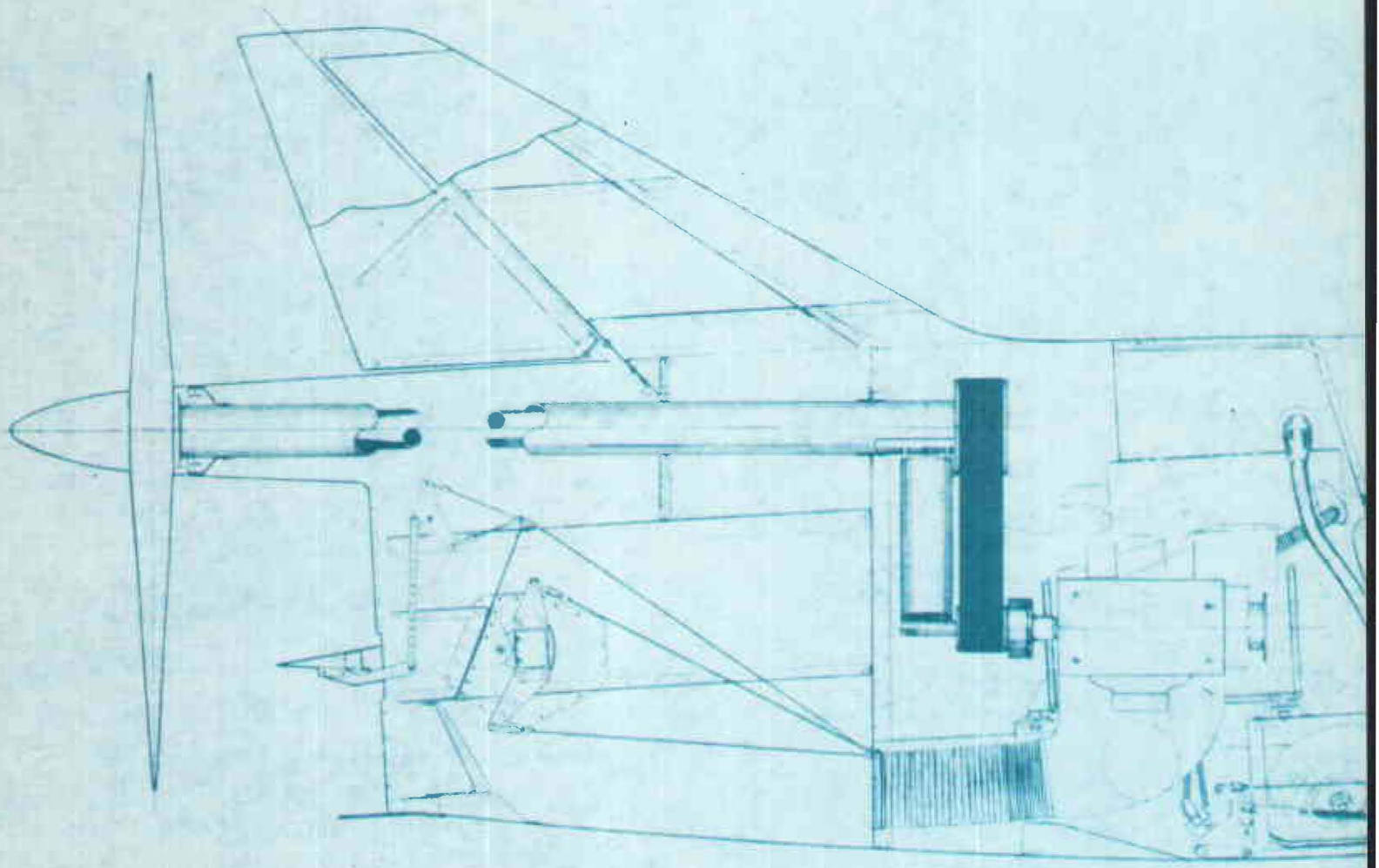
Measure

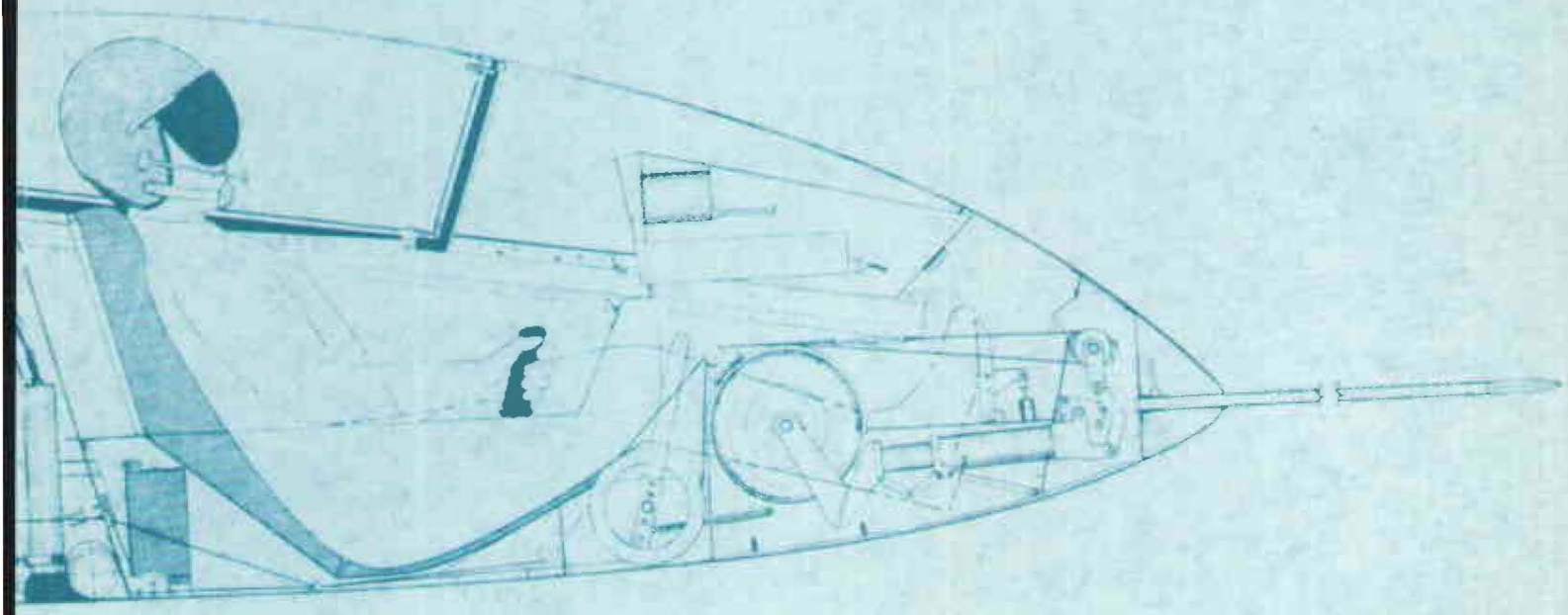
For the men and women of Hewlett-Packard/FEBRUARY 1975

