

April 1965



Measure

In this issue

Our increasing competition

The journey to journeyman



Competition: It's getting tougher and there's more of it

AS ONE HP MARKETING EXECUTIVE PUT IT: "Competition is particularly rugged in our business, because many of the instruments we sell can be developed by a couple of bright engineers in a garage."

□ The point he was making explains, in large part, some peculiar characteristics of the competition which HP sales people must cope with on a day-to-day basis. This competition is made up of more than 200 companies, of which the great majority are young, relatively small, aggressive, and smart. Most often they are highly specialized and concentrate on one or just a few lines of instruments. Not many of them actually had to start in a garage, because investment dollars in recent years have been increasingly available to those new electronics enterprises which are based on good ideas and sound technical capabilities.

Big doesn't mean best in the electronics industry. These small companies can contribute significantly to science and technology. When they do, they make very rough competitors indeed.

□ Hewlett-Packard must also face a dozen or so large corporations which operate on an international scale and have extensive R&D, manufacturing, and marketing resources. A company like General Radio competes with several HP divisions including F&T, Microwave, Loveland, and Harrison. Beckman Instruments is an example of a big firm which competes in many product areas against a single division—Frequency & Time. And Tektronix is yet another case: a sizable company which specializes in just one instrument line, oscilloscopes. By no stretch of the imagination is any division or product line without competition. A product such as electronic sweepers has perhaps only four or five competitors, but at the other extreme, voltmeters and power supplies have 50, at least.

HP competition is more in evidence at the annual IEEE show in New York than at any other time. Last month, large and small competitors were out in force. Nearly 60,000 people came to view \$20 million in products displayed by 900 companies. The attendance was somewhat less than in past years, but Field Engineer Al Kennedy of the Syracuse Sales division was one of several HP sales people who felt the



With expressive gesture, Sr. Field Engineer John Chiarella holds dinner meeting with customers after a day at the IEEE show. Chiarella thinks understanding customer problems is first line of defense against competition.

Photo permission of General Radio



Chiarella visits a competitor's booth. Salesman there gives information about his company's products.

"quality" of the attendance had improved. "A lot of companies are cutting back on the number of representatives they send to the show," he comments, "but more of the ones that do turn up are guys who buy capital equipment."

Kennedy spent a portion of his time at the IEEE show scouting the competition for weaknesses and strengths. "Some talk and some don't," he says. "With many, there is a free exchange of product literature and technical information. Others clam up. As for us, we believe in free exchange. We bend over backwards to tell our customers about our products, so what's the big secret!"

Senior Field Engineer John Chiarella of the Yewell Sales division in Middletown, Conn., suggests that the show provides an opportunity for learning about the "gimmicks" and main selling points of competitive products. "You've got to know where you're better," he says. "I call this 'specsman-ship'."

After his week at the show, Chiarella commented that "competition looks rougher and rougher. More digital readouts, improved scopes. I saw some real worthy competition. There are still some fly-by-nights in this business, but they don't go to IEEE."

□ Chiarella thinks that the better the competition, the better it is for Hewlett-Packard. "It keeps us on our toes," he says. "We make better instruments, provide better service, and sell harder."

The HP salesman's best answer to competition is to understand the customer's problem, according to Chiarella. "It's like the old Army game," he says. "Know the enemy and hit with all your shots. In addition, you've got to know your own equipment. But most important, know what your customer needs."



An hour in hotel room is spent scanning product literature from other companies. Throughout the world, at least 200 companies compete with HP. There are as many as 50 competitors to some product lines.

The industry's big annual bash, the IEEE show in New York City, attracted nearly 60,000 visitors March 22-25, who came to see \$20 million in products displayed by 900 companies.



Air consolidation extended

HP's highly successful consolidated air freight shipping program was extended April 12 from the Colorado Springs and Loveland plants to the thirteen Northeastern states. During the past two years, consolidated shipments of instruments have been flown daily to the East from the Palo Alto operations and the Moseley division in Pasadena.

Shipments will be flown each week-day from Stapleton Airfield in Denver by United Air Lines. Flying Tigers is the carrier utilized by the West Coast operations.

