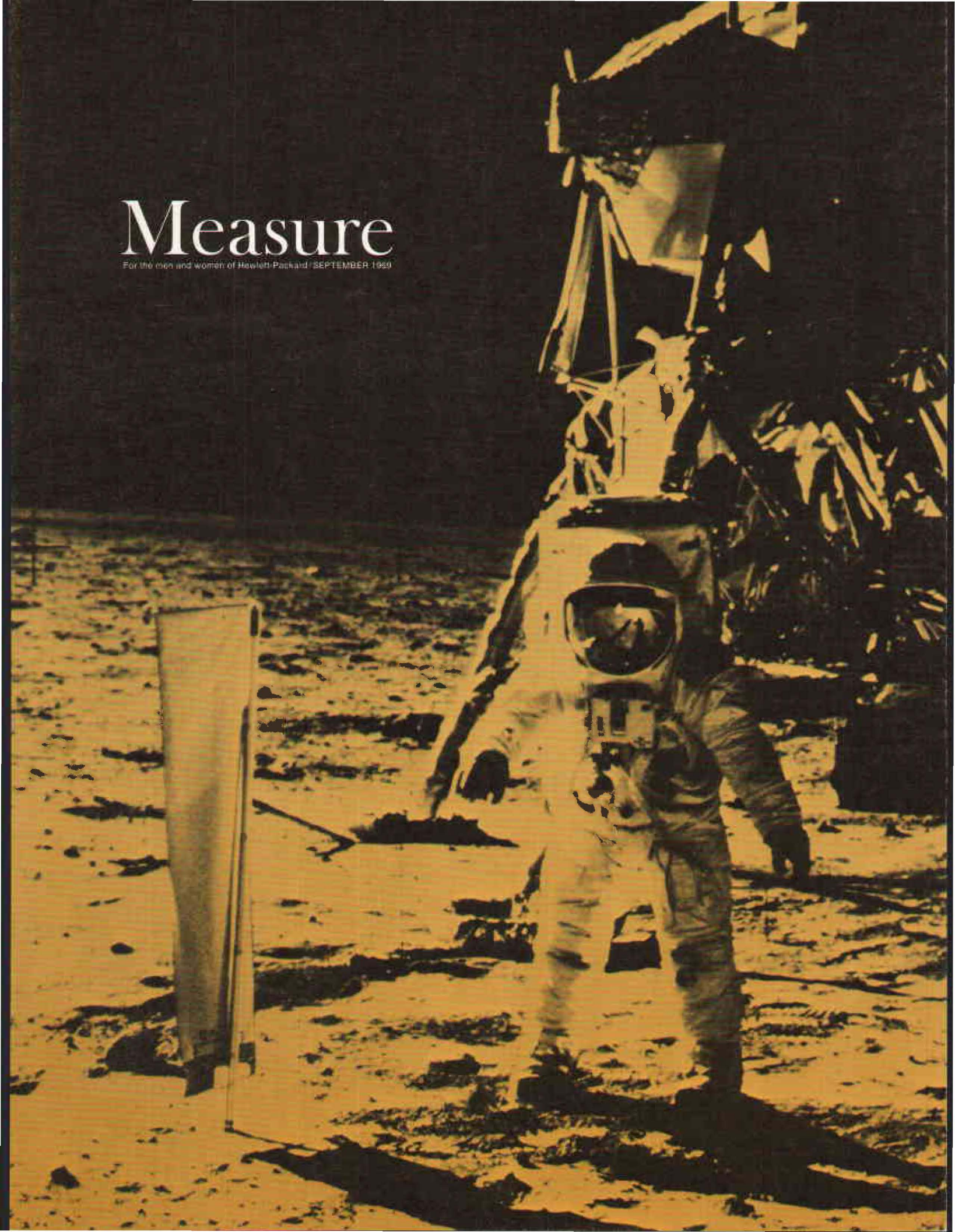
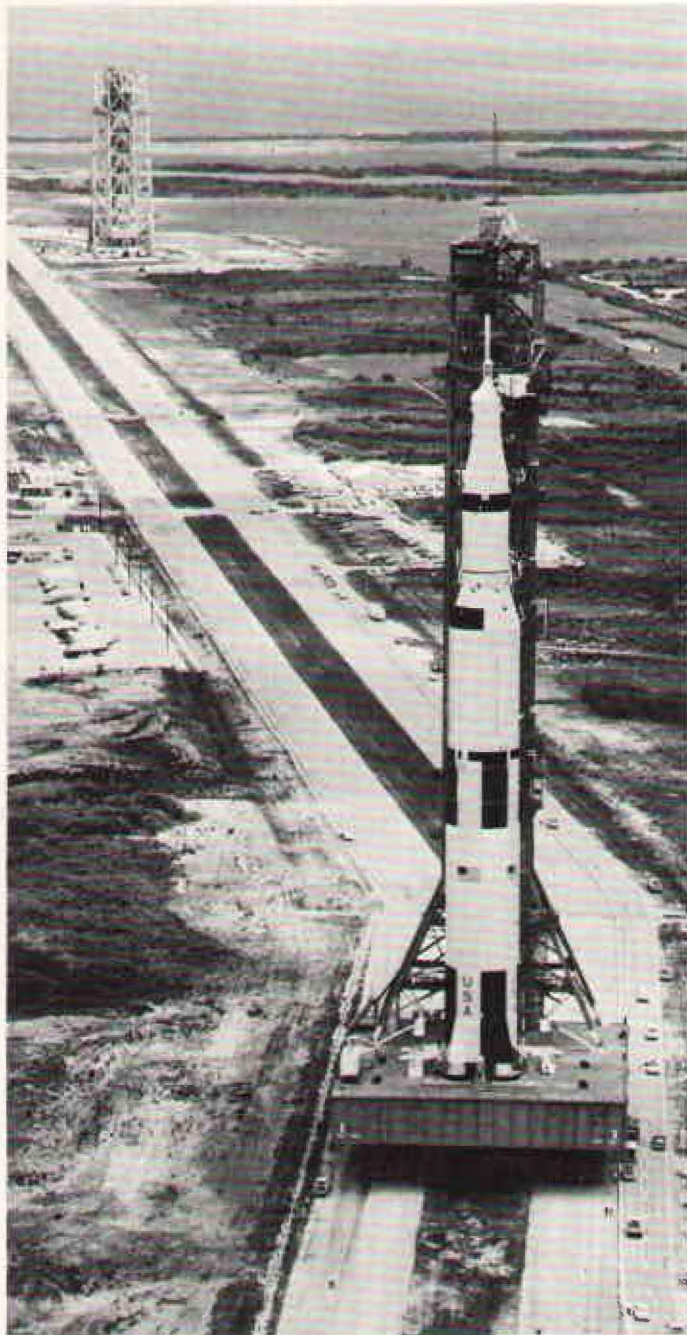