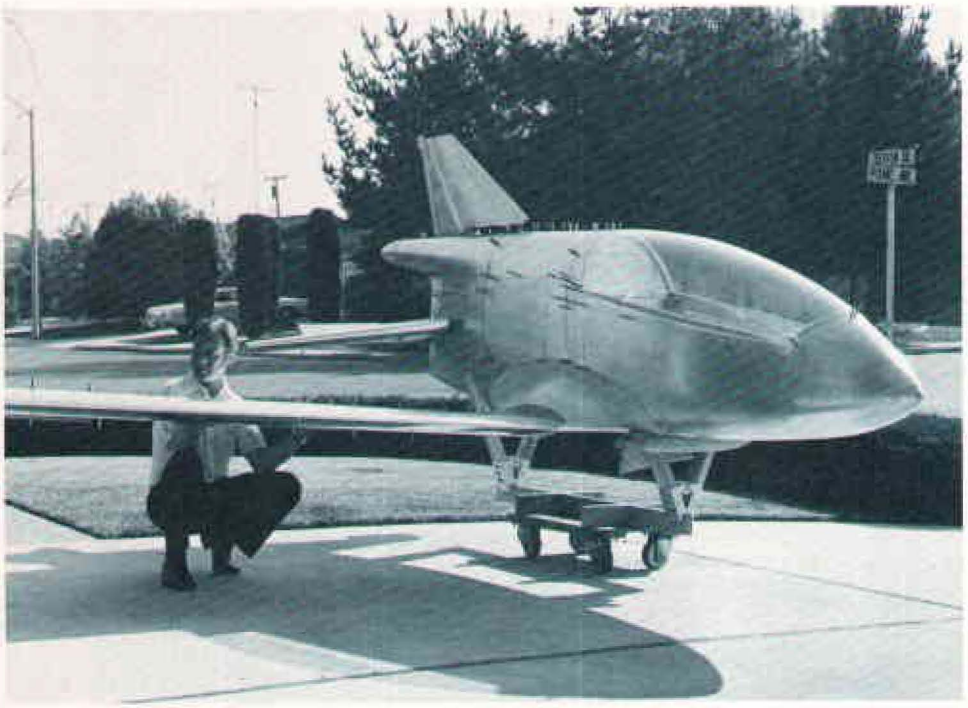


They're nuts and bolts about airplanes...

☐ To almost everyone except a pilot, the mention of amateur airplane builders brings to mind hobbyists who assemble tiny model planes and fly them in the parks or their back yards. Challenging as that may be, it doesn't compare with building *real* aircraft—and although homebuilding planes will never surpass stamp-collecting in popularity, it's a hobby that attracts a surprising number of people, including HP employees. You don't need a degree in aeronautical engineering, they say—just the time and interest, some mechanical skills, a little money and a great deal of patience.

They work in a variety of jobs at HP. Their airplanes are different sizes and shapes, starting out as complete kits or as sets of blueprints. For some their first airplanes will be the ones they build themselves; others have already owned one or more aircraft. Their reasons for building their own also vary. Some do it because they want an airplane that performs better or is more economical to operate than any on the market. For some it's a way of developing their skills so they can become licensed airframe and powerplant mechanics—or they may want a plane they can legally maintain themselves *without* an "A and P" license, as they can with a homebuilt. And many build airplanes simply because they enjoy it, like Earl Heldt of Stanford Park Division. "I like to stay busy. If I weren't working on an airplane,





The BD-5, a single-place kit airplane with retractable landing gear and a "pusher" prop looks a bit like a rocket plane somehow mislaid on a suburban street as Jim Hergert fits one of the wings. He's building the tiny aircraft in his one-car garage—and still has room for the car!

I'd probably be building a boat or something."

But these builders have several things in common too. First, almost all are already licensed private pilots and would really rather be flying than riveting. And in the U.S., practically every builder is a member of the Experimental Aircraft Association (EAA), a nationwide organization with an informative monthly magazine, an annual "fly-in" at Oshkosh, Wisconsin, and local chapters of builders just about everywhere. Incidentally, the term "experimental aircraft"—although it may invoke visions of rocket planes and daredevil pilots—is a term the Federal Aviation Agency applies to all homebuilts, even though many planes of the same design may have already proven airworthy.

It is a hobby that requires skills in sheet metal work, welding and machining, electrical wiring, upholstering, sometimes woodworking and plastics molding. "Even with a kit it's not just a matter of bolting parts together," explains Gary Bullen, an electronics technician at Data Systems Division. "The kit only contains the plans and raw materials."

Bullen was the first in Northern California to complete a four-seater airplane called a BD-4, a now-popular model in a complete line of kits from designer Jim Bede. Gary completed his in a year and a half, which is practically record time for any homebuilt. He and his family have been flying all over the West in it for the past two years.

On the other hand, Earl Heldt has been working on his nearly-completed Pazmany PL-2 for nine years. It's not built from a kit, so nearly every part of the airframe has been handcrafted. According to Earl, to build an airplane this way you have to be good at "scrounging" many of the needed materials.

Airplane builders are a close fraternity. They exchange ideas and informa-

(continued)

With blueprints spread out in the garage of his home, Tom Piper ponders a problem in the construction of his Pazmany PL-1, about 40 percent complete after seven years. The engine alone for a small plane can cost three to four thousand dollars, but Tom estimates he'll spend no more than that on his entire project. He acquired a surplus Air Force engine to overhaul.

