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November 1963



M e a s u r e

In this issue

Monitoring Modern Surgery
Order Processing Streamlined



from our president's desk

AS YOU KNOW, we have been gradually divisionalizing our corporate structure to provide greater flexibility throughout the organization and to improve our overall operating efficiency. Several of our field sales groups have been divisionalized, and we have also converted some of our important engineering and manufacturing subsidiaries, such as Dymec, Boonton, and Harrison Laboratories, into divisions.

For a company of our size and scope a divisionalized structure offers several advantages, not the least of which is the increased opportunity for individuals to move from one division to another, assuming positions of greater responsibility, challenge, and reward.

As of November 1, the beginning of our 1964 fiscal year, we divisionalized three additional groups. Two of these are sales organizations, Neely Enterprises and Earl Lipscomb Associates, both of whom have been associated with us for many years and have contributed greatly to our continuing sales growth.

The third new division is Sanborn, our largest and most important subsidiary. While it may take a few months to complete the necessary legal arrangements converting Sanborn into a division, the company is now functioning, insofar as its day-to-day operations are concerned, on a divisional basis.

In evaluating the pros and cons of divisionalization, it is important to remember that newly-created divisions do not lose their public image as separate operating entities with

their own traditions, characteristics, and product lines. For example, General Motors operates on a divisional basis. Yet in the eyes of the public GM's divisions, such as Chevrolet and Pontiac, are separate companies with distinct lines of products and strong customer and employee loyalty.

The same is true of our established divisions, such as Dymec, Boonton, and Harrison, and of our newly-created divisions—Sanborn, Neely, and Lipscomb. Down through the years they have built up an identity and character which will be retained regardless of the type of organizational structure under which they operate. Clearly, divisionalization should in no way diminish our most important corporate resource—the enthusiasm and loyalty of our people.

In connection with this most recent divisionalization, we have made some reassignments of personnel which we believe will strengthen our organization. Bruce Wholey has been appointed general manager and chief executive officer of Sanborn. He succeeds Al Lonnberg, who recently resigned to take a year's leave of absence from the company. Bruce has been with us since 1945 and for the past three years has served as general manager of our Microwave Division. Succeeding Bruce in heading up the Microwave Division is John Young, whose previous position as division sales manager will be filled by John Minck.

We are confident that the divisionalization of these three important groups will add substantial strength to our present organization and enhance our opportunities for future growth and success.

David Packard

*Sanborn NIH Equipment
Marks Major Medical Advance*



Monitoring Modern Surgery

THE STETHOSCOPE “monitors” the beat of the human heart . . . and it has served physicians faithfully for a century and a half.

But tremendous strides have been made in medical instrumentation through the years which make the stethoscope seem a simple device, although no less important to mankind’s good health. Sanborn Company—among those who know medical instruments best—is an acknowledged leader in this field.

Most dramatic of Sanborn’s recent contributions to advanced medical instrumentation was the design and construction of four surgical monitoring systems now in operation in the new surgical wing at the National Institutes of Health Clinical Center in Bethesda, Md.

These are the most comprehensive electronic monitoring systems ever built for acquiring, recording, and visually presenting data on patients while they are undergoing surgery.

Each operating room in the new NIH surgical wing has its own monitoring system, including ceiling-mounted data display units located inside the operating room and the system operator’s console on the outside.

Systems serving the two neuro-surgical and two cardiac operating suites pick up and instantaneously display signals of such physical phenomena as blood pressures, temperatures, breathing rate, heart rate, heart output, blood flow, blood loss, brain waves, and electrocardiogram. In addition, permanent recordings of these constantly varying phenomena are made by each system’s magnetic tape and moving strip chart recording instruments for later study by doctors, researchers, and medical investigators.