# Measure

For the men and women of Hewlett-Packard / SEPTEMBER 1969







At one mile per hour, Saturn V **Apollo** moves along crawlerway to launch complex at Cape Kennedy. The three lower booster stages plus the instrument unit were developed at Marshall Space Flight Center, Huntsville, Alabama, with HP furnishing an extensive array of test equipment. For example, prior to joining the company, P. K.

Weir and Siler Manley of the Huntsville office designed the very complex facility, employing HP data acquisition system, used for pressure testing of liquid oxygen tanks. Some other important Huntsville applications: Waltham recorders for data communications between Marshall and the Cape; HP scopes in launch support operations by the Computation Lab; data acquisition systems for monitoring accelerometers and strain gauges by the Propulsion and Vehicle Engineering Lab; data systems, signal generators and power meters in the Astrionics Lab used in development of the Apollo guidance unit and the on-board RF system; and data systems and digital voltmeters at the Static Test Stand.

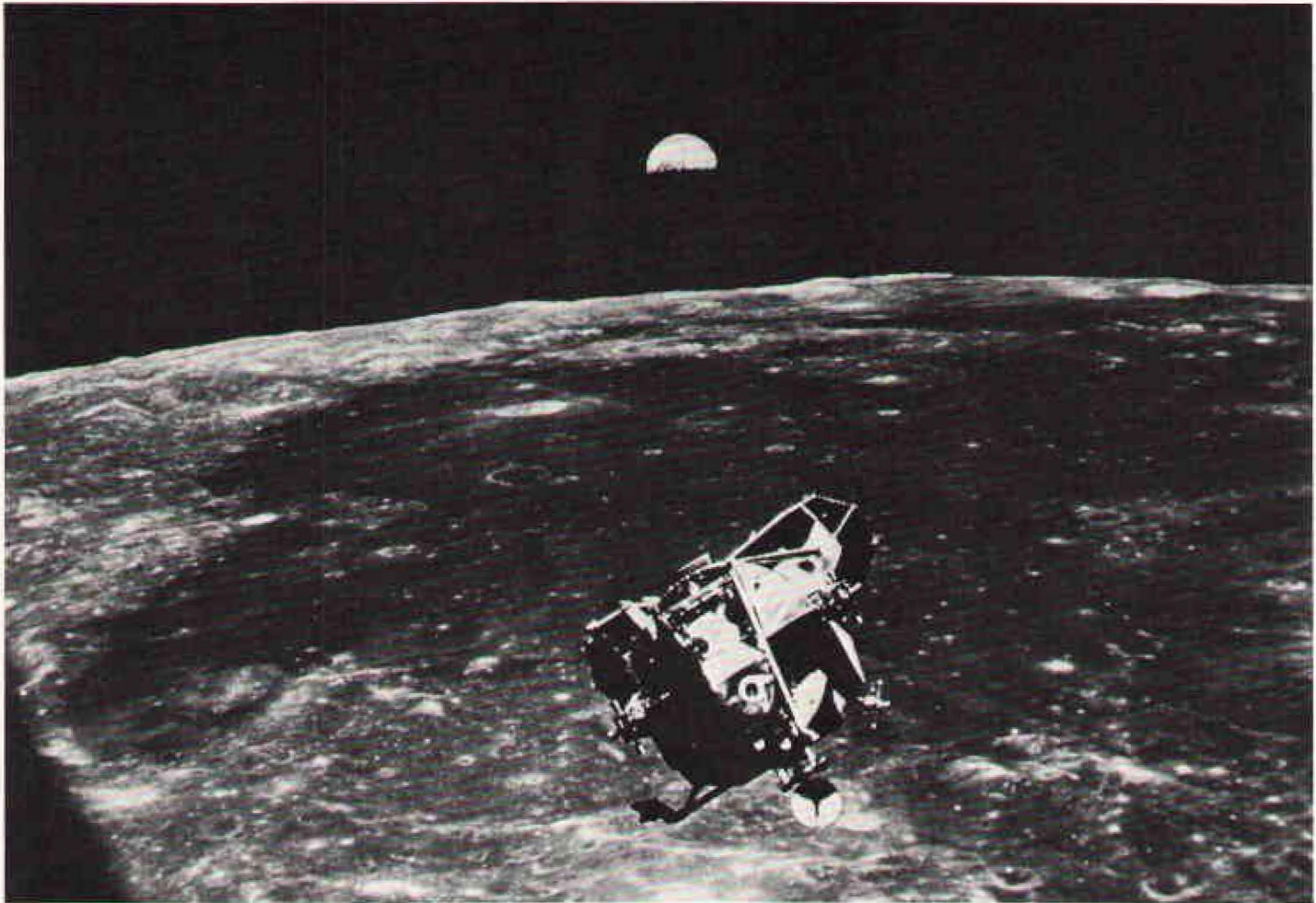
*HP was there,  
with Armstrong and Aldrin,  
and during the many other steps  
that took man to the moon . . .*