By assembling various customers' shipments at plants and airlifting them to the East, HP has reduced delivery times by as much as two weeks.

Demere appointment

Raymond M. Demere, Jr., has been named general manager of HP's Loveland Division in Loveland, Colorado.

He succeeds C. S. (Stan) Selby, who was recently appointed general manager of the company's Colorado Springs Division.

Demere previously was Hewlett-Packard's corporate customer service manager, headquartered in Palo Alto. Prior to that, he served as general manager of Hewlett-Packard GmbH, a manufacturing subsidiary in Boeblingen, West Germany. In this capacity, he was instrumental in setting up the company's initial manufacturing operations in Europe.

He has been with Hewlett-Packard since 1946.

PEOPLE ON THE MOVE

HP PALO ALTO

Dean Morton, marketing manager, Frequency & Time Division—to corporate sales manager.

Dave Penning, manager of quality assurance, HP Associates—to systems analyst, systems and procedures, HP Palo Alto.

Cort Van Rensselaer, general manager, Colorado Springs Division—to manager of corporate planning.

COLORADO SPRINGS

Stan Selby, general manager, Loveland Division—to general manager, Colorado Springs.

Bill Terry, corporate sales manager—to sales manager, Colorado Springs Division.

DYMEC

Ernst Nourney, R&D engineering, F&T Division—to field service engineering, Dymec Division.

LOVELAND

Ray Demere, manager, corporate customer service—to general manager, Loveland Division.

MECHROLAB

Tom Whatley, physical chemist, U.T.C.—to senior chemist, R&D Department, Mechrolab Division.

MICROWAVE

Paul Dugre, Microwave R&D—to Microwave magnetic tape.

Bernard Lizenby, corporate marketing staff—to Microwave sales services.

MOSELEY

Bill Eyer, Consolidated Western Steel Division, U.S. Steel Co., Commerce, Calif.—to administrative engineer, Moseley Division.

Dick Langworthy, consultant—to chief engineer, Moseley Division.

SANBORN

Wes Draper, order service manager, Yewell Sales Division—to manager of order processing, Sanborn Division.

YEWELL SALES DIVISION

Joe Romano, order service coordinator—to order service manager.

HP ASSOCIATES

Albert L. Wilson, manager reliability and quality assurance, Sylvania Electric, Mountain View—to manager of quality assurance, HP Associates.

*Before they enter this tough,
demanding training program,
they have to answer
the question . . .*

THESE FELLOWS ARE REAL COMPETITORS. They work hard at their jobs all day and then spend a lot of evenings at school or doing homework. After four years of hammering away, you can bet they've earned their journeyman stripes."

Thus, a Palo Alto machine shop supervisor summed up his feelings about the promising young men who take part in HP's rigorous Machinist Apprenticeship Program.

□ It's no exaggeration to say that this is one of the most thorough and demanding programs of its kind sponsored by any firm in America. It is a tough program—one that calls for a considerable sacrifice on the part of each participant. But the rewards are substantial for the man, the company, and ultimately for the HP customers, by providing, long range, the fabrication supervisors, tool designers, and other manufacturing administrative people that will be required.

The initials of the program—MAP—are a rather symbolic combination of letters suggesting the charting of career courses for men who can meet the test.

□ MAP was originally established in 1959 to provide intensive training for vocationally oriented employees in all phases of HP's machine shop and related operations. As men graduate from the program, there are always many more waiting in line for a chance to participate. Present em-

Are you willing to pay the price?

ployees of operations in Palo Alto and men on the outside are considered when openings occur. The program has become so highly regarded in the Palo Alto area that there is never a need to advertise for new members.

The enrollee follows a carefully charted job rotation schedule in machining and fabrication and the emphasis on fundamentals is so great that it is nearly a year before he actually operates his first machine tool. Simultaneously he attends evening classes at one of four junior colleges to take such engineering-oriented courses as math, engineering drawing, numerical control, and basic machine tool theory.

□ After 8,160 hours of on-the-job training in 22 work processes, 650 hours in college classrooms, and at least that many hours in study at home, the apprentice becomes a journeyman. Before he entered the program, the company asked him a direct question: "Are you willing to pay the price?"