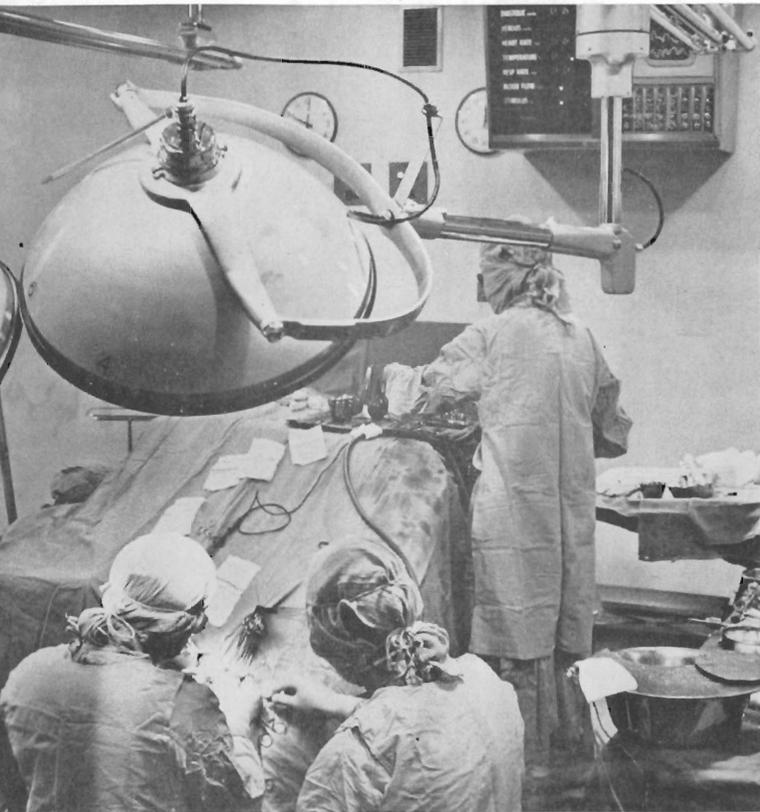
The systems also provide related and equally important facilities for two-way communications between all operating room personnel, equipment operators, and observers in rooms above the operating rooms; defibrillation (restoration of normal heart rhythm by the application of electrical impulses); cautery by electrical means; and mechanical bypass and simulation of heart and lung action by a “heart-lung machine.”

During surgery, the operating team has continuous visual presentation of 16 patient signals—eight in numerical read-out form and eight as dynamic waveforms on the 17-inch screen of a Sanborn oscilloscope. Previously tape-recorded waveforms of the patient’s body phenomena may also be displayed simultaneously with the current waveform for comparison purposes. Among other things, this can help warn the surgeons of imminent distress conditions.

The basic concept of these physiologic monitoring and recording systems was originated by staff members of the Na-



NIH’s four-floor circular structure has two neurology and two heart operating suites, each equipped with its own monitoring system. MEASURE’s cover reveals one of the operating rooms in use.



A display revealing data gathered by the console is partially visible in upper right portion of this operating room scene. In heart surgery, two of these panels are located within the room and one immediately outside where it is visible through glass.

Surgery *(continued)*

tional Heart Institute, National Institute of Neurological Diseases and Blindness, the Division of Research Services, and the Clinical Center—all sections of the National Institutes of Health, a bureau of the Public Health Service aptly called “the capital of U.S. Medical Research.” Sanborn engineers began consultation on the systems with NIH people in early 1962 and inauguration of the systems took place on September 5 this year when the Clinical Center’s new \$2,000,000 surgical wing was dedicated.

The new NIH operating rooms are far less cluttered than the old operating suites in the Clinical Center, where, as one surgeon put it, “we hardly had room for the patient.” Now nearly all the monitoring instrumentation—except for the display units—is located in adjoining “recording rooms” visible through glass panels. Leads from the patient are gathered together as a single cable and plugged into a small stationary pedestal near the operating table. Cables from the pedestals to the consoles are installed in conduits within the floor. The readout panels in each operating room are mounted above the heads of the surgical team, out of the way yet completely visible.

But the provision of more space is only incidental compared to the major significance of these monitoring systems. NIH officials agree that the equipment “opens broad new avenues for research, diagnosis, and improved surgical technique.” NIH surgeons can now record, recall, and compare more kinds of data in greater quantities and receive it faster than ever before.



One of four monitoring consoles, engineered and built for NIH by Sanborn, is a complex but thoroughly integrated system of instruments. Clearly visible are such pieces of Sanborn equipment as an 8-channel oscilloscope, photographic oscillograph, 8-channel digital display, preamplifiers, and magnetic tape recorder.

John Hearn, designer of 5090A, sets up receiver during field trials in Geneva.

Bedford Designs First Instrument



THE FIRST INSTRUMENT designed and developed entirely by the R&D staff at Bedford, England, is now being produced there in quantity.

Called the 5090A Standard Frequency Receiver, the instrument provides the means of setting up and adjusting highly stable secondary frequency standards and counters. It was designed by John R. Hearn, a member of the R&D team headed by Technical Manager A. F. Boff.