Jim Haynes of HP Labs, ready to install canopy slide rails on his Sidewinder, checks for alignment by using a piece of string. Jim, like most builders, doesn't have a big investment in equipment, but he has bought and refurbished some second-hand machine tools. By equipping his 125-horsepower engine with a constant-speed propeller, Jim expects a cruise speed of 170 miles per hour.

Gary Wey, a product design engineer at Santa Rosa Division, turned his hobby into a part-time business rebuilding wrecks, like this Cessna Turbo Centurion. He started by building a kit airplane, then rebuilt and sold an American Yankee from parts of two that had crashed.

Waltham's John Allen is putting the finishing touches on his Thorpe T-18, a high-performance two-seater that he plans to use for aerobatic flying. He also owns a restored Fairchild built in 1946.

airplanes...

tion at EAA meetings, help one another over difficult hurdles, swap parts and tools, and are usually willing to let other builders get some "stick time" in their creations. Colin Powers, an engineering group manager at HP's McMinnville Division, built one of the first BD-4's in Oregon. His project was well along when he met Gary Bullen on a business trip to the Bay Area and got a ride in Gary's plane. Later he sought Gary's advice in solving an engine cooling problem.

Tom Piper is a photo-mask maker in Stanford Park's thin-film technology program. Since he's also building a Pazmany, he and Earl Heldt consult with each other from time to time. "Earl has a good engineering background for this," Tom says. "I don't, although I've learned a lot since I've been working on the project." One of his admitted weaknesses is machining, so he began swapping fiberglass parts he made himself for machined parts that were made by a builder in the East. They learned of each other's skills through a newsletter that keeps all Pazmany builders and owners up-to-date.

Things do not always go according to plan, of course. Some HP builders are assembling a tiny 200-mile-per-hour single-place kit airplane called the BD-5—among them Jim Hergert of Palo Alto's Manufacturing Division, and Fred Staats, Jim Rea and Wally Wahlen at Loveland, Colorado. The BD-5 was designed for a particular engine which is no longer being manufactured. What now? Hergert feels he has the answer in a turbo-charged four-cylinder Honda engine, and he is stretching the plane's fuselage by five inches for better visibility and to compensate for the engine's weight and size. Like all homebuilts, the plane will be inspected several times by the FAA during and after construction to insure that it's well built and aerodynamically safe.

The energy crisis, and the possibility of fuel rationing, is a cause for concern among all private pilots. But the greater fuel economy is one of the attractive aspects of flying a homebuilt. According to Tom Piper, only a small percentage of the nation's fuel supply is used for private flying. "If general aviation is treated fairly,

Now nearing completion after nine years, Earl Heldt's Pazmany represents a considerable investment of money as well as man-hours, but Earl doesn't know how many thousands of dollars he has put into it. "I have all the bills and receipts," he told MEASURE, "but I'm afraid to add them up." Earl owned a Cessna 140 until he and his two sons had all gotten their flying licenses, then sold it.

For Gary Bullen and his wife Linda, building a plane was a means to an end. It's now a busy travel machine that has taken them throughout the western states, to Mexico and Alaska. They also enjoy skiing, and the BD-4's collapsible wings provide a convenient place to carry skis and poles—inside the tubular wing spars! As you might suspect, they draw curious onlookers when they load and unload.

In the yard of his Colorado home, Wally Austin of HP's Loveland facility exercises the engine of his Pitts aerobatic biplane—the second one he has built. Wally is president of the new Loveland chapter of the Experimental Aircraft Association.

rationing shouldn't hurt too badly. But if I could have foreseen a fuel crisis years ago, I would have reconsidered building an airplane."

Not everyone who starts a project finishes. Partially completed experimental airplanes are constantly being bought, sold and swapped. Jim Haynes of HP Labs started his Sidewinder by buying two partially completed projects. Al Griswold of HP's Medical Electronics Division in Waltham, Massachusetts, was building a "Volksplane," designed for a VW engine, until he became impatient to fly. He sold his kit and bought a factory-built Piper Tripacer, descendant of the famous "Cub" that brought pleasure flying within the reach of millions.