The men featured on these pages, typical of the 40 HP MAP enrollees today, won't hesitate to give a direct answer: "Yes, the price is right." ▷



(continued from page five)



BILL PETERS is about to complete his first year in the Machinist Apprenticeship Program. His current assignment calls for four months' work in drill press operations with the Microwave division. During the previous months, Bill rotated among metal stock, tool crib, machine maintenance, machine assembly, beginning bench, and metal finishing. As in the case of many other apprentices, he had some junior college before entering the program. He is presently studying basic machine tool theory at Foothill College.



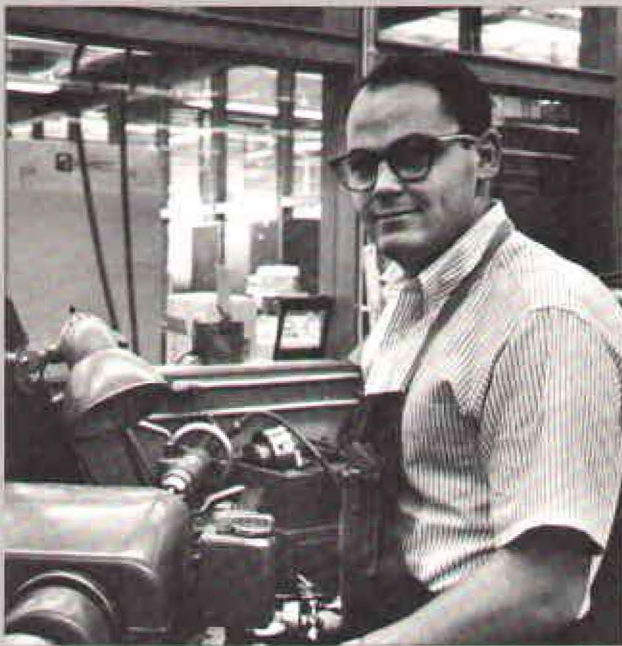
CHARLIE FIKES says he had never been in a machine shop before he joined the apprenticeship program. However, the screening tests and interviews showed that he had the aptitude and personal qualities to meet the program's high standards. Now in his second year, he is currently belt sanding in the Microwave division's waveguide machining area. His evening studies include two courses at San Jose City College—shop practices and advanced technical drawing.



BOB McKEE is in his third year with MAP and has a total of six years with the company. Prior to becoming an apprentice he was with Dymec, where he worked in the sheetmetal shop and later in the silk-screening operation. He admits that such experience has been a big help but, regardless of background, the apprenticeship program is still a challenge. Bob is now with the inspection department in the Model Shop. He is studying materials and processes at Foothill College, a course he calls a "breather" after the technical drawing courses.



AL NORTHROP, a four-year veteran in the program, will receive his journeyman certificate in a month. He plans to continue studies at Foothill College, where he needs only three more courses to earn an A.A. degree. Al, who is now assigned to tool-room processes in the tool and die shop, says that he has learned a lot in the program, but he admits that men with years of experience can show him there is much more to be learned. With the same enthusiasm and ambition that got him into the apprenticeship program, Northrup is now aiming for a key position in tool design or tool engineering.



VERN PETERSON was a member of the original "Class of '59." That year, 13 HP employees were selected for the Machinist Apprenticeship Program. Now, approximately 40 men are in training at any given time. Vern completed the program requirements in 1963, but like many other graduates he is continuing his education by taking college courses. He is presently doing tool design work with the thin film development group.

Selecting candidates for MAP is done with all possible care. An opening occurs about once a month. In a recent instance, 135 people responded to a call for applicants. About 35 survived the initial screening involving numerical and verbal tests, mechanical comprehension, and a test of general intelligence.

□ Next, the candidates were interviewed by three members of the Apprenticeship Steering Committee, who made recommendations leading to the final selection by the full committee. The steering committee is composed of shop heads and supervisory people in HPA, and the Microwave, Frequency & Time, and Dymec divisions, and one member from the corporate personnel department who coordinates the program.