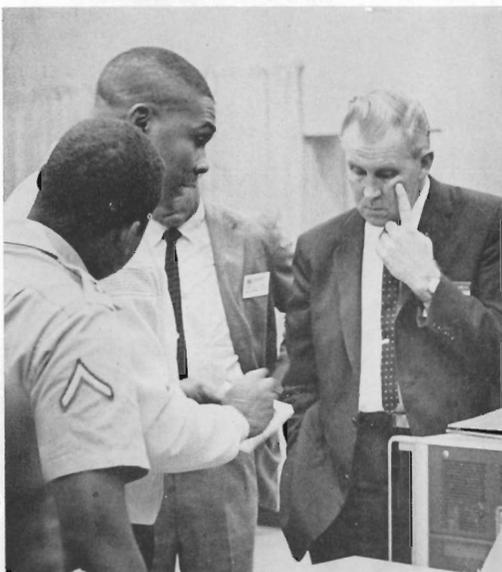
The British Broadcasting Company has recently improved the frequency stability of its Droitwich transmitter to a degree which enables it to be used for frequency standardization of very high precision. The 5090A receiver uses the

signal from this transmitter to synchronize the frequency of an internal oscillator which, in turn, provides output frequencies at 100 Kc/s and 1 Mc/s. These outputs, at the frequencies most used for this type of work, have the same frequency stability as that of the original transmission.

The instrument is intended to be usable throughout most of Europe, and special features are incorporated to enable it to be utilized in regions of low signal strength and high electrical noise level.

The 5090A is the first of a series of new instruments being designed at Bedford by HP Ltd. to supplement production of American-designed equipment there.

Horman's Open House Draws Record Crowd



THE SIXTH ANNUAL open house exhibit held September 26-27 by Horman Associates at Rockville, Md., attracted the most visitors in the history of the affair. Nearly 1,500 people turned out, representing 163 firms, all of which helped Horman celebrate a happy tenth anniversary in business.

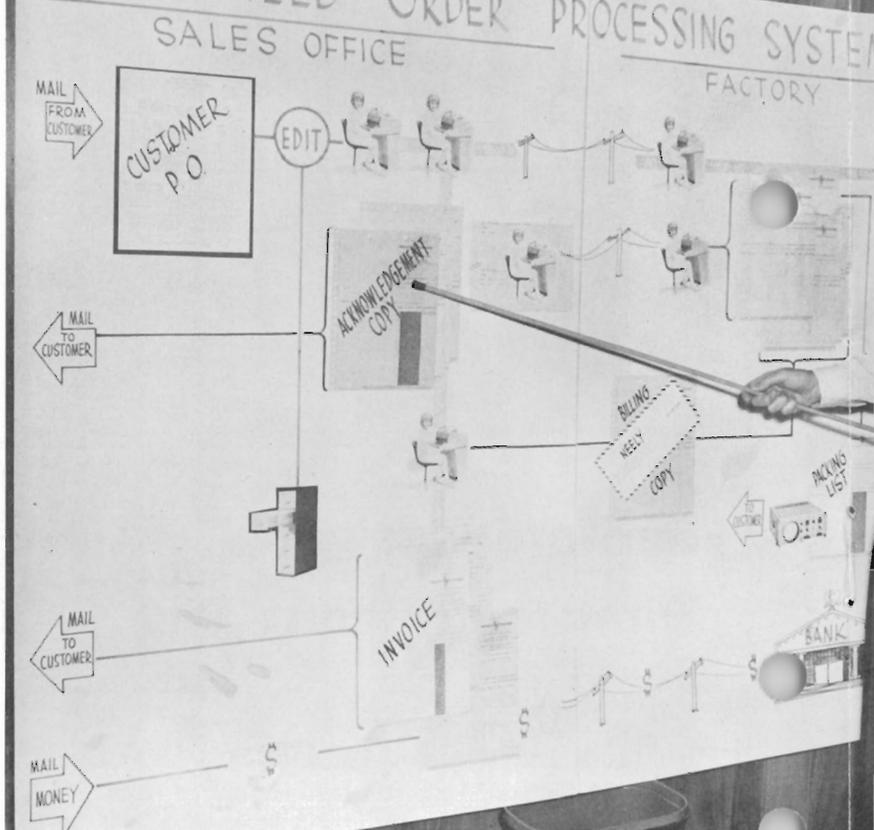
More than 100 instruments from various HP divisions and affiliates were set up for active demonstrations.

In the photo at left, Herb Kroft of Horman Associates has a thoughtful expression as he talks to customers. *The picture below* shows a well-attended portion of the exhibit where Dick Cline of Oscilloscope Division and Jerry Coan of Horman present demonstrations. Cline is at left with his back to the camera and Coan is operating the scope.