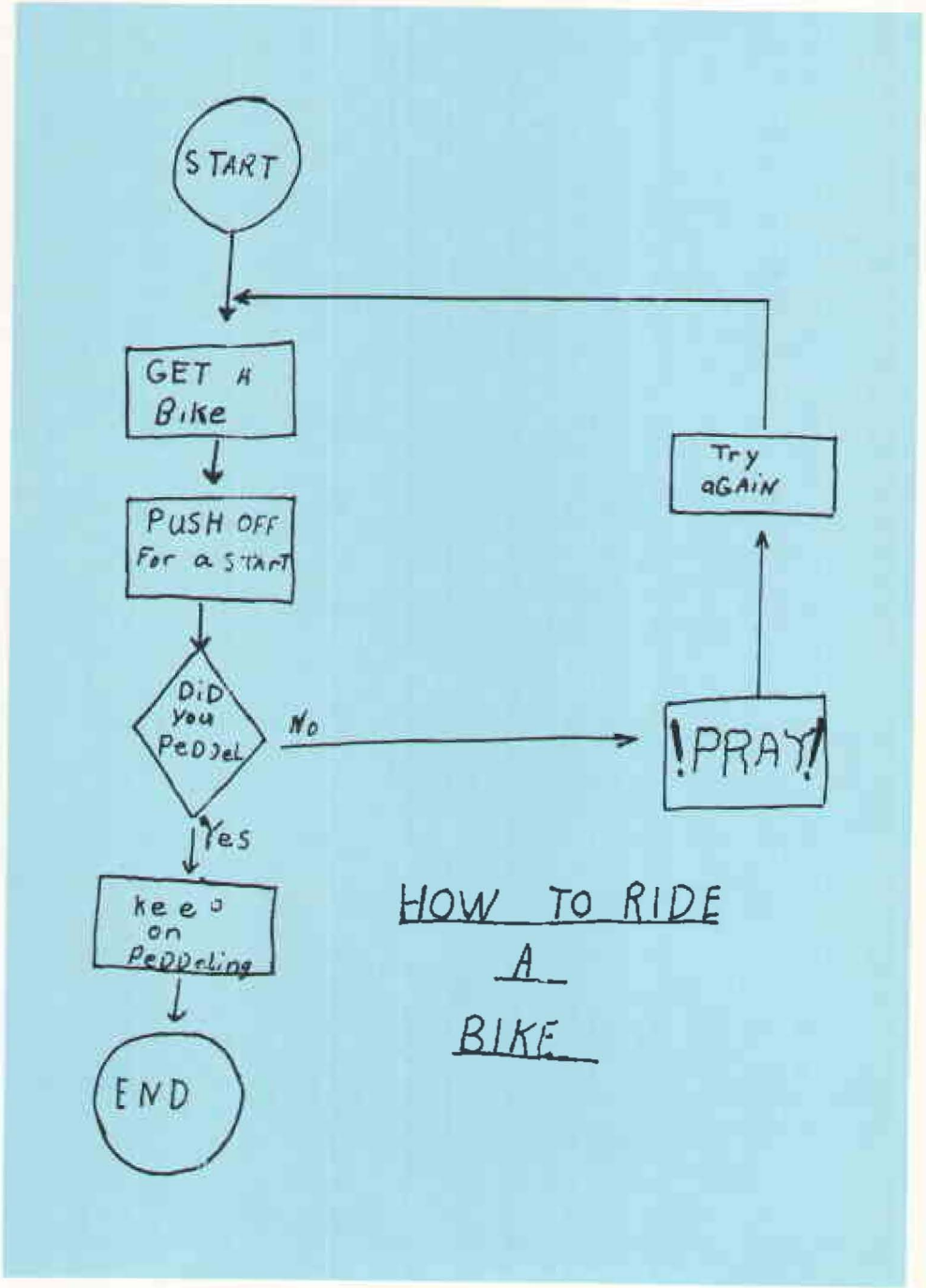
Ralph Korngold, shown here in the cockpit of the Whitman Tailwind he built, is one of the few HP employees who actually earns a living working on aircraft—as a maintenance technician in HP's aviation department at San Jose Municipal Airport. When he's not working on HP's airplanes or flying his Tailwind, Ralph can usually be found working on a racing plane he started building three years ago.