The average age of a new apprentice is 23. He is most often an HP employee with a high school education and perhaps some junior college credits which reduce the hours of formal study required.

On-the-job training begins with a month in metal stock, the tool crib, or machine maintenance. Toward the end of his first year, the apprentice is working in drill press operations. After the full four-year course he has progressed through 22 work processes, spending

BOB PETERSEN, a member of the HP Associates model shop, received his journeyman certificate from MAP last fall. He says the training he received is essential to the precision lathe and drill work he is now required to perform to turn out micro-miniature parts. He has continued his studies and recently received a certificate from the American Society for Metals.



from one to eight months at each.

□ Simultaneously, he attends a junior college four to five evening hours each week for classroom instruction which adds up to 26 semester units at the end of the training period.

A most significant aspect of the program is the method of "measuring" each man's progress. After every job rotation, the apprentice is evaluated by his supervisor, who follows a detailed evaluation sheet. These sheets are held in central files, where they become a cumulative record.

□ Since it was founded six years ago, 90 men have entered the program, 19 have been graduated, and 40 are presently enrolled.

However, not all of HP's journeyman machinists have arrived at their high degrees of skill through participation in the apprenticeship program. Many are journeymen today because of years of dedication and practical experience. One such person was recently given an honorary certificate because he took the college courses on his own and met all the requirements of the program. It's this kind of initiative, determination, and ability that transforms an apprentice into a journeyman. ◀

OSCAR flies again

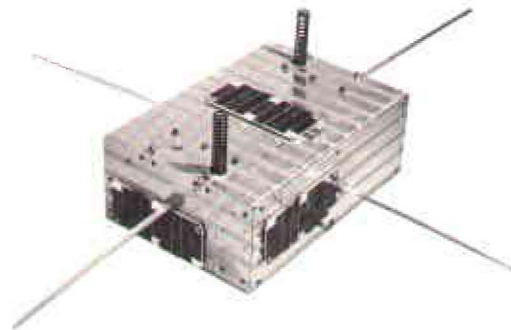
OSCAR, as any ham knows, means Orbital Satellite Carrying Amateur Radio. It also means a lot of hard work, seasoned with initiative and served with a fair portion of genius.

On March 9, 1965, OSCAR III (the third of a series started in 1961) was boosted into space aboard an Air Force vehicle. This particular satellite is noteworthy in several respects. It is the first multiple-access, linear translator satellite to be placed in orbit, and is designed to receive amateur radio signals at one end of the two-meter band (144.1 mc) and to instantaneously retransmit the signals at the opposite end of the band (145.9 mc). Thus, an amateur anywhere in the world can conduct a two-way conversation up to a distance of 4,000 miles using short-distance "line-of-sight" VHF.

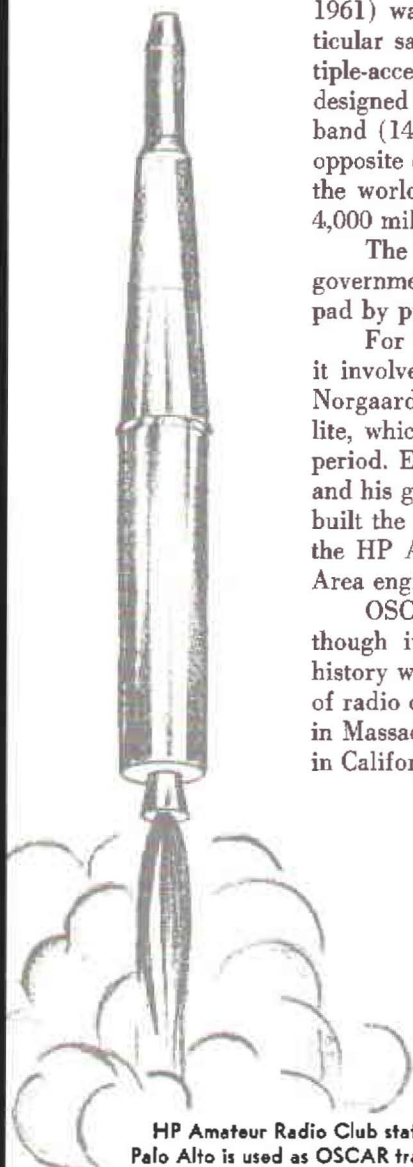
The satellite is also unique in that it was a non-commercial non-government-sponsored project, planned and carried to the launching pad by private citizens.