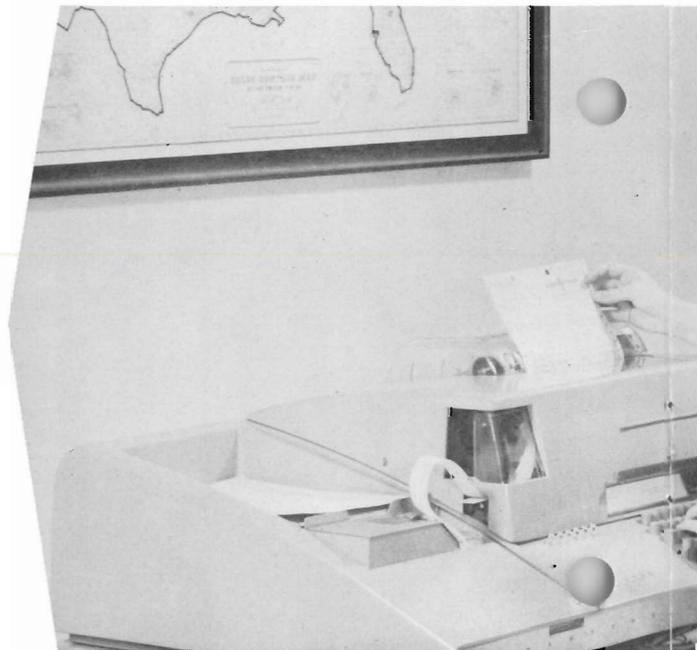


Order Processing Streamlined

Bud Eldon explains decentralized order processing system to executive council in Palo Alto. Chart traces an order from the time it is received until the money is deposited in the bank. Ron Buehner, Bob Stephenson, and Jerry Carlson were other members of team assigned to study and develop the new system.



Jan Shaffer (left) at Neely Enterprises' North Hollywood office, types an order for transmission to the Loveland, Colo., plant. At Loveland, Nancy Shanks (below) receives order exactly as transmitted.





Task force reports amazing results in field trial . . .

PROCESSING A CUSTOMER'S ORDER can be a lot like navigating a ship on the high seas. The object is to get from one point to another as fast as possible, in as straight a line as possible, and with a minimum of mishaps.

HP has long had an enviable record in this regard, pretty generally accepted as "the best in the industry." The company's order processing system presently revolves around a central department in Palo Alto. This means that orders from the field are transmitted to this group to be "processed"—that is, to be edited, assembled, scheduled, and all the other myriad paperwork chores involved in a single sale.

But, the company meantime has GROWN. There are new divisions, new sales affiliates, new subsidiary companies, new joint ventures. There are also some new questions to be answered. For instance: "Is HP continuing to navigate the shortest distance between two points in all of its efforts and procedures?"

It's a logical question and one that is asked over and over again by all successful enterprises. Just about a year ago, the executive council appointed a team to evaluate order handling. Members of this task force were Ron Buehner, Bob Stephenson, Jerry Carlson, and Bud Eldon. Bud, HP's systems and operations analysis manager, served as chairman.

First order of business was to define the objectives for a new corporate order processing system. To improve customer service was Number One objective. Others were: establish efficient independent operations by each manufacturing unit; reduce inventories; minimize and standardize paperwork; and make maximum use of the new field sales units. The ultimate system should be compatible with the company's philosophy of decentralization and delegation of responsibility to the lowest effective level.

By February, the group had a new system ready for trial run between Palo Alto and Loveland. In April, it was set up between Neely's North Hollywood office and Loveland. By July, North Hollywood was processing all commercial orders in that territory for HP-name products.

Very briefly, the system works like this: the customer submits his order to his HP sales office, which immediately checks it completely. An acknowledgment is prepared on a new model TWX machine and transmitted instantly to all factories. The transmission produces all required shipping papers at each factory, as well as punched paper tape that can be fed into a computer for statistical analysis of orders. Thus, the very same order information is available simultaneously at sales office and factory.

The factory enters the order against its production schedule and teletypes a brief delivery commitment back to the sales office. The sales office then mails a complete order acknowledgment to the customer, formally accepting the order and giving delivery promises for each item. Only a few hours may have elapsed.

With this new system, it is possible regularly to ship instruments the very day a customer gives his order to a sales office. There is no duplication of order editing between sales office and factory, and no possibility of differing interpretations. Since the sales office has all the order information, it can invoice the customer after shipment and collect the payment too.

An interesting result follows: in the customer's eyes the local sales office is Hewlett-Packard—the whole corporation. He goes only one place to get information or place an order or ask for technical help or pay an invoice, without concern about where any item is manufactured or stocked.

The study is far from over. Other field sales locations and other plants will introduce the system and undoubtedly further refinements will be made. In all probability, order processing centers will be established in several strategic field sales locations. Where and how many, is a question yet to be answered.