## The giant step

□ For a couple of magic hours last July, the world stood still long enough to watch the men on the moon walk and run and leap right into history. Only the finding of a bottled message adrift in the sands of the Sea of Tranquility could have provided more excitement and suspense than the landing and explorations by Armstrong and Aldrin, and finally their rendezvous with Mike Collins. No such cosmic mystery occurred, of course. Everything went precisely as programmed – like atomic clockwork.

As many people in the company know, HP cesium beam frequency standards were indeed the atomic clocks that kept the worldwide Apollo network of 18 tracking stations and communications systems synchronized to within a few thousandths of a second. In turn, the precise workings of the earthbound systems made an extremely important contribution to the navigational accuracy of the Apollo 11





Here, on July 17, the ascent stage of **Eagle** approaches for its brief rendezvous with **Columbia**. Earth is seen above the lunar horizon. HPA diodes and switches on the lunar module were very much in action during this critical docking maneuver as well as in astronaut communications during the moon walk. In addition, scores of HP instruments were employed in testing and calibrating the LM at Cape Kennedy prior to launch. In testing the various communications, guidance and tracking systems, Cape scientists used HP frequency synthesizers, signal generators, scopes, analog and digital recorders, and data acquisition systems. Transmissions from the spacecraft were recorded on a variety of HP recorders.

spacecraft. At all times save when hidden from earth by the moon, its position was known to within a few feet. Had any navigational problems developed during any of the many critical maneuvers, particularly the docking and lunar departure phases, Houston Control would have known about it almost immediately and been able to analyze and direct corrective action.

However, as MEASURE found in checking with the various divisions and sales offices, Hewlett-Packard's involvement in the Apollo project goes well beyond precision frequency standards. It appears, in fact, that products of almost every division have been employed on behalf of the NASA space-flight programs.

As a prime example, Al Wilson, quality assurance manager of HP Associates, wrote the following at the very time Apollo 11 was heading back from the moon: "As you

follow the progress of Apollo 11 on its historic flight to the moon, you can be proud of the fact that HPA has helped make it possible. Our Hot Carriers, PIN, Step Recovery Diodes and a PIN switch are there as they were in the other Apollo flights. Our diodes are also in the Eagle. After it landed on the moon, some of them were with Armstrong and Aldrin in their communication system during their walk on the moon."

Those HPA products were the subject of a commendation from one of the contractors responsible for the communications systems. Paul Leinheiser, purchasing manager of Motorola Inc.'s Government Electronics Division sent the following wire to general manager Dave Weindorf: "The Motorola S-band transponder and up-data link on the Apollo command module and the S-band transceiver on the lunar module performed flawlessly. These units provided the

*(continued)*





Launch Control Center at Cape Kennedy, shown here, and Mission Control Center at Houston both were equipped with a wide range of HP gear for communications systems and calibration facilities. The New Jersey Division, for example, provided precision picture monitors, power supplies, FM-AM telemetering signal generators and RF vector impedance meters.

## the giant step

only voice and television link our astronauts had with earth after their spacecraft reached a point 30,000 miles from earth, and transmitted the first voice and TV pictures ever sent from the moon to earth.

"We at Motorola commend you and your dedicated employees who helped make this possible. Without your able support and constant attention to the reliability of your company's vital components required to produce this equipment we seriously doubt that the Apollo 11 mission would have been successful. Our sincere thanks, congratulations, and a hearty well done . . ."

Well, not all HP applications could be so spectacularly or directly linked to the moon landing. Yet, in the buildup of the nation's space capability following Sputnik, every step was related to the next. As the captions to the accompanying photos show, HP products were vital in many of the most important steps that led finally to those first footsteps on the moon itself. □





NASA's key tracking stations around the world, including this **Apollo** antenna site at Goldstone, California, are all veritable storehouses of HP equipment. Foremost, of course, are the cesium beam precision frequency standards that synchronize the entire NASA network to within a few milliseconds. Typically, the sites also employ many frequency synthesizers, counters, power supplies, amplifiers, voltmeters, signal generators, oscillators, picture monitors, recorders, and desktop calculators.

Meanwhile, moon rocks more precious than any earthly gem were being analyzed at a variety of labs around the country. At Pasadena, Jet Propulsion Lab scientists planned to use a new HP signal averager in their investigations.



Back on Earth, and rigidly screened from public contact in their mobile quarantine facility aboard the USS **Hornet**, Astronauts Armstrong, Collins and Aldrin were greeted by the President. Many observers have called it the greatest adventure of the 20th Century and an inspiration for unity to a world so near the boiling point at so many places. At the same time, new goals were pondered — and the **Mariner** cameras showed one likely target — Mars — to be of great scientific interest but not much living appeal.