For MEASURE readers, the venture is of special interest because it involves a number of HP engineers in the Palo Alto area. Don Norgaard, Mechrolab division, was chief design engineer for the satellite, which was built in the workshop at his home over a two-year period. Ed Hilton, HP Associates, was project engineering manager and his garage served as the test site. Don Cross, HPA, designed and built the satellite's telemetry system. A number of other members of the HP Amateur Radio Club, along with other San Francisco Bay Area engineers, also pitched in.

OSCAR III is still circling the earth in a 500-mile orbit, and although its main power supply is now exhausted, communication history was made during its battery's life span. Among the thousands of radio contacts made during that period were those between a ham in Massachusetts with one in Germany, and those of radio amateurs in California with hams as far away as Alaska and New York.

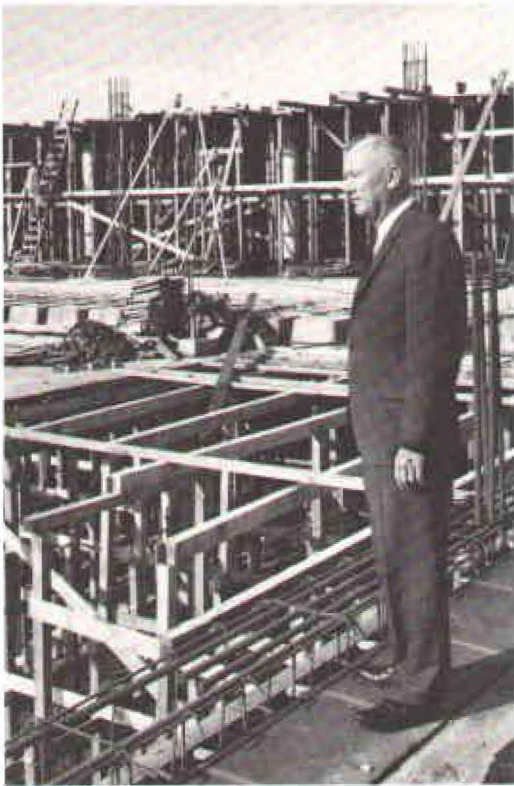


Homemade satellite contains radio repeater, telemetry equipment, a beacon that says "hi" in Morse code. Springs served to push package from Air Force launch vehicle. Antenna arms were made from steel measuring tape purchased at hardware store.



HP Amateur Radio Club station in Palo Alto is used as OSCAR tracking station. Don Norgaard adjusts equipment as Ed Hilton (standing) and club president Earl Freeman look on. This station is one of three places in the world doing precision Doppler tracking of OSCAR III.





Noel E. Porter, Vice President, Operations

WERE NEARING THE END OF THE FIRST HALF of our 1965 fiscal year, and things look good. Shipments and incoming orders for March were well above the corresponding month of 1964, and we expect to wind up the first half (April 30) with nearly every division turning in a record performance.

□ The IEEE Show was a great success. There was considerable traffic in the HP booths and our new instruments were well received. However, as mentioned elsewhere in this issue, our competition is stronger than ever and we have to hustle right along to stay in front.

During IEEE many of us have a chance to visit our Eastern divisions and also hold a series of management meetings covering various phases of our operations.

There is plenty of activity at Sanborn. Shipments were good in February and March, and the division continues to improve its overall performance. Harrison Labs is still producing at an optimum rate, and stepping up its marketing efforts to keep finished inventory in balance. Things are looking up at Boonton, with the division expecting big things from its new vector impedance meter, introduced at IEEE. The Eastern Service Center, part of the Boonton operation, has done extremely well. Its volume of business is now about equal to the volume at the Western Center in Palo Alto.