But one thing for certain, the task force charted its course carefully and can still say that a straight line is the shortest distance . . .





Frank Cavier, unable to obtain a "Wall Street Journal" at the Hotel Ukraine (see sign), searches an edition of the "Daily Worker" for the latest in the world of business.

CAVIER'S MISSION TO MOSCOW

THERE IS SOME EFFORT being made in the USSR to produce more consumer items, but with the lack of profit incentive I don't believe they will ever get up enough steam to reach our present standard of living."

This is one of many observations made by Frank Cavier, corporate vice president and secretary, during his recent visit to the Soviet Union, Hungary, and East and West Berlin. Cavier was one of 31 California business and professional men selected by Congressman Charles S. Gubser to tour various areas behind the Iron Curtain as an American "executive delegation."

The group departed from San Francisco International Airport on September 10, stopping over in Washington, D.C., and returned via Paris, Brussels, and New York three weeks later. "In between time," says Cavier, "we visited Moscow, Leningrad, Kiev, Budapest, and Berlin. The Soviet Union is definitely not a place to go for a fun vacation. Many of the things that we Americans are attracted to when pleasure bent are non-existent there.

"However, because of our world competition with the USSR," he continues, "it is very interesting to see with one's own eyes what life in Russia is like and to try to draw conclusions as to the relative progress of the Communist and Capitalist systems."

Geneva Seminar: Closer Ties Abroad

AN IMPORTANT MOVE to bring various segments of HP's far-flung international organization closer together was made in Geneva September 2-7. During that week, key personnel from Bedford, England; Boeblingen, Germany; and Geneva, Switzerland, met with Lee Seligson of the Palo Alto headquarters personnel department for orientation in the techniques and training of conference leadership.

The purpose of the program developed by Seligson was to prepare members of the group to conduct supervisory development programs at their home bases. The basic elements of these programs are patterned after methods found successful in supervisory training at Palo Alto during past years.

The Geneva workshop included: Alan Watts, fabrication supervisor; Derek Arnold, works manager; Peter Lingley, QA supervisor; and Andrew Mellish, test supervisor, all from Bedford. Representing the German operation were Gunter Warmbold, manufacturing manager; Eberhard Knoblauch, administrative manager; Robert Hofgaertner, production engineer; Reinhold Weyl, production engineer; and Miss Bruni Gebauer, personnel and payroll. Curt Edelmann, assistant manager of order processing, represented HPSA of Geneva.

Photo at upper right shows Seligson conducting a session.



Two Sales Divisions in EER Show

THE NINTH ANNUAL Electronic Engineering Representative show went on the road in September and took four Eastern markets by storm.

Each year the EER show is a unique event, sponsored by several electronics sales companies. Two HP divisions are among the sponsors: RMC Sales Division of New York City and Robinson Sales Division of West Conshohocken, Pa.

This year the road show, with hundreds of electronic instruments, spent two days each at Huntington, L.I., Cedar Grove, N.J., and Philadelphia, plus a day at Eatontown, N.J.

around



the circuit

By NOEL E. PORTER, *Vice President, Operations*

AS YOU KNOW, our 1963 fiscal year ended October 31. While the final operating figures are not available as of this writing, the preliminary figures in the table below indicate that we wound up the year in pretty good shape. All in all, total orders were up about 6% over 1962, production held about even, and shipments were up 4%. Moreover, targeted figures for the first half of fiscal 1964 are up substantially over the corresponding period of '63.

To get a better fix on the table, "parent company" includes HP Palo Alto divisions (oscilloscope, microwave, and frequency and time), customer service, Loveland, and Colorado Springs. Total corporate includes the parent company plus Paeco, Dymec, HP Associates, Sanborn, Moseley, Boonton, Harrison, and International.

The international picture continues to show good strength. Orders were up 23% and shipments up 28% over fiscal 1962.

Production increased 83% at GmbH and 118% at HP Ltd.

We're now moving into our new fiscal year. With a lot of effort on everyone's part, coupled with a little bit of luck, we expect to come out well ahead of our 1963 performance.

Turning to another subject, we'd like to clarify the position of Paeco, our Palo Alto supplier of transformers and magnetic components. While Paeco, from an organizational standpoint, is now a department of the Frequency and Time Division, it is actually operating as a division of the parent company with its own accounting function.

It will continue to be a major supplier of transformers and magnetic components to the Palo Alto complex, even though some high production items are being transferred to the Loveland components section. Moreover, Paeco will continue to supply local electronic firms with magnetic components, an important and profitable service.