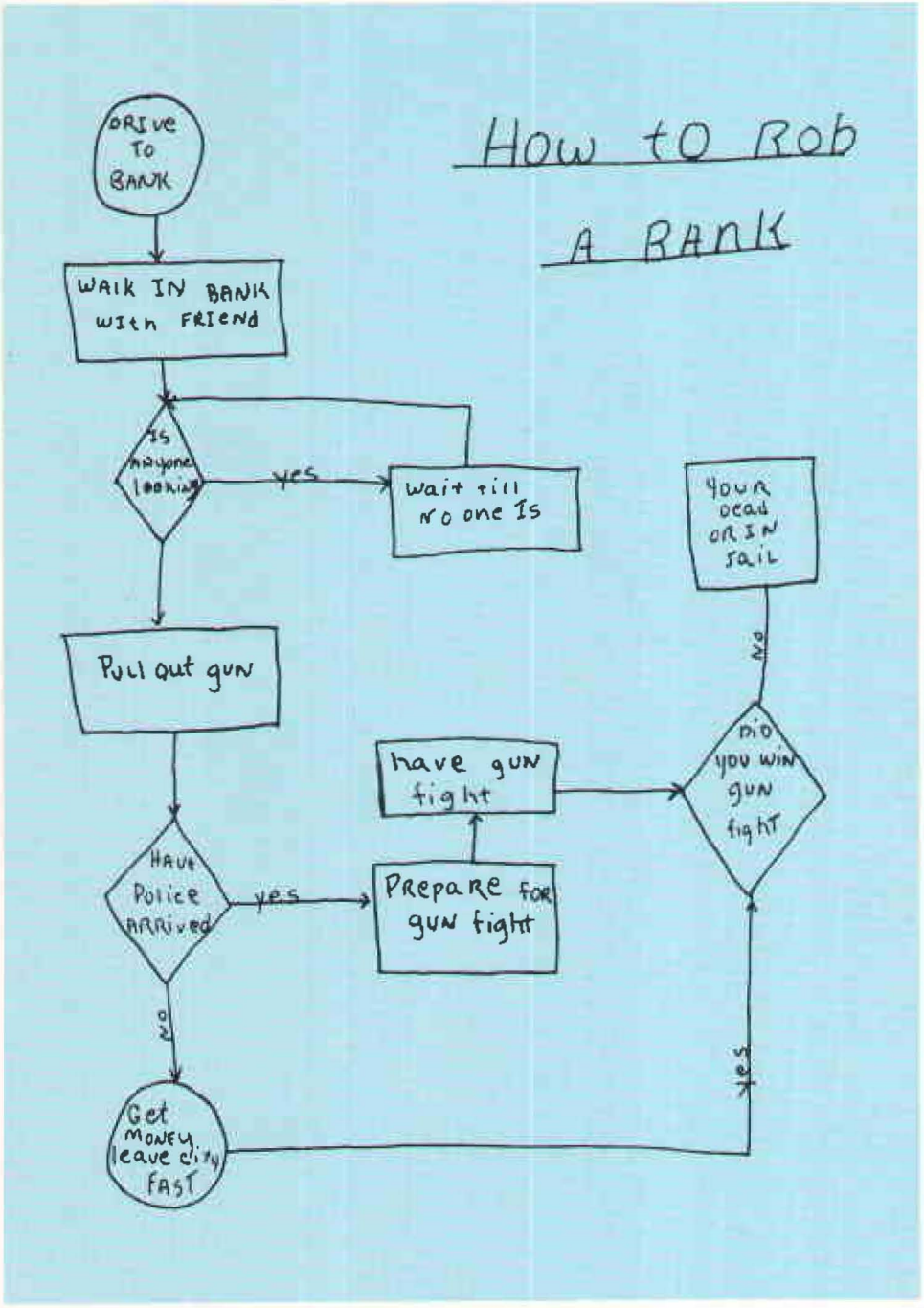
□

The South Hill mob...

☐ *It was O.K.—really good clean fun—as long as the kids of South Hill Elementary School in Vancouver, British Columbia, confined their computer programming activities to such concepts as—*

HOW TO RIDE A BIKE