□ We had a general management meeting in New York on the Sunday prior to the show. Among the many topics discussed were corporate communications, reporting procedures, and systems. We reviewed the order processing system, now in operation at virtually all domestic plants and sales offices. Here we decided that some simplification of instrument model numbers and descriptions is appropriate, and that we should further study the parts and accessory order handling to achieve additional reductions in paper work.

We also considered at some length our financial reporting systems and procedures. We find we can greatly reduce and simplify the amount of data needed at headquarters for monitoring and control. We also decided that all transfers of materials and instruments between divisions will be made at inventory value to minimize paper work now required for credit adjustments. These and other financial matters were discussed in greater detail at the manufacturing accounting seminar held in Colorado in early April.

Our marketing managers held two important and productive meetings in New York prior to the show. Considerable attention was given to working out the details of our new regional approach to U.S. marketing, and to

AROUND THE CIRCUIT . . .

All signs indicate record first half

expanding and coordinating our marketing efforts in new fields of instrumentation.

□ Before returning to Palo Alto, some of us had the opportunity to visit F&M Scientific Corp., scheduled to become part of the HP family on June 30. This is a most interesting young company with an impressive growth pattern. Its strong position in the field of gas chromatography opens up an exciting new area for HP know-how and instrumentation.

Here in Palo Alto things are moving along at a good clip. The Frequency & Time division is setting up an integrated circuit development and production facility which will work closely with the solid state capability of HP Associates. The local Neely group, formerly in San Carlos, is well settled in its new quarters near the Bayshore Freeway in Palo Alto. Construction of the new addition to our Stanford plant is just about on schedule and will be completed before the end of the year. We'll really be ready for this 175,000 square feet of additional space.



Nine hundred instruments in a beautiful book

A foreman at I. S. Berlin Press, Chicago, proofreads pages of HP's new catalogue. The finished product, shown in inset, has 406 pages bound in a full-color hard cover.

THE BIGGEST ELECTRONICS instrument catalogue in the history of the industry is now flowing through the bindery at the rate of 4,000 copies a day. When 130,000 copies have been produced, which should occur around May 15, several dozen HP marketing people and members of the company's advertising agency will heave a sigh of relief. This has been the most extensive, most tedious, most difficult, and possibly most important printing job Hewlett-Packard has ever undertaken.

Headed up by HP Ad/Sales Promotion Manager Harry Lewenstein, the project took six months to complete. The Lennen & Newell (formerly L. C. Cole Co.) advertising

agency in San Francisco assigned five people to the task full time to design, edit, and produce the hard-cover, 406-page catalogue. Each HP division had at least two men to write the descriptive text for the division's products. And several members of Lewenstein's staff spent hundreds of hours coordinating and supervising.

Aside from its size and comprehensiveness, the catalogue is notable for its beautiful full-color hard cover displaying an original illustration by San Francisco Artist Joe Cleary. The 130,000 copies of the book were printed by I. S. Berlin Press in Chicago, using about 12 carloads of coated paper. Type was set by Holmes Typography of San Jose, Calif.

HP contest winners announced

E. F. Sartori of Bell Laboratories, Whippany, N.J., won first prize in the contest sponsored by HP at the recent IEEE show in New York. He headed the list of nine winners selected April 5 in drawings at Palo Alto.

To qualify for the contest, entrants estimated the number of instruments listed in the new HP catalogue exhibited at the show. From these entries, the names of winners were then drawn by Barbara Harrison (shown at right), a secretary at Eitel-McCullough, San Carlos, Calif.

First prize was a single HP instrument of list price up to \$1,500. Second through ninth place winners were entitled to select instruments at lower list prices.





from the chairman's desk

LAST MONTH'S IEEE SHOW was one of the best of all time as far as HP was concerned. We had an excellent exhibit—well planned, well managed, and well attended. Our customers were very interested in what we had to show and there seemed to be a great deal more optimism in the business climate. This has, in fact, been reflected by our high level of incoming orders during the month of March and into April.