PRELIMINARY OPERATIONS DATA

(All dollar figures in millions)

Fiscal 1963 vs. Fiscal 1962						
	Est. Orders Fiscal '63	% Change From Fiscal '62	Est. Shipments Fiscal '63	% Change From Fiscal '62	Est. Production* Fiscal '63	% Change From Fiscal '62
PARENT COMPANY	\$69.6	+ 8.0	\$68.1	+ 2.4	\$68.2	No change
TOTAL CORPORATE	\$118.5	+ 6.4	\$115.0	+ 3.6	\$103.6	No change
Targets for first half of Fiscal '64 vs. Actual Operations for first half of Fiscal '63						
	Est. Orders First Half '64	% Change From First Half '63	Est. Shipments First Half '64	% Change From First Half '63	Est. Production* First Half '64	% Change From First Half '63
PARENT COMPANY	\$35.7	+ 14.5	\$37.4	+ 11.4	\$35.9	+ 9.3
TOTAL CORPORATE	\$61.9	+ 14.5	\$63.0	+ 15.0	\$59.1	+ 17.2

* Production totals do not include some supplies and accessories purchased and resold with no value added.

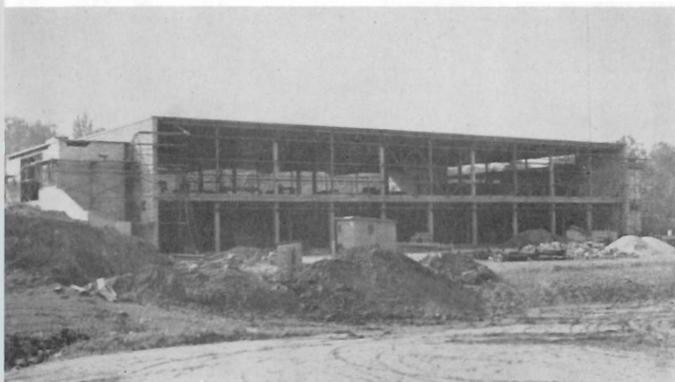
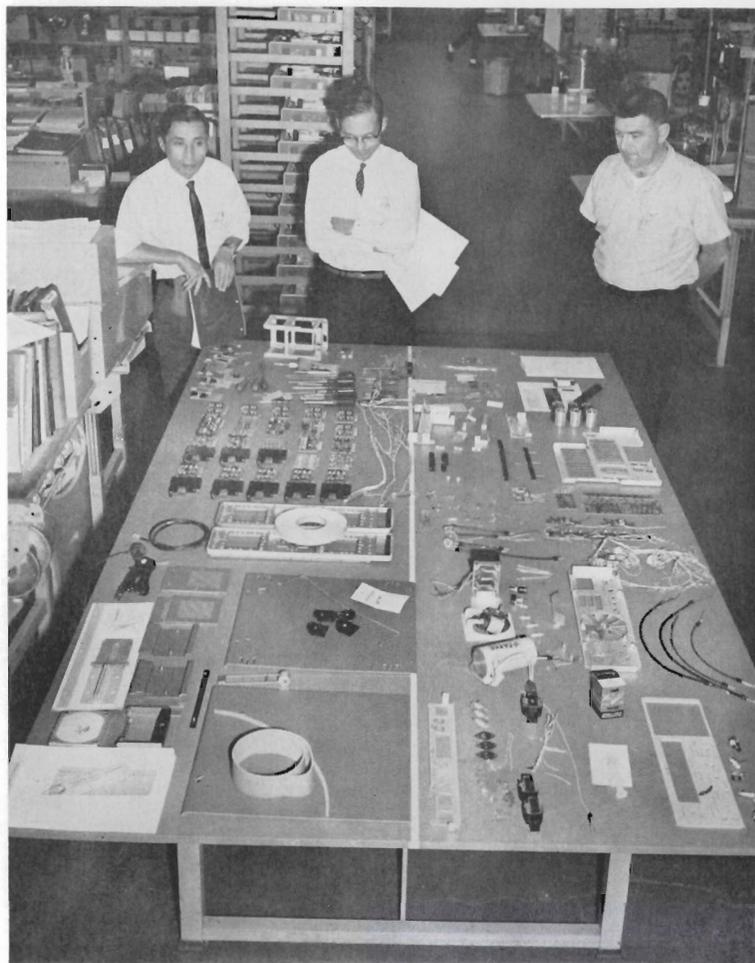
HP Booth in Toronto Draws 3,000 IEEE Visitors

THE BI-ANNUAL IEEE SHOW in Toronto, September 30-October 2, featured 180 exhibitors, and the Hewlett-Packard (Canada) Ltd. booth turned out to be a major attraction. More than 3,000 visitors to the booth showed particular interest in the 8614 signal generators, 5100/5110 synthesizer, 140A and 175A oscilloscopes, 692B sweepers, and a stereo display using the Boonton 219A, 202H, and a commercial receiver. Manning the booth were Bob Sayliss, Chuck Williams, Barry Saper, Ralph Haywood, Ted Grunau, and Dave Salter of HP (Canada) Ltd. Also on duty were Marty Nauer of Dymec and Bob Hall and Frank Culver from Loveland.



