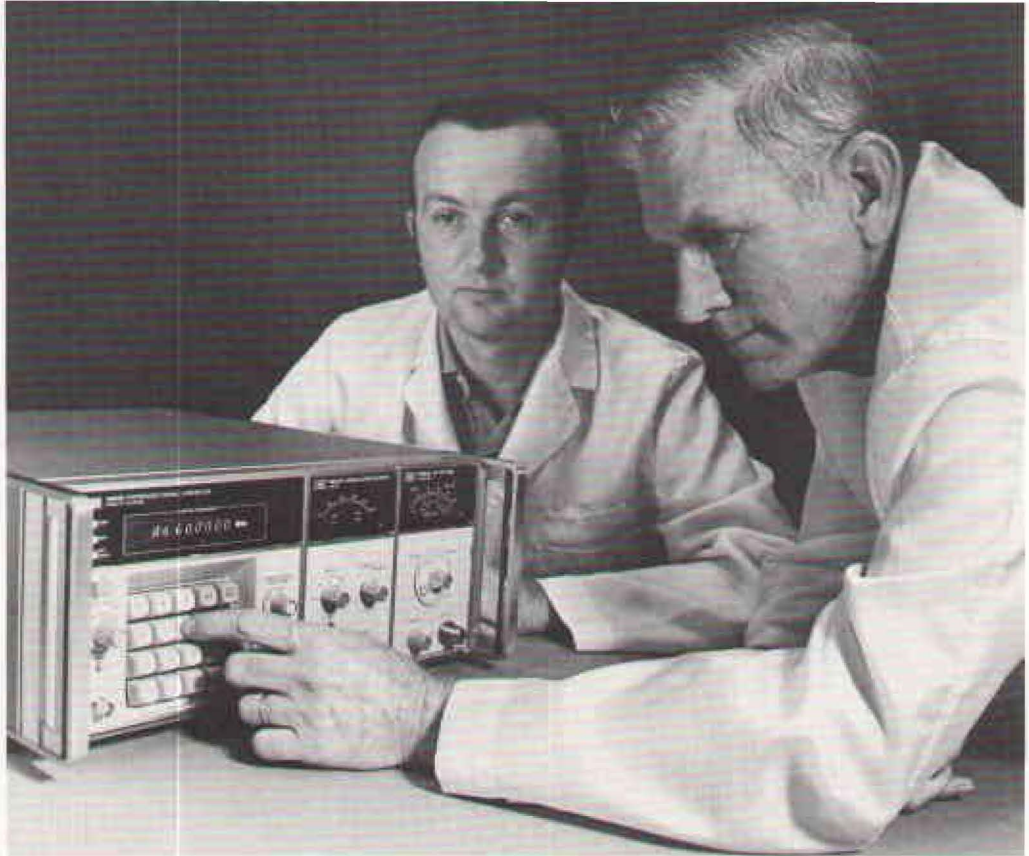
The sampling was based on nominations by the various product-group marketing managers. They were asked to list those products introduced late in 1971 that they felt would have a significant impact on the company's business in 1972. In many respects the listing is incomplete since other products introduced in 1971 will also be important, as will the products that are planned to come on stream in the months ahead.

HP systems, an increasingly important area of business for the company, is discussed in a separate article on pages 11–12.



Story behind the story: Among the new products for 1972, the battery-powered HP-35 pocket calculator from Advanced Products in Cupertino is certainly one of the more interesting. While it will fit a shirt pocket, it performs "like a fast, extremely accurate electronic slide rule, with a solid-state memory similar to those in computers." All of which makes it a candidate for some unusual marketing approaches. One of these is suggested by the cover photo sequence: "consumer style" publicity. Here, Peter Nelson of Corporate Public Relations and photographer Norton Pearl work with Karen Cambria of AMD to get just the right shot—such as that shown on this page. Another approach—and a first for HP—is to sell the HP-35 primarily by direct mail. Both of these approaches went into high gear early this month with a major press conference and mail campaign. Preliminary market tests indicate exceptionally high interest for this \$395 gem in applications for science, engineering of all kinds, statistics, mathematics, education and business and finance.

for 1972



one

two

Electronic products

PHOTO ONE

Great expectations are held for Microwave's 8660A/B, a new RF signal generator that uses synthesizer techniques to achieve the performance characteristics needed for modern communication systems applications. Because all functions are programmable, the 8660 will enjoy wide acceptance as a "building block" in automatic test systems. Here, project leader John Shanahan (center), and digital controls designer Hamilton Chisholm pose with an 8660B, the keyboard version. Along with the A version and a growing family of plug-ins, the 8660 is regarded as a very strong candidate for leadership in its field.

PHOTO TWO

Two important additions to the HP 1700 portable oscilloscope line introduced just one year ago are the new storage scopes. These are more completely identified as the 1702A and 1703A variable persistence/storage portable oscilloscopes. Even petite Lee Ann Jones of the Springs has little trouble handling one of these lightweight portables. The important thing, though, is that they provide storage operation — that is, they can store a trace and return it to you later — in a battery-powered oscilloscope. The major market for the 1700 portable scopes is in field servicing of computers and peripheral equipment. It's a big market, and HP's new products offer a broad new capability.



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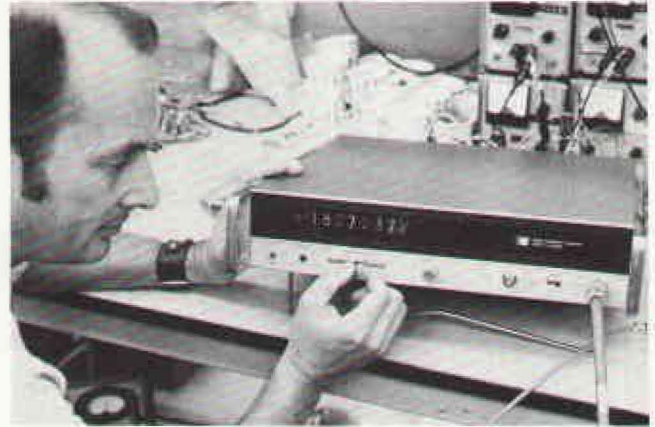
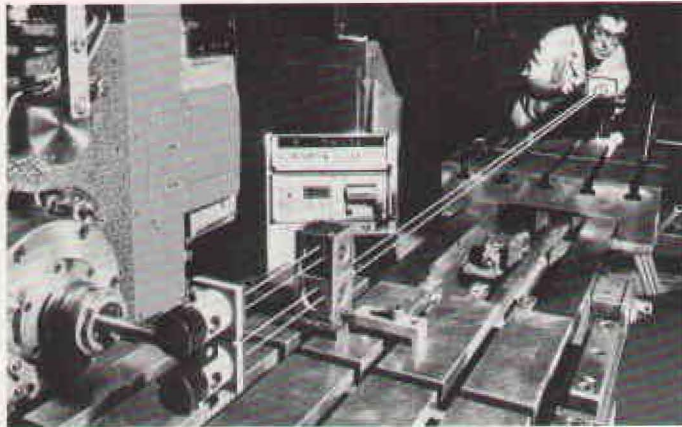
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six



the big parade

PHOTO THREE

Major technological hurdles had to be overcome in developing a precision frequency unit — or “atomic clock” — for use in aircraft collision avoidance systems. Essentially this involved reducing the cesium beam tube to much smaller size without sacrificing the stability and accuracy of its timekeeping function. In fact, the whole unit had to come up very rugged — able to operate under any combination of environmental effects, such as an airliner might encounter. Last month the precision frequency team at Santa Clara, represented here by Darwin Throne, saw a United Airlines jetliner begin evaluation flights with a prototype HP 5062B unit as part of a McDonnell-Douglas collision avoidance system named Eros II. If all goes well, and if the airlines can find the money for CAS, here's a market that could take off in 1972.

PHOTO FOUR

Greatly expanded versatility in application has been added to the HP laser interferometer system with the introduction of the remote interferometer, or “Magic Cube.” The cube, seen clamped near center of table, permits angular and linear displacement measurements — very important in such areas as machine-tool calibration. A graph of the surface of polished granite, for example, looks like a rugged mountain range when the minute surface variations have been measured by the cube system.

PHOTO FIVE

Selectively but surely over the past few years, HP has

changed from being a producer of electronic components *primarily* for its own use to that of supplier at large. Its offerings include diodes, displays, optoelectronic devices, and LED's, transistors, IC's, mixers, and microcircuits. In 1972, the market embracing microwave communications looks particularly exciting. This arises from recent FCC decisions that could lead to a proliferation of point-to-point microwave links for data communications and CATV relays. For this market, Microwave's microelectronics team has developed a series of microwave transistors and hybrid IC products that greatly reduce the cost, size and complexity of spanning difficult terrain for communications systems. HPA is also going to become more involved in the communications industry; its new IMPATT diodes provide a source of microwave power as high as 1.5 watts. For HPA displays and LEDs, the trend this year is also strongly upward. It is also making important technological and economic contributions in offering custom-quality diode products at quantity prices, thanks to production innovations.

PHOTO SIX

Satellite communications and other sophisticated systems in the microwave field will find matters greatly simplified by use of the 5340A automatic microwave frequency counter from Santa Clara. One input — instead of the several connectors needed in the past — handles all signals from 1 Hz to 18 GHz, and the counter significantly advances the state of the art in virtually every respect. In the photo above, R&D project manager Dick Schneider puts the sensitive 5340A through its paces. Another important new family of Santa Clara counters is the portable 5300 measuring system. Still



seven

eight



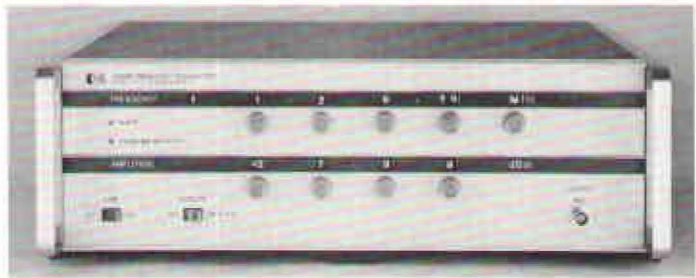
another recently expanded Santa Clara product line—IC troubleshooters—is represented by the 10529 logic comparator, a handy-dandy locator of faulty in-circuit IC's. It's not only very marketable but is helping HP build its own products more economically.

PHOTO SEVEN

As fast as your computer can describe something—which is very, very fast these days—this display can write it out, or draw it. That describes Colorado Springs Division's new high-speed graphic displays, the 1310A and 1311A. Together, they represent an improvement in performance that's revolutionary for large-screen instruments. One significant advantage over competitive models is demonstrated here by Sharon Kent: plug-in circuit boards which contribute to improved serviceability and compactness. Weight and power consumption are also significantly less. At Colorado Springs the market potential for the display units in 1972 is rated very high, with applications in computer systems and O. E. M. (original equipment manufacturers) systems adding substantially to division sales.

PHOTO EIGHT

Proof that the New Jersey Division is serious about the business of modular power supplies is furnished by the upcoming new 62000 series. It's made up of 44 fixed-voltage modular power supplies ranging from 3 to 48 Vdc. Bill Pierce, project engineer, is seen with modules in the 1/8 and 1/4 width. The division's existing power supply lines are aimed chiefly at the R&D laboratory market; the new line will find markets in computers and peripherals, industrial electronics, semi-con-



nine

ten



ductors/solid state fields, communications, aerospace and other systems—markets the company is already in.

PHOTO NINE

"The oscillators of the future" are here now and are "going to set the pace in quality low-frequency signal sources." So said *Critter Talk*, Loveland Instrument Division's marketing newsletter late last year. It was referring to the new 3320A and 3320B frequency oscillators. The 3320 is said to have the widest frequency range of any test oscillator, programmable oscillator or low-cost synthesizer in today's marketplace... 0.01 Hz to 13 MHz. Both A and B versions give frequency stability and accuracy measured in a few parts per million per year.

PHOTO TEN

Meter meter: Yes, that's what the Loveland Civil Engineering Products team dubbed this 3800B version of the distance meter. Logically enough, it provides a readout in meters rather than the feet of the A model. This will make it much more marketable in the metric-standard areas of the world, such as Europe. Simple though it may seem, conversion to meters represented a substantial engineering program, according to Bill McCullough, CEP manager. But it's still the same basic instrument using an invisible beam of infra-red light to measure distances up to 3,000 meters (approximately 2 miles) accurately to within 25 millimeters—about 1 inch. The 3800B will be among the first products manufactured at the new HP facility in Grenoble, France. First shipments were scheduled from Loveland in December, and from HPG in April.

(continued)



eleven



thirteen

the big parade



twelve

fourteen



Data products

PHOTO ELEVEN

For the Cupertino computer products division, the key to 1972 is the HP 2100A minicomputer — faster, more versatile, and lower in cost. It is a general-purpose computer designed for an extremely wide range of applications in business, industry, science, medicine and education. With a 16-bit word length, core-memory capacity begins at 4,096 words, and is readily expandable to 32,768 words. The 2100A's speed, compact size and ease of modular expansion result from the most recent advances in computer technology. Hardware features include medium to large-scale IC's throughout, micro-programmed read-only memories (ROM's), and memory stacks so thin they are mounted on plug-in printed circuit boards. Available with the 2100A are 14 computer peripherals and 47 instruments (or other input-output-devices).

PHOTO TWELVE

These two data products en route to a demonstration by Mike Paul, Neely-Palo Alto calculator salesman — Model 10 calculator from Loveland and the 9862A X-Y plotter from San Diego — are key items in the 9800 system introduced late last year. If initial reception is any guide, then they and a growing list of other 9800 products are in for a very successful 1972. One of the Model 10's main selling features is the customer's ability to tailor it to his own unique needs through selection of accessories, peripherals and function blocks.

PHOTO THIRTEEN

"The fastest, toughest disc drive in the industry!" That's how HP's new and first disc drive, the 7900, is billed in recent

ads by the Mountain View Division. In operation, the disc, seen inside the pack that production supervisor Mike Bir is inserting for diagnostic testing, spins at 2,400 RPM. Meanwhile, the "head" zips in and out to select data bits stored on the disc's 200 tracks. The basic use of the 7900 is as a data storage peripheral device in small or medium-size computer systems. It's going to be a very significant contribution to HP data-systems involvement. Other key Mountain View products of recent vintage include the 7970E digital magnetic tape unit and the HP 2022A-option 101 magnetic tape reformatting system.

PHOTO FOURTEEN

Although the first System/3000 won't be ready for shipping until well into the second half of this year, it and others on order will occupy the attention of many Cupertino people in the coming months. That's because the 3000 is a "big ticket" item. Long lead times are involved both in the buying and the building. Yet, for the \$100,000 to \$300,000 paid for a System/3000 — depending on configuration — the buyer will get features found only in the half-million to million-dollar range. Visitors to the recent Fall Joint Computer Conference in Las Vegas found it among the most interesting exhibits.

Medical products

PHOTO FIFTEEN

The patient has survived a heart attack. After five days in a coronary care unit he was moved to another part of the hospital. Here he begins to take care of many of his own needs — and to move around for the first time since the attack. It's a critical period in his recuperation, and it has led to the concept of the "progressive coronary care unit." Key



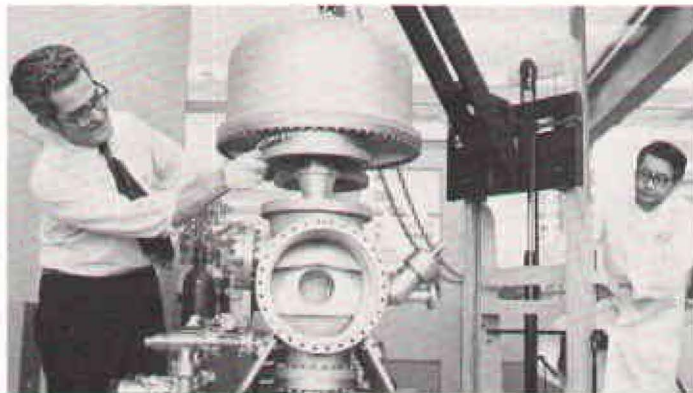
fifteen

sixteen



seventeen

eighteen



to this concept is a method of monitoring the patient during his first few days of moving around. This is what the Medical Division's new 78000 system is all about. Using radio waves, the transmitter sends the patient's ECG to remote monitoring equipment which may display the ECG waveform or heart rate, detect and analyze cardiac arrhythmias, and displays alarm or inoperative conditions.

PHOTO SIXTEEN

With Medical Division's new 1530A, hospitals and screening clinics now can have a practical system for computer-aided interpretation of electrocardiograms. Performing rapidly, consistently and at low cost per ECG, the HP ECG interpretive system offers the cardiologist a time-saving tool to assist him in his diagnosis. Transmission of the ECG from the patient site to the computer can either be made directly by phoning or indirectly on magnetic tape. More than 60 ECG's can be processed per hour; in emergency situations, high-priority printouts can be made available to the cardiologist in less than two minutes from the time of ECG phone transmission. In another medical field — natal monitoring — HP-GmbH has added the 78204A respiration meter and 78202A temperature meter for measuring the breathing and temperature of newborn babies.

Delcon

PHOTO SEVENTEEN

Life is now much easier for repairmen looking for telephone cable faults, thanks to the new Model 4910F open fault locator from Delcon Division. It pinpoints breaks in seconds, and provides a direct readout in feet or meters. No further calculations are required, and the service crew can go di-

rectly to the fault site and begin its digging with a better than 99 percent chance of uncovering the fault the first go. Introduced last October, the 4910F has already scored a hit.

Analytical products

PHOTO EIGHTEEN

ESCA: Those letters stand for Electron Spectroscopy for Chemical Analysis, one of the most promising and potentially powerful of emerging analytical techniques. HP's first production unit of its technically advanced Model 5950A ESCA spectrometer was shipped by the new Scientific Instruments Division to the Eastman Kodak Company last November for use in photographic film research. ESCA's prime ability, in fact, is in determining, with high accuracy and speed, the physical and chemical nature of the surfaces of materials — and the surface of a material is where much of the "action" takes place in chemical reactions. In operation, a small sample of the material — solid, solidified liquid or condensed gas — is inserted into the spectrometer being assembled here by Harold Rocklitz, production engineer (at left) and Frank Bunya, design technician. X-ray photons bombard the sample, resulting in the emission of electrons which are then detected and sorted according to their kinetic energy. The resulting spectra is displayed on an HP 5401B multi-channel analyzer. Since each atomic element or molecule emits a characteristic "spectrum signature," it is possible to determine both the specie of atom present as well as the nature of the chemical bonding between different atoms. Other new analytical instruments of significant importance in 1972 are the 5930A/5932A mass spectrometer and data system from S.I.D. and the Model 5700 gas chromatograph from Avondale. □

PLANNING IN



No matter how the figures add up, by the end of fiscal 1972 the company will have passed through its first full year under a new corporate-wide planning program. It's a program that gives the divisions and the corporation a much better view of where they want to go — what products to push, what R&D to emphasize, what resources to commit — than ever before. In view of the evident importance of this program and the fact that all parts of the company will be living with it for the foreseeable future, MEASURE asked Corporate Development manager Tom Perkins what it was all about:

□ “The point to emphasize is that the basic planning is really done at the local level, by the divisions and departments. It's their inputs about what they expect to happen to their products and markets that provide the content of the company's planning. We call it ‘bottoms up’ planning.

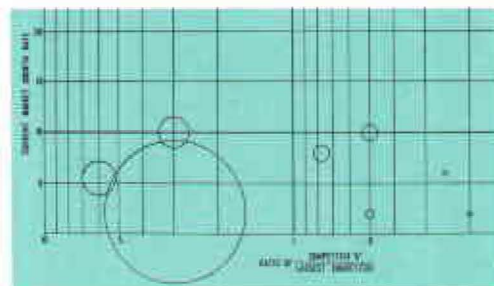
“When this information gets to the corporate level, it's top management's job to make the decision as to how the company will support the various divisional proposals. In other words, how the money and other resources will be allocated. We do this by preparing guidelines, and it is here that the major changes in planning techniques have been made.

“For example, what used to be looked on as product reviews really became strategy reviews last year. The divisions were asked to project their total programs for the next three years. We put these together as a complete projection for the company, then compared this with the computerized ‘world view’ of economic activity that Austin Marx had developed. Austin's program has been remarkably good at calling the shots about the business climate, so we got a very good picture of just how our plans might fare world wide.

“Meanwhile, it was my job to look for an overall strategy system, because we must have identifiable economic and other goals for each part of the total corporation. It would not be right to apply a single set of goals uniformly to the individual parts of the company. Each is in a different stage in its life cycle, so the goals need to be individually tailored.

“Now it's easy to say that, but to do it is not so easy. One tool we found useful here is the so-called ‘bubble chart.’ This is a method of visualizing the company in terms of the

ING



businesses it is in — where these businesses fit in their respective industries as to growth and share of market.

“It turns out that the company is presently in 50 different businesses. These cut across divisional and even group lines, depending on where we market our products. The bubble charts helped us identify the problems and opportunities of these businesses.

“However, when it comes to making decisions about so many businesses, you can’t very well do this just by looking at a chart. So again, we went back to the basic data provided by the divisions and built a time-sharing model or picture of each business.

“It’s an automated accounting model that automatically consolidates all the inter-divisional transactions and details into a single statement. It allows us to experiment readily. For example, if someone wants to know the overall effect of accelerating our growth in a particular market, or allocating resources somewhere else, we just plug the data into the ‘bank’ and get back a complete new reading. Jack Loustaunou of Data Products Group and George Schapiro of Cupertino really did a brilliant job in programming this model.

“A series of top management meetings made good use of this system and the bubble charts last August. In effect, we used them as tools in planning the allocation of resources — the guidelines — for fiscal 1972. These were then shown to Bill Hewlett who for the most part bought them. We then submitted these back to the division. In turn, they used the guidelines in developing their own programs which they sent back to us in the form of ‘targets’ for 1972. I think

most divisions will agree that approval of these went quite smoothly last October.

“In the meantime, the Corporate Development department has been working on the development of a five-year financial planning technique. It’s one that will accommodate a variety of assumptions beyond those used in the past.

“This will give us a third new tool to use along with the bubble charts and accounting model as methods of planning our future.

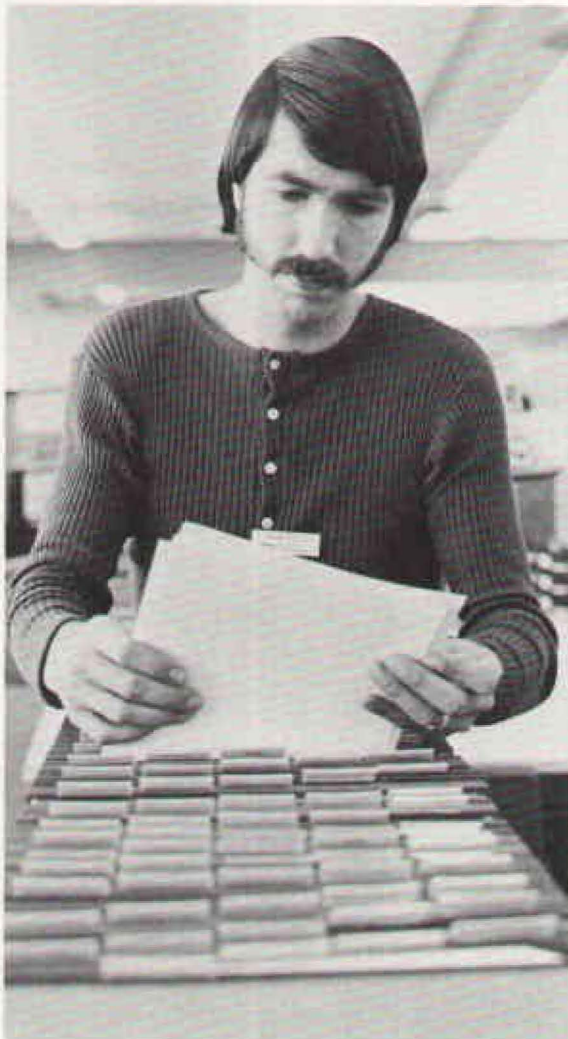
“Another change in planning was apparent in the managers’ meeting in December. This was a much smaller group than in previous meetings.

“It did not deal specifically with 1972. Instead, we concentrated on the important trends — the financial, environmental, governmental, social, human and industrial trends that will affect us over the next ten years and beyond. It represented a whole new dimension in our planning, one that is bound to have a profound influence.

“But I’d like to stress again that our new planning approach still is based on a strong interaction with the divisions. The mix is different, but the interaction is actually greater than ever.

“I think the planning procedures we’ve developed recently are likely to be a format for next year’s cycle. One thing perhaps will change a bit, and that is that more and more planning is going to be done by the groups and finance departments, hopefully using the tools we have developed. Our department will concentrate more and more on the ‘development’ aspects of our title — that is, helping to make some of our plans happen.” □

1972— It's catalog time again



Some HP salesmen will tell you that many customers keep track of the season and the year just by taking notice of the company catalog.

"You fellows publish only in even years, don't you?" This was heard a lot in 1971.

"Sure glad the holiday season is over. Expect we'll be receiving your new book soon!" That is being heard a lot this month.

Indeed, 1972 is an even year and an HP catalog year. To get it published and into the hands of 175,000 potential buyers of electronic products, a lot of divisional and Corporate marketing people were very busy in 1971.

In Microwave Division, for example, Frank Dilles of the publications department (photo at left) was responsible for the layout of more than 80 pages of material prepared by a half-dozen writers. Some pages covered up to a dozen different products. The total effort was concentrated in a period of just over a month in order to meet the complex printing deadlines.

In all, the new electronic products catalog runs 416 printed pages, plus hard cover. Distribution is underway.

Does it pay its way? That question was answered in part by one division which sought to determine the usefulness of various alternative methods of informing customers. The division's survey indicated a 2-to-1 preference for the big catalog, and clearly established its effectiveness in the selling process.

Selling systems in '72

Preface by John Young, vice president, general manager of Electronic Products Group

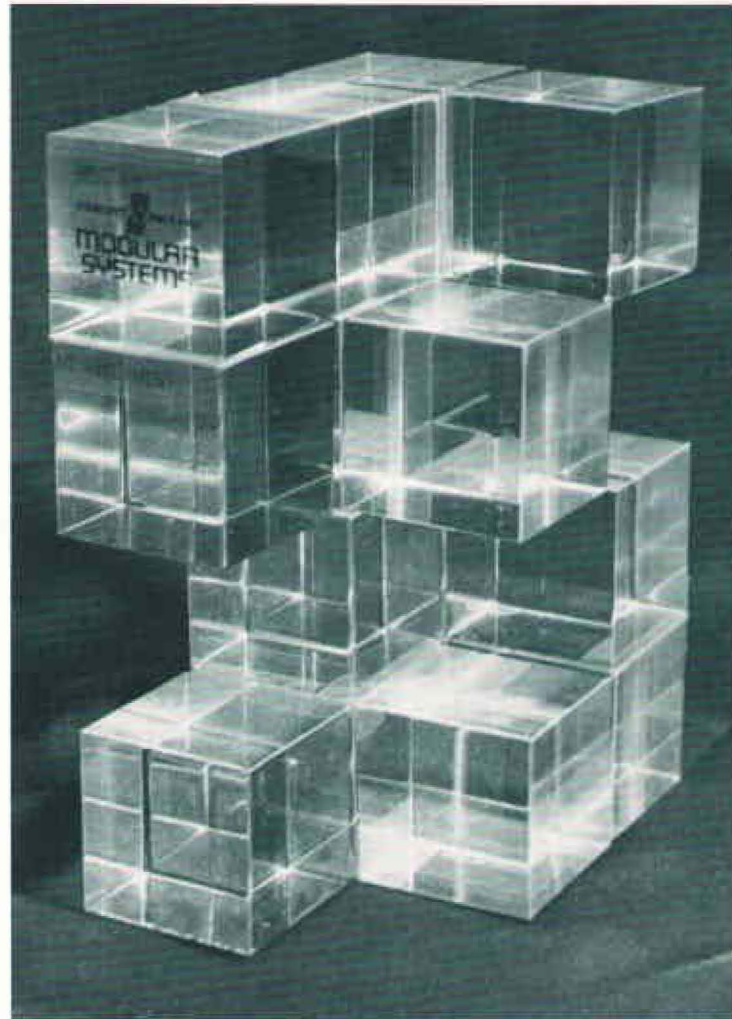
□ "People have always sought to improve their ability to measure things — with more precision, greater diversity of characteristics, higher speed, and lower cost. So for us, building instrument systems is a logical extension of the business we've always been in, that is the business of measurement.

"A significant landmark in the evolution of systems in HP was the development of the automatic network analyzer six years ago. It was the first computer-instrument combination to incorporate many of the features we associate with automated measurement. Today, almost every one of our instrument functions has been incorporated into measuring systems.

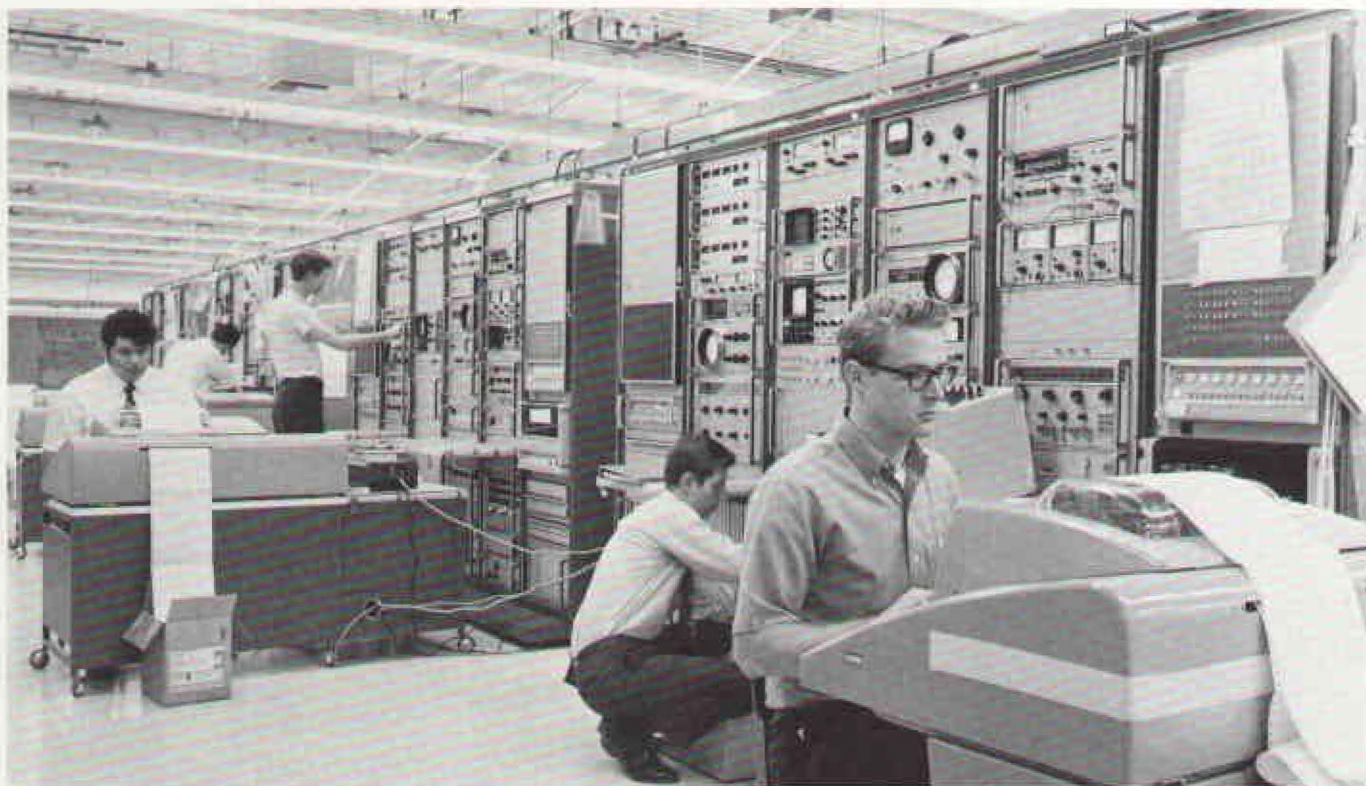
"In complexity these systems range from mini-systems based on HP calculators to systems that check out an entire aircraft avionic capability. But complexity is not confined to the engineering and technological side. It extends all the way into the selling and service areas, and this inevitably has had a major effect on the way we go about marketing our systems.

"In selling the larger systems, for example, we must talk to people making buying decisions in the \$100,000-plus range. So we not only have to sell the working engineer but often the president and the board of directors. And price is not the only consideration. Often the customer's entire production capability is dependent on our system, so field support is vital.

"This represents a fundamentally new level of selling for us. To be successful in it we first have to create in top managements the same awareness and confidence in HP that the working engineer has gained over the years. The modular systems promotional program, which the systems-oriented divisions of EPG developed in cooperation with Corporate Advertising, is directed to that goal."

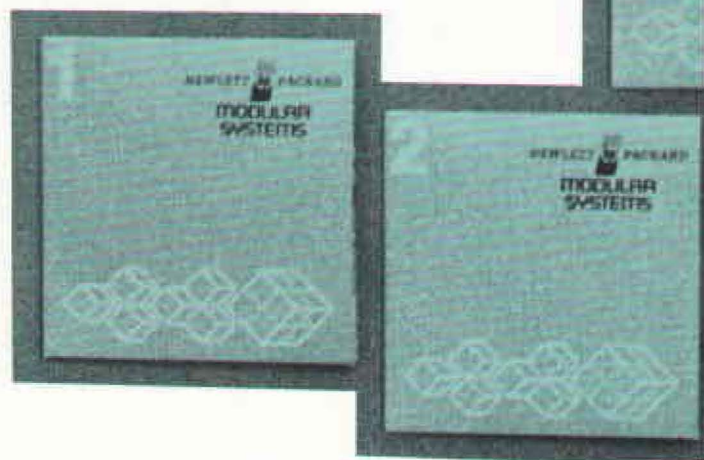


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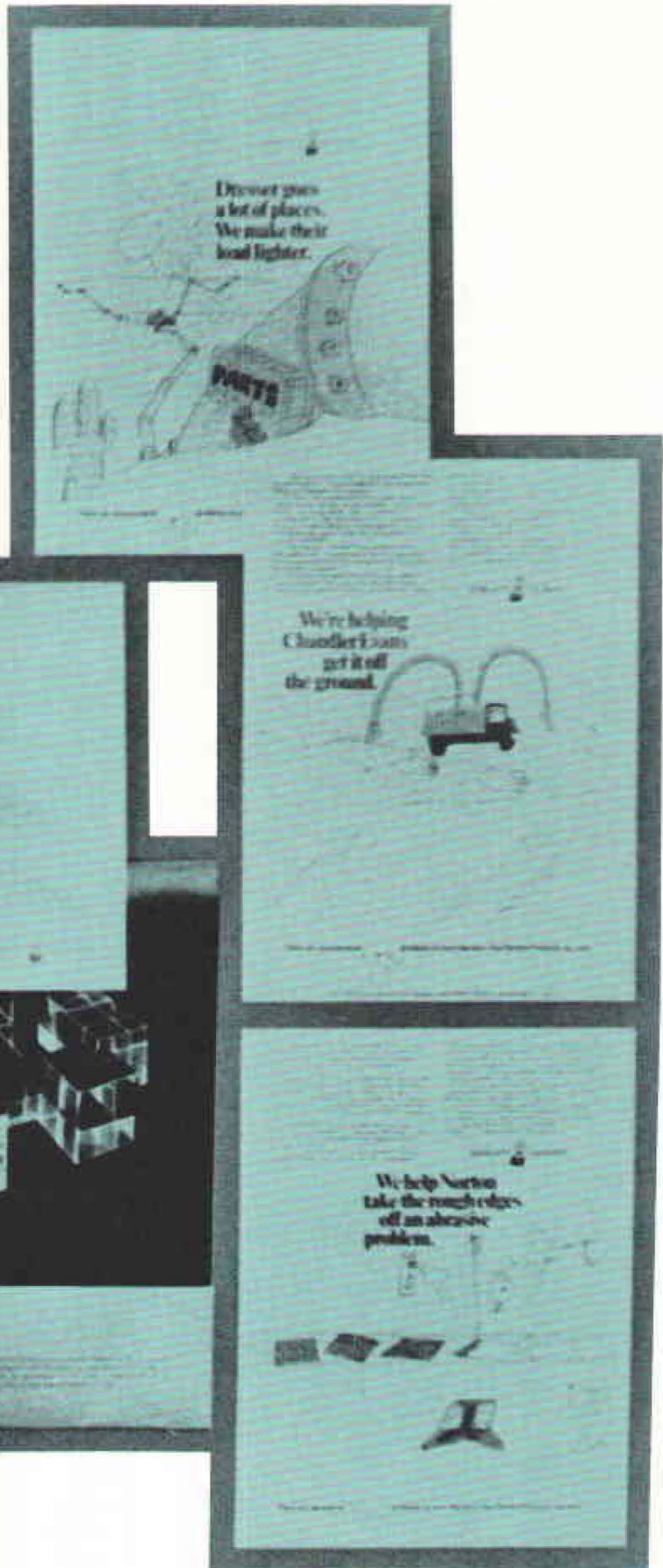


The 'building block' theme of HP systems is dramatically supported by this view of a major instrument system – actually one used by Automatic Measurement Division in its own testing. As pointed out in the new promotional program, HP offers systems' customers something no other supplier can match – a complete lineup of its own instruments, computers, software, training and sales-service support. Important functions now include automatic test and data acquisition; network, signal and spectrum analysis; noise monitoring; nuclear measurement; and computer-based Fourier analysis. Recent application areas include auto exhaust analysis, telephone production testing, design of integrated circuits, production-line quality control, oceanographic research, motor vibration testing, autopilot testing, airport noise monitoring, aerodynamic testing, refinery production control – and many others. Promising new instrument systems include the 9600 test system from AMD, and the 18 GHz automatic spectrum analyzer that helps make satellite communication more effective.

selling systems in '72



Key elements in the modular systems promotion program are shown in the adjacent photo. The advertisements, case histories of how major 'name' clients have made use of HP systems, appear at three-week intervals in *Business Week*, hopefully to be read by the many thousands of decision-makers among its readers. People who respond to the ads, or whose names have been sent in by the field sales force, then begin to receive the series of direct mail pieces. The goal is to make them aware of the advantages of systems in solving complex measurement problems, and to get them to *think HP* whenever they think of systems.



News in Brief

Palo Alto – Ray Demere, operations manager of the Electronic Products Group, and Bill Terry, general manager of the Data Products Group, have been elected vice presidents of the company.

Demere, a science graduate of Yale, joined HP in 1946. He subsequently served in product engineering, quality control and production management. He was the company's first general manager in West Germany (1959 to 1962), managed Customer Service for three years, then was appointed general manager at Loveland. With the formation of the Electronic Products Group in 1970, he returned to Palo Alto with the responsibility for the direction of the group's manufacturing divisions.

Terry has headed the Data Products Group since last February. A graduate of the University of Santa Clara, he joined HP in 1957 and held positions in training, sales and corporate marketing before being named marketing manager at Colorado Springs in 1965. Two years later he became the division's general manager.



Ray Demere



Bill Terry

Palo Alto – Hewlett-Packard has agreed to purchase 50 acres of land in Cupertino, California, from Varian Associates.

The unoccupied land, first purchased by Varian in 1963, is being purchased by HP for \$2,750,000. The land is adjacent to the 46-acre site HP already owns in the Valco Industrial Park. This site is occupied by HP's computer products manufacturing division.

HP has no immediate plans to develop the property.

Palo Alto – Distribution of \$2,661,106.00 to approximately 11,400 eligible employees under the company's cash profit-sharing plan was

made in December.

Combined with the first profit-sharing cash disbursement made by HP in mid-year, it brought the year's total to more than \$5,000,000.

The company has had a profit-sharing policy since it was founded in 1939.

Washington, D.C. – Social Security deductions for 1972 will be at the same 5.2 percent rate as last year; however, the deductions will extend over a base annual maximum of \$9,000 rather than the previous \$7,800. Maximum additional deductions for an individual – 5.2 percent of the \$1,200 differential – thus will amount to \$62.40 for the year.

From the president's desk

In years past we have held a winter management meeting in California attended by 50 to 60 of the key managers and officers of the company. In general these meetings were designed to discuss the operating results of the year just completed, and to plan for the year ahead.

This year, however, we tried something of a different nature. We got together the top 15 people from the group and corporate levels and went down to the Ranch for two full days of just talking about the company—where it is headed, what internal and external factors would be influencing its health and growth during the next 10 years, and how to best plan for its future. It was an informal assembly in that we held our meetings in the center of all ranch houses, the dining room.

A wide variety of subjects were discussed, some of greater importance than others. A number of programs were considered for further action, others rejected. The results of the meeting are now being digested and several constructive programs will be initiated. I will report on these at a later date.

As I look back at those two days, however, I am impressed with one major observation—most of the subjects discussed dealt with people and not dollars. Much was said about management by objective, about career opportunities for minorities and women, and about how we could make HP a better place to work.

Considerable concern was expressed that in our efforts to make a satisfactory profit showing we sometimes forget about that most important element, our people. Management may be defined as "getting things done through people." If you don't understand your people or your people don't understand you, you cannot be successful in any management slot. I am afraid that too many times with the pressures under which most of us operate we forget the human side of the problem. I maintain and strongly believe that HP is a great company because of the people we have assembled. Our people are our greatest asset.

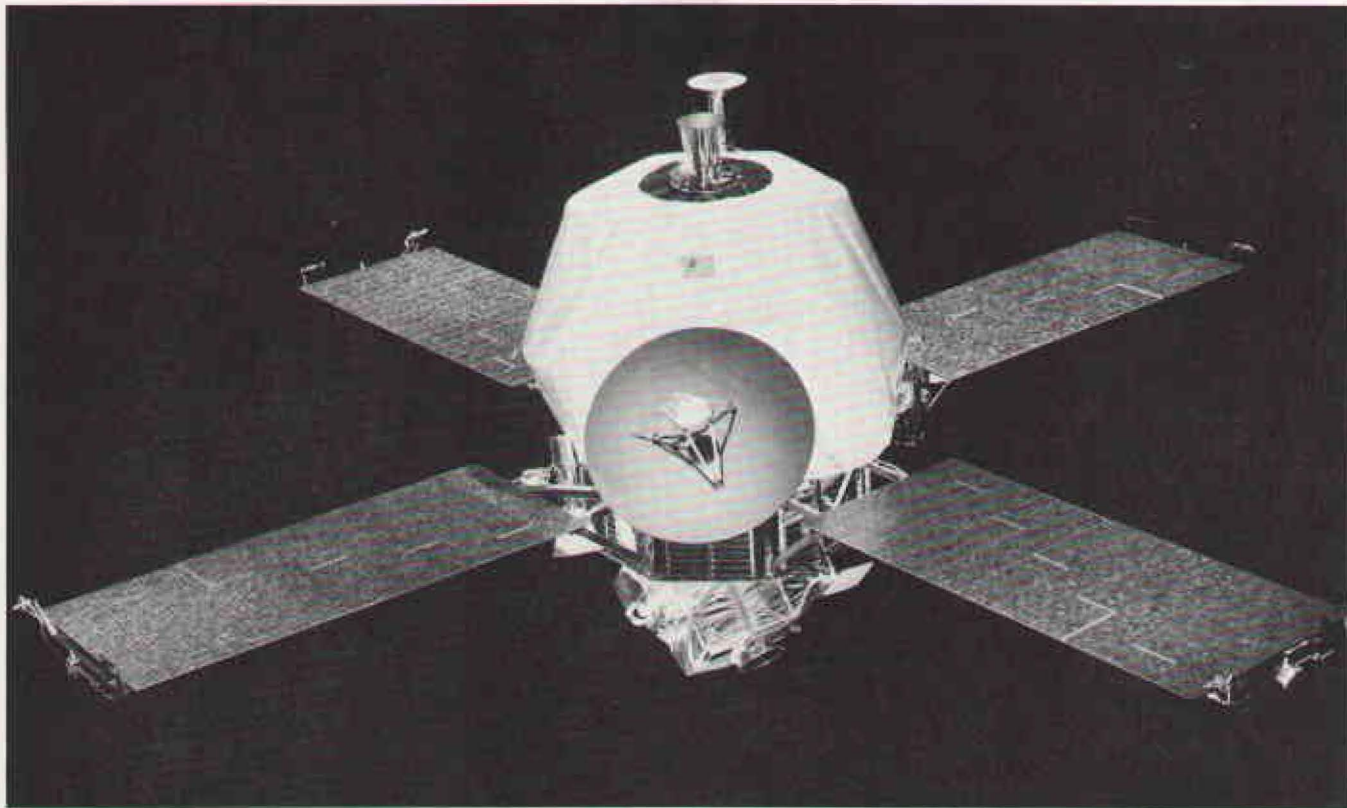
It is the responsibility of each one of us in our day-to-day dealings with our associates—regardless of our position in the company—to be thoughtful of how our individual actions and decisions will affect those around us.

As I write this message on the eve of Christmas I find this thought singularly appropriate.

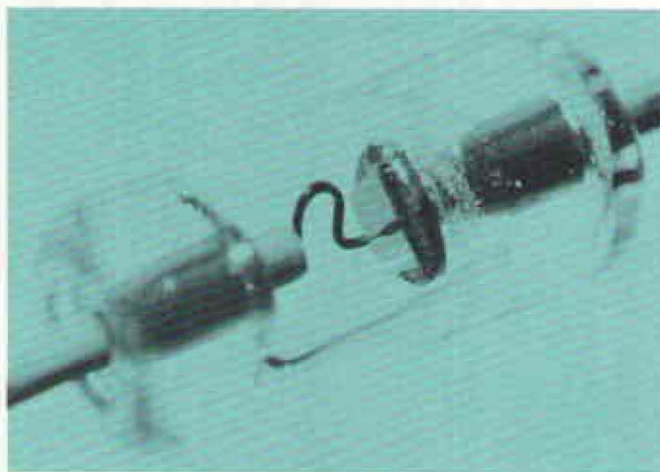
Bill Hewlett

P.S. It's going to be just great having Dave back with us again. As you know, he will be elected a director and will become Chairman of the Board. He has some business to finish up in Washington, but shortly after the first of the year will be spending almost full time on HP matters. One of the first things he has planned is to visit the various HP operations and catch up on what has been happening during the past three years. So, in the weeks ahead if you see a big tall guy walking around, that will probably be Dave.





The Little HP Diode That Could is playing a role in the success of the Mariner 9 space probe, now orbiting Mars taking pictures and gathering data. The probe contains an HPA mesh-hot carrier diode, which monitors the power transmitting data back to Earth. The diode, belonging to HPA's 2300 series, was sold to Jet Propulsion Laboratory in Pasadena, California, the Mariner program project manager.



Measure

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