With HP people from all over the country in attendance, the IEEE presents an excellent opportunity for us to hold a number of management meetings. One of the most important meetings was an all-day session of the Executive Council, at which all division managers were present. From their reports it is apparent that those divisions which have been doing well expect to do even better in the months ahead. And those divisions which haven't done quite as well seem to be making excellent progress in solving their problems and improving their over-all performance. In a company as large as ours, there are bound to be some problems from time to time, but none that can't be solved with enthusiasm and hard work.

In sizing up the competition at the show, we noticed there were several newcomers in the field of instrumentation who will have to be watched. This is particularly true of those who are turning to the use of integrated circuits in their instruments. Needless to say, we will have to adapt many of our present instruments to this new technique over the next few years or we will be left behind.

To meet this challenge will require new thinking and new design concepts throughout the company. Many of our engineers will have to become familiar with integrated circuit technology and be able to incorporate this technology into the original design of new instruments. Our Frequency and Time Division is taking the lead in this new area, but all divisions will become involved before we are through.

In a sense, the transition to integrated circuits is similar to the change the industry experienced in switching to printed circuits. It may, however, be more difficult to master and more significant in its impact. I am confident we have the technical capability, the determination, and enthusiasm to meet this challenge and become a leader in this new technology. We are at an important turning point in the industry, and one that offers tremendous opportunities for us to make significant and far-reaching contributions.

David Packard

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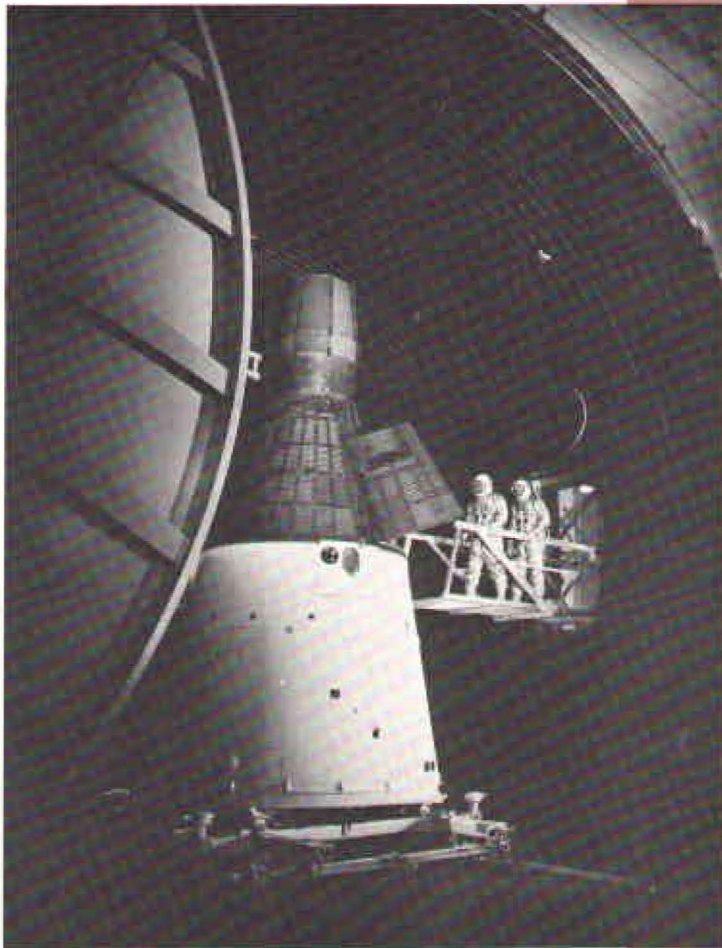
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"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind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



**Imagine this
minus electronics**

GUS GRISSOM AND JOHN YOUNG rode 81,000 miles March 23 in the safest, most exhaustively tested, most thoroughly television-viewed space capsule in the history of man. Take away the electronic instrumentation and what have you got—John and Gus flying from Winnipeg to Winnemucca with the air conditioning on the fritz. Here you see both of them entering the Gemini capsule in the McDonnell space simulation chamber to check out all systems prior to flight. The eventual journey made history, and Hewlett-Packard was proud to have been there with digital voltmeters, couplers, signal generators, counters, oscilloscopes, and accessory equipment.

Photo courtesy McDonnell Aircraft and NASA