NEWS IN FOCUS

Production experts from Yokogawa-Hewlett-Packard, Ltd., of Tokyo, get "3-dimensional training" in instruments soon to be produced in Japan. Left to right: Yosifusa Yamada and Morisaburo Katakami are shown at Palo Alto with Jack Carlozzi, production line leader, who helped explain each part in HP's 5243 and 5245 counters and plug-ins. Having instruments broken down has proved a valuable training supplement to conventional "lecture and reading" methods.



Harrison Laboratories' new plant at Berkeley Heights, N.J., is taking shape on schedule. With the roof completed and walls up, work can continue inside during the coming winter months until completion in March, 1964.



Erik Ferner (right), HPSA's Swedish distributor, describes instruments to Daniel L. Goldy, deputy assistant secretary for business development in the U.S. Department of Commerce, during opening of the American Pavilion September 27 at the Stockholm Technical Fair. Two hostesses look on. By closing day a week later, 35,000 visitors had wandered through the 10,000-square-foot building.



people on the move

HP—PALO ALTO

Cliff Edginton, customer service instrument repairs staff—to regional order supervisor, marketing department.

Al Hockley, sales department staff, Paeco—to assistant employment supervisor, personnel department.

Al Inhelder, manager, industrial design staff, Microwave division—to manager, central industrial design department.

Tom Lauhon, central industrial design staff—to manager, industrial design staff, Microwave division.

Charles Lundeen, engineer, Advanced R&D—to in-plant engineer, Oscilloscope division.

Johnny Morton, production manager, F. L. Moseley Co.—to production manager, Frequency & Time division.

George Newman, European accounting manager, HPSA—to assistant treasurer, corporate finance.

Norm Overacker, service engineering, customer service staff—to advanced circuit design, Oscilloscope division.

HP—HARRISBURG

Don Tenney, field engineer, Unitec Corp., Timonium, Md.—to field engineer, Harrisburg office.

HP ASSOCIATES

Robert Archer, technical staff, Bell Labs, Murray Hill, N.J.—to department head, R&D.

Stan Barski, foreman, Pacific Semiconductors—to supervisor, semiconductor production.

Reinhart Engelmann, physicist, CBS Laboratories, Stamford, Conn.—to electroluminescence physicist, R&D.

Robert Hall, advanced research engineer, Sylvania Electronic Defense Lab—to applications engineer, R&D.

NEELY

Joe Gattuso, engineer, Northrop-Ventura—to staff engineer, North Hollywood office.

Jerry Olson, publications technical advisor, Hughes-Fullerton—to staff engineer, North Hollywood office.

Glenn Sharp, staff engineer—to senior staff engineer, North Hollywood office.

ROBINSON

Bark Bush, field engineer, Sonco, Inc.—to field engineer, Philadelphia office.

Dick Stone, staff engineer, West Conshohocken—to field engineer, Camp Hill territory.

COLORADO SPRINGS

Ted Statler, engineer, Oscilloscope division—to in-plant production engineer, Colorado Springs.

DYMEC

George Kan, manager of service engineering, HP customer service—to head, materials engineering department.

George McClelland, supervisor, wiring, assembly, and test—to project engineer, manufacturing engineering.

Gerry Priestley, central industrial design staff—to manager, Dymec industrial design staff.

LOVELAND

John Smethurst, Packard-Bell Computer Co., Anaheim—to purchasing department staff.

Ed White, staff engineer, Neely-San Carlos—to marketing department staff.

HP FRANCE

Bob Podevyn, International Operations staff—to field sales manager, HP France.

Andre Renard, International Operations staff—to manager, HP France.