# Meet the salesmen's salesman

□ Hard to believe, but there are HP salesmen who may never have taken an order, spend most of their time in the office, and see a customer only infrequently.

But such is generally the case of the factory sales engineer. It's his job, as a member of the divisional marketing team, to work closely with the field sales engineers of one or more of the sales regions. One of his roles is to serve as technical expert, expediter and trouble shooter. Another is, in fact, to 'sell' these same field people on the idea of giving more attention to the sale of his division's products.

That last role — selling the sellers — may well be the toughest and most important of all. That's particularly so if you happen to be a member of a division that manufactures a range of lower-priced instruments for a highly competitive market, as the New Jersey Division does with its line of power supplies.

Marsh Johnson, sales manager at the Berkeley Heights operation, believes the division sales engineer has got to display the same kind of care and follow-through in helping the field salesman as the field man does in relation to his customers.

"We're one of the four top manufacturers of power supplies in the U.S.," he said. "We also have to compete with six more smaller producers, and then there are over 100 firms that make DC power supplies for special uses. The average selling price of our products is around \$350 versus something like \$1,500 for the whole HP line.

"Our basic goal, therefore, is to have the customer think instinctively of HP when he has a power supply need. We want him to be aware that we have a complete line and that we can satisfy any power supply requirement."

How does someone become a division sales engineer?

In the case of Bill Dudley, whose title is "applications/sales engineer — power supplies," it perhaps goes back as far as summer employment at the Berkeley Heights plant — a job that helped finance his studies at Rose Polytechnic Institute in Indiana. Following graduation as an EE and two years in the U.S. Army, Bill joined full time as a design engineer in 1965. He immediately became involved in the development of the bench power supplies.

Bill recalls that "About two years ago, Art Darbie, the marketing manager, said he wanted to add people who

had strong technical backgrounds to the marketing department. He also said these people should have the desire and temperament to deal with people. The technical qualifications were needed in helping to dig into problems and help the customer, because we are not so much selling instruments as solutions to problems the customer has.

"It's a real contrast to design engineering. It's broader. You get highly involved with people in the field. You get to know more about the division and the company as a whole. Occasionally we do come in direct contact with customers. It's problem solving — but it's also selling, and this I enjoy.

"I spend quite a bit of the day on the phone, generally talking with Neely or Midwest field men since those are the regions I cover. You know when the phone rings it's a problem, because obviously no one calls us to say everything is O.K. I'll bend over backwards to give an immediate answer."

There have been times when, because of an urgent need by the customer, Bill has worked personally on finishing up an instrument, packed it or helped the shipping people get it ready, made sure it went aboard the aircraft, and then called the customer to advise him of the flight.

But Bill's responsibilities go well beyond the immediate tasks of selling. He is expected to develop ideas and recommendations on new products and applications, to recommend advertising and sales promotion strategy, to coordinate matters between factory and field when customers request modifications to products, to detect when a problem is one of service rather than factory, and to undertake product training missions including field trips several times during the year. Also, Bill tries to keep things moving with sales communications — writing application notes and sales amplifiers, such as the amplifier he is now writing on constant-current power supplies.

Meanwhile, Bill is pursuing a master's degree at Newark College of Engineering, with a year of night studies to go under the GI Bill.

One of these days, Bill Dudley — like so many before him — will face the inevitable question: Whether or not to accept, or seek, a field sales position in one of the HP regions? For that does seem to be the natural progression of a great many of HP's sales-minded engineers. When that time comes, Bill no doubt will have the right answer. □





As a division sales engineer, New Jersey's Bill Dudley will answer many phone calls and undertake many services during the course of a day, all in the cause of selling. But his contact will be mainly with HP's own field sales people.



# Arrivederci doping

*In this year's running of the tortuous Giro d'Italia,  
it was 'goodbye' to illegal pep pills, thanks to the analytical  
enterprise of an HP Italiana team.*





□ That day, the 13th leg of the 1967 Tour de France, started badly for Tom Simpson, England's top professional cyclist. Drained by the 150-mile 12th leg and the victim of a sleepless night, he popped a few pills to get the new day going. Later, as he pumped toward the summit of the 6,000 foot climb in 90° heat, he weaved and faltered. Finally he collapsed in a coma and died. One year later a French soccer player was about to shoot a goal when he, too, collapsed and died. One month later, another cyclist . . . Well, he also died, as have other unfortunate athletes seeking the fountain of youthful strength and endurance in amphetamines.

For drug taking, far from being the exclusive province of turned-on youth or addicted adults, has indeed become a major phenomena in the world of sports. In training rooms and stables around the globe, the quest is for the compound that will magically improve performance or fight pain and fatigue. Only in the last few years have a few voices of conscience raised questions not only of the physical threat poised by doping but also concerning the moral position of performances achieved by drug stimulation or the repression of stress symptoms. Recently Hewlett-Packard became very involved in these questions, as de-

scribed here for MEASURE readers by Piero di Camillo, sales promotion manager for HP Italiana at its Milan headquarters:

"Italy is famous for its art treasures, for its beautiful cities, for its fascinating landscapes, for the cheerful temperament and the lively fancy of its people, for the delicious foods and wines.

"Millions of people travel there each year to enjoy these pleasures. You too would probably be excited by the prospect of spending a month touring Italy. But would you be willing to do it on a bicycle?

"Yet, for the past fifty years, nearly 100 men have continued to meet in May for the start of their tour of Italy by bicycle: the Giro d' Italia. These men are professional racers whose tour is far from pleasurable -- a severe contest which day after day builds in hardship along the 3,000 miles to be covered in 25 days, climbing hills as high as 6,700 feet, racing now in the hot southern sun, now in the snow of the Alps.

"For this month, nearly everybody's attention is drawn by this contest which in Italy and other European countries enjoys much the same popularity as baseball in the U.S.

*(continued)*



HP's mobile demonstration lab became famous in Europe as a result of its "anti-doping" role in the 3,000-mile Giro d'Italia. Each day, samples randomly selected from the 100 original starting cyclists were tested in the five GC units. As it happened, one such test showed the presence of amphetimine use by the leader, who was promptly disqualified amid much furor.

Professional bicycle racing, very big in Europe, is only one of the many sports in which pep pills and other drugs have gained a hold as athletes strive for ever-greater performances. HP's mobile "anti-doping" lab employed gas chromatographs to detect the use of illegal stimulants by cyclists in the famed Giro d'Italia.





The sheer grind of 30 days and 3,000 miles on a bicycle, through the heat of the valley and the cold of the Alps, shows itself in the wet and weary faces of these racers. All too often, a pep pill seems the only answer to getting started the next morning, or continuing that last stretch of an uphill day. Unfortunately, several well-known cyclists as well as other athletes have died from amphetimine use.

The HP Italiana "anti-doping" team on hand during the progress of the Giro included, from left: driver Roberto Fabiani, GC technician Bruno Gherardi, sales promotion manager Piero di Camillo, and analytical products manager Enzo Fontana.



## arrivederci doping

Indeed, because of its huge popularity and the passions it stirs up, the Giro has become a social institution: in the turmoil following World War II, the exploits of rival champions Coppi and Bartali served to siphon off the heat of political controversy, and thus, it has been said, cool the Communist party's takeover attempts.

"How did Hewlett-Packard become involved in the Giro? It took an idea, some imagination, and a bit of luck. The whole matter began when Enzo Fontana, analytical products manager, and I realized that we had the solution to the burning question of doping, that is the use of illegal drugs and stimulants. The way to detect racers who took drugs would be to make analyses through gas chromatography of urine samples taken from racers chosen at random.

"Since the punishment for a "doping" offense is banishment from the race, the problem for a competition such as the Giro is to know the results of the analyses of each day's leg before the start of the next day's race. Here the solution we developed was this: a chemical demonstration bus, borrowed from Geneva headquarters, was completely outfitted to run five analyses a day, using three HP 5750 gas chromatographs. The mobile lab, as it was called,

covered the entire Giro route, making a total of 105 analyses.

"Great interest was aroused by the Lab, both among people and the press. The most astounding development, of course, and one that made everybody talk about HP instruments, was the banishment of the champion who at that moment was the leader of the race.

"Nobody in Italy questioned the validity of the analyses and the reliability of HP instruments. On the contrary, it was an occasion for much favorable comment and publicity. Enzo demonstrated the 5750 to the national television audience; apart from his strong southern (Italian) accent, it was a perfect demonstration. Our customers were mad with enthusiasm for it.

"But the leader's backers were not so easily satisfied, so an Italian government inquiry, sponsored by the Health Office, was created in order to evaluate the testing. To that end, the HP bus and its equipment were officially inspected by the authorities and then a formal announcement was released to the press, radio and television: the HP instruments, after 25 days of running, were found to be 100 percent efficient and reliable."

Dulcis in Fundo, as the Romans used to say. How sweet it is. □



# Job Fair

**"I don't know what we  
might have done without it..."**

□ Job Fair sounds as if it might be a happy hunting ground for job seekers. In the case of some 1,200 youngsters in the mid-Peninsula area south of San Francisco, more than a third of them minority youths, it was all of that and more. Job Fair for many of them these past two summers has meant the opportunity – desperately needed all too often – to earn enough to start or continue college programs and other career goals.

Job Fair was actually a school day at one of the local high schools, a day set aside for a schedule of meetings between young people from the school district and the representatives of a score of mid-Peninsula companies. Career opportunities were explained and demonstrated. But mainly it was a matter of matching students with the summer jobs that would be available. Several hundred students were hired on the spot. Others were advised where and how to apply at the various firms. Hewlett-Packard signed on 55 boys and girls from the 1969 Job Fair.

Ray Heringer, head of the employment office at Ravenswood High where the Fair was held and which worked closely with the Mid-Peninsula Business Leadership Council in sponsoring the day, feels it already has had an important impact.

"Before Job Fair got going last year, normally about 100 'east-of-Bayshore' kids got service jobs for the summers," he said. "Job Fair has brought in more than 500 jobs to this area. At a conservative estimate of \$700 income per job, that's big money here. You could see the effect right away just in the better clothes worn during the past school year. Really, it's done all kinds of good things!"

MEASURE found that every HP division in the area had Job Fair people aboard for the recent summer. Likewise, almost all other HP organizations across the country participated in one form or another of summer employment programs, usually with emphasis on hiring some minority students. Almost without exception, comments by supervisors were strong in praise of the jobs being done. The following is a sampling of what Job Fair holders themselves had to say about it:

*(continued)*

*A modest scholarship is going to get Nat Brooks into Claremont Men's College in Southern California this Fall.*

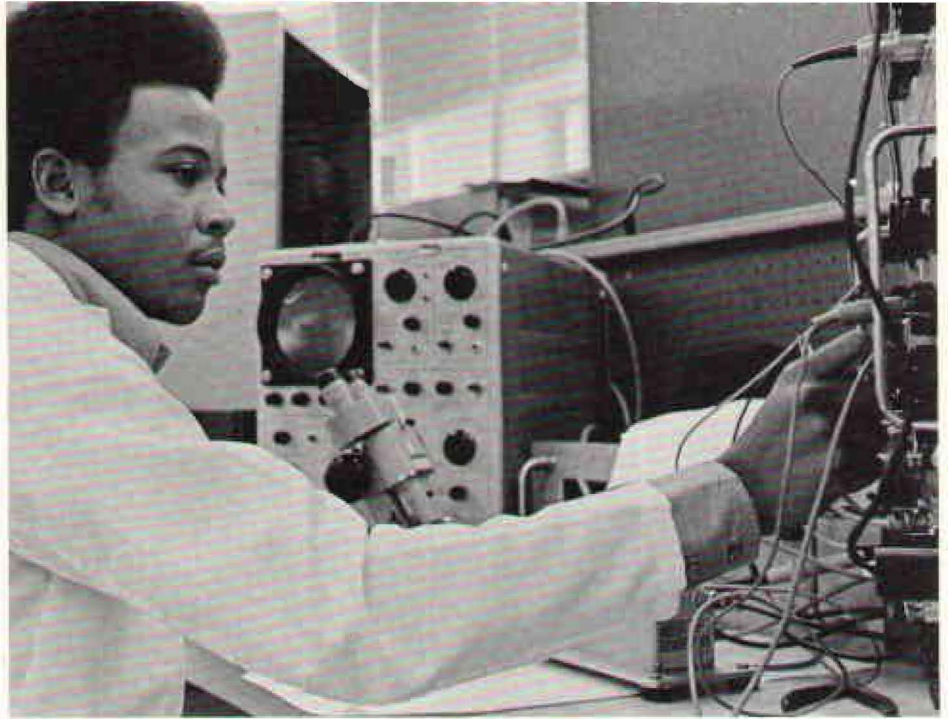
*But what about the clothes, the extras and the pride that a measure of independence brings? That's what Nat's job was all about in the Manufacturing Division warehouse this summer.*

*"It's not really teaching me useful career things," he said, "but it's a fine summer job. Most of my friends from Ravenswood got jobs through Job Fair, so it was very helpful!"*





## job fair



*The experience of actually working with electronic concepts and equipment is very important to Emil Robertson. With two years of electronic studies in high school, he plans to enter college in Arizona next year and continue toward an engineering degree. Working with diodes at HPA – packaging, capping and testing them – has given Emil a lot more experience than he expected. “After I got here I recommended two friends should try HP. They were hired on the spot by Maintenance.”*

*The whole spectrum of job experience – the money, the people, the various kinds of work – is important to Gwen Hunt. The money she earns in the tape head department at Mountain View Division will help Gwen through her first year of math and business education studies at Mount Angel College in Oregon. Last year as a senior at Ravenswood she worked at a telephone exchange, but wanted something more challenging. Through Job Fair, she found it.*

*June Kunitomo has the face of a doll – and the determination of a tiger. You know this is true when she begins telling you about the loan she took out to get her through the first year at Chico State College, California. And now she is working in Manufacturing Division’s Building 15 to help pay off the loan, pay her car insurance, and save for next year in college, and eventually dental technician school.*







*Rose Dulay, whose parents came from the Philippines, has been fascinated with astronomy since childhood. "I was thrilled by the moon landing, so I would like to take lots of math and science, and teach at the college level." Her job of soldering coax cable connectors at Santa Clara Division will help her during the coming year of studies at Pomona College. The work she does is not easy, but Rose figures it is good discipline for a student.*



*For Moseeta Brown, her summer job of wiring harnesses on the spectrum analyzer line of Microwave Division was essential to her plan of living on campus at San Jose State beginning this Fall. The academic environment is important for serious studies, Moseeta feels. Eventually she hopes to teach business education at the high school or college level.*

*Roy Williams has a close-to-home hero — his uncle who works as a master mechanic in a car assembly plant. In the course of Roy's sixteen years, he too has acquired a love for the lore and mystique of the automobile. So he's aiming at an auto engineering career requiring years of apprenticeship plus some college. More immediately, Roy needs a job to pay the insurance premium on his '63 Pontiac that gets him to and from the Cupertino Division where he helps build and test power supplies for the 2115 computer line.*

*"I don't know what we might have done without Job Fair — or something like it," said Camille Ferguson, summer employee at Customer Service Center's publications department. "I really needed it because the grant I received for Pitzer College at Claremont, California will cover only about half my basic expenses." Camille also got her first job experience through last year's Job Fair — as a Girl Scout camp counsellor. Her goal is elementary school teaching in Palo Alto.*





# News in brief

**Palo Alto** — The company reported a 20 percent gain in sales and a 23 percent gain in earnings for the nine-month period ended July 31, 1969. Sales totaled \$234,686,000, compared with \$196,114,000 for the first nine months of fiscal 1968. Net earnings amounted to \$17,814,000, equal to \$1.41 a share on 12,629,343 shares of common stock outstanding. This compares with earnings of \$14,529,000, equal to \$1.16 a share on 12,546,101 shares, during the corresponding period last year. In announcing the results, President Bill Hewlett said that business has been "uniformly good" throughout HP's various product groups and noted that incoming orders for the nine-month period totaled \$265,300,000, up 27 percent over the corresponding period of 1968. "Orders during the third quarter totaled \$100,929,000, a 33 percent increase over orders of \$76,153,000 during the corresponding quarter last year," he said. Third-qr. sales amounted to \$82,727,000, compared with sales of \$68,601,000 in the corresponding period of 1968. Earnings for the

quarter totaled \$6,126,000, equal to 48 cents a share. This compares with earnings of \$5,626,000, or 45 cents a share, in the third quarter of 1968.

**Palo Alto** — A restructuring of HP European operations, in order to prepare for expected sales growth in that area, has been announced by Bill Doolittle, HP vice president for international operations. The restructuring, to take place gradually, calls for each product group to have a European general manager stationed in Geneva who will report directly to the group vice president. These managers will coordinate European manufacturing and marketing activities for their products. Eventually a European Operations Office will be established to administer all HP manufacturing and marketing activities in Europe. The operations director will report to the international vice president. As a first step, Fred Schroeder has been appointed European general manager for the Data Products Group. Coordinating data products activities

in Europe, Schroeder will report to group manager Carl Cottrell in Cupertino. Reporting to Schroeder as European data products marketing manager will be Franco Mariotti. Eberhard Knoblauch will replace Schroeder as general manager of HP GmbH. Knoblauch was formerly GmbH business manager.

**Palo Alto** — International Operations has announced plans to consolidate the Hewlett-Packard Inter-Americas and Asia, Africa, Australasia sales regions into one region, effective November 1. Vice president Bill Doolittle said the new region will have a sales volume that will make it economical to structure the organization along lines similar to U.S. and European regions. Dick Mobilio, recently appointed manager of the AAA Region, will be general manager of the combined international sales region. Other assignments include Neil Carlson to manage the Latin American area, Ralph Hayward to continue his responsibilities for Canada, and Dick Love to become regional business manager.

## People on the move

**Corporate** — Carl Finfrock, to credit manager, from corporate leasing.

**HP Labs** — Len Cutler, lab director, physical research lab, from same, F&T East; Joe Holloway, to section leader, physical research lab, from same, F&T East; Richard Lacey, to member technical staff, physical research lab, from physicist, F&T East; Robert Lorimer, to master glass blower, from Santa Clara, frequency standards glass shop; Lou Mueller, to member technical staff, physical research lab, from physicist, F&T East; Gene Reynolds, to technician, electronic research labs, from chemical technician, Operations West/Electro-sensitive paper; Gary Seavey, to associate engineer, physical research lab, from same, F&T East.

### Data Products Group

**Cupertino** — Don Connelly, to environmental test engineer, quality assurance, from same, Microwave QA; Bob Dell, to associate engineer, hardware development, from same, HP Labs.

**Mountain View** — James Barnes, to member technical staff, R&D tape section, from same, HP Labs; Jack Olney, to accountant, from corporate credit manager.

**Palo Alto** — Jerry Krueger, to technical

writer, from same, Systems Division; Herbert Rost, to marketing staff, from field engineer, VGmbH, Munich.

### Electronic Products Group

**Group** — Cornelia Sluis, to personnel assistant, from same, corporate personnel.

**HP Associates** — Gerd Hellmann, to manufacturing supervisor, semiconductor R&D, from Microwave components; Volkmar Schaldach, to marketing staff, from HPA/microwave specialist, VGmbH, Frankfurt.

**Manufacturing** — Jerry Heigl, to supervisor, internal marketing, from HPA.

**Microwave** — Dick Arey, to systems programmer, quality assurance, from corporate management services.

**Santa Clara** — Alan Steiner, to marketing manager, from product manager, Microwave marketing.

**Systems** — Ross McCann, to technician, manufacturing fabrication, from Santa Clara R&D; Chuck Reichel, to finance staff, from corporate accounting services.

### Operations

**Loveland** — Frank Yockey, to member technical staff, R&D, from Santa Clara R&D.

**Avondale** — Sue Bunton, to personnel manager, from personnel staff.

**Eastern Sales Region** — Ted Doyle, to district manager, Data Products, Syracuse/New England Areas, from account manager, Lexington; Paul Guercio, to district manager, Data Products, Philadelphia/Washington Areas, from district manager, Baltimore; Jim Hall, to district manager, Rockville, from account manager, Rockville; Rich Jobin, to field manager, Endicott, from field engineer, Rochester; Jack Petz, to district manager, Rochester, from account manager, Rochester; Joe Skortoski, to account manager, Rockville, from field engineer, Rockville; Russ Stewart, to district manager, Baltimore, from field manager, Endicott.

### International

**HP-VGmbH** — Heinz Böff, to group leader, calculator sales, Frankfurt, from calculator specialist; Klaus Dziubek, to tape and acoustic systems specialist, Frankfurt, from service engineer, HPSA Geneva; Peter Frye, to branch office manager, Berlin, from field engineer, Berlin; Walter Geierhaas, to branch office manager, Munich, from field engineer, Munich; Peter Greve, to group leader, computer sales, Frankfurt, from computer field engineer, Hamburg; Detlef Niemeyer, to product sales manager, Frankfurt, from branch office manager, Berlin; Peter Schöltzel, to specialist, digital analyzers, Frankfurt, from field engineer, Böblingen.



## From the president's desk



Certainly one of the great accomplishments of our time was the landing of astronauts Aldrin and Armstrong on the surface of the moon. It was a thrilling experience for the millions of people who followed the flight of Apollo 11. To think that man was actually walking on the moon was incredible enough; to have this feat televised and sent back a quarter of a million miles through space was for me the capstone. Admittedly, this one aspect was only a small part of the Apollo program, but it involves a technology that I understand and appreciate. And it emphasized to me the fantastic scientific contributions that are making the space program possible. It was an absolutely astounding demonstration of our technology.

In another part of this issue of MEASURE, editor Gordon Brown has written an article that discusses the part Hewlett-Packard played in the Apollo program. One group of our instruments mentioned in the article, the cesium beam frequency and time standards, were of critical importance to the successful navigation of the Apollo vehicles. It is interesting to note that these instruments meet our standard HP commercial specifications and yet were good enough to be selected by NASA for this critical role. This is a very great tribute to the commercial quality of our products.

It is exactly this kind of quality on which the company has built its reputation. Quality, however, is a perishable commodity, and unfortunately an incident of poor reliability in any one of our product areas can tarnish the entire corporate image. Quality is not a new subject for discussion. The problem is always with us, and can be overcome only by all of us recognizing the extreme importance of having "quality" associated with all HP products.

I think this whole subject takes on increasing importance as we move from the era of relatively simple instruments, used by themselves, toward the more sophisticated grouping of instruments. A good example is the network analyzer, which basically is an assemblage of standard HP equipment. Such system grouping of instruments compounds our reliability problem, for if one instrument in the system fails then, in many cases, the total system is out of service.

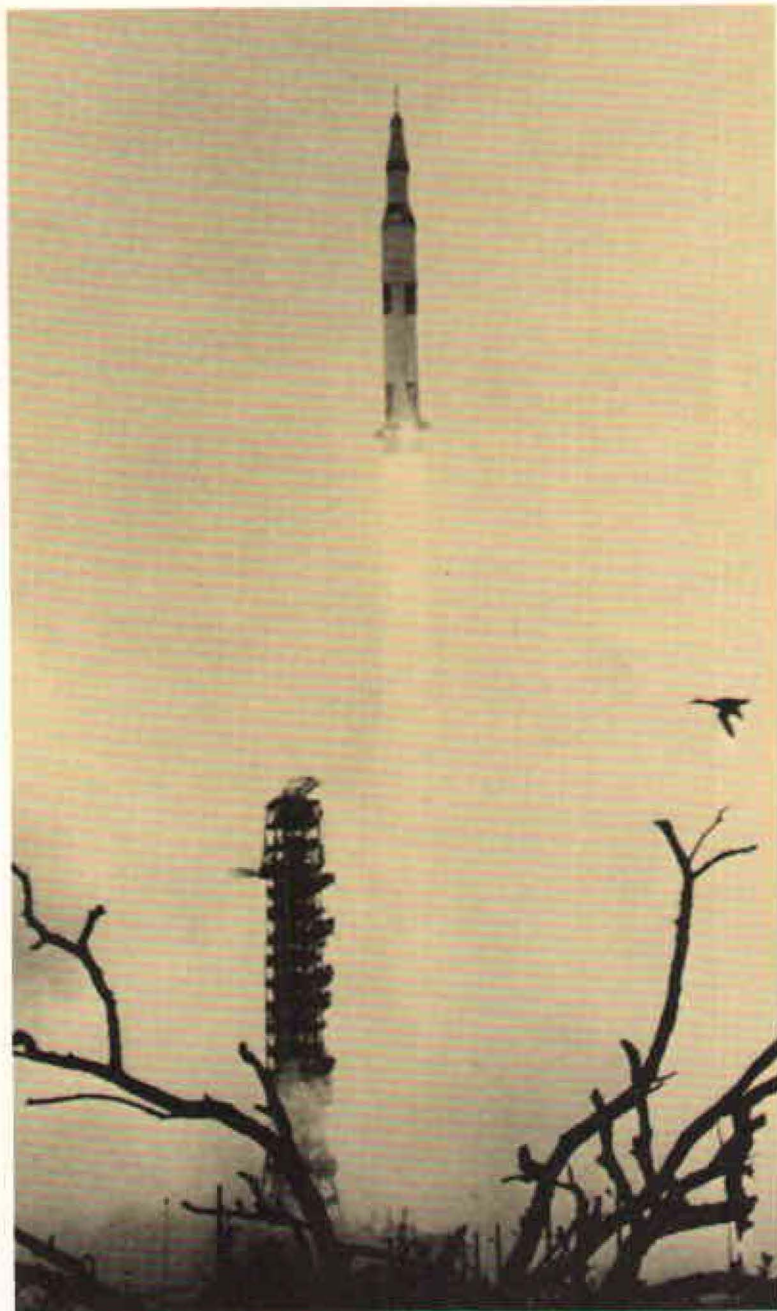
Not all customer applications of our equipment are as critical as those occurring in the Apollo program, but regardless of the application, the failure of any instrument or component has a serious effect on HP as a manufacturer of quality instrumentation. I cannot stress enough the importance of close attention by all of us to the maintenance of highest quality and reliability standards.

*William P. Hewlett*



## The EAGLE and the egret

This lone egret appears to be the sole witness as Saturn V lifts *Apollo* into space. But the spectacle was watched almost universally. Mankind's spirit soared with the flight of *Apollo 11*, the landing of *Eagle* on the Moon, and the safe return to Earth of *Columbia*. It was a voyage, some said, equal in significance to that of Columbus, because Man could claim a second celestial base to help him in his explorations and expansions into the universe. It was a voyage of particular interest for Hewlett-Packard people, because of the many significant ways in which the company's products were involved, as outlined on pages 2-5.



### Measure

EDITOR  
Gordon Brown

ART DIRECTOR  
Tom Martin



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