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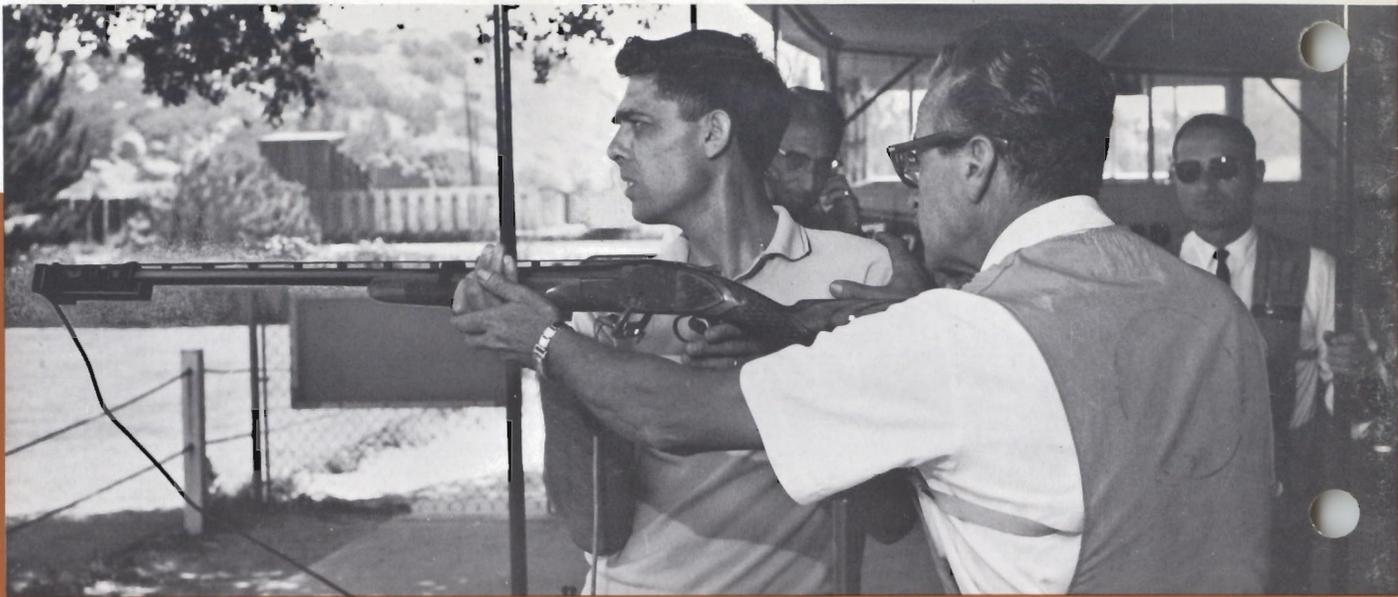


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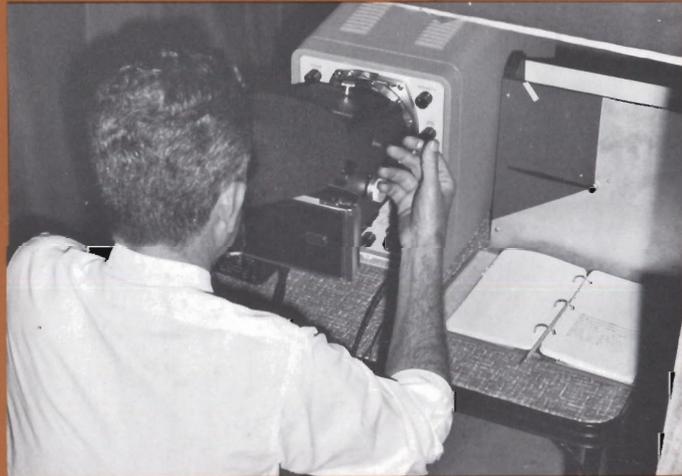
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 HEIKE WOLLRAB, Hewlett-Packard GmbH

"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind . . ." LORD KELVIN (1824-1907)



BIG BANG, LITTLE KICK



TO THE MAN who knows shotguns, recoil is the aftermath of every firing and can be the cause of a painful shoulder after a day in the field. At least that used to be true until Hollywood inventor Ralph Hoge figured out how to make a shotgun's kick more like a kiss. He took a large measure of inventive genius, a thorough knowledge of shotguns and hydraulics, and developed a gadget now called a Hydrocoil. He made several of them, in fact, each one better than the one before, and measured their effectiveness with an HP 130B scope purchased through Neely's North Hollywood office. Neely service technicians Tom Winker and Al Petretto showed him how to use the scope and set up a triggering mechanism. Hoge's Hydrocoil, which is installed in the gun stock, was shown to reduce a 400-pound backthrust to 40 pounds. In top photo, Hoge fires a test round to check recoil. In lower photo, a technician gets pictures of scope readings. Hydrocoil is literally a million-dollar idea, since that's reportedly the amount the Winchester people paid him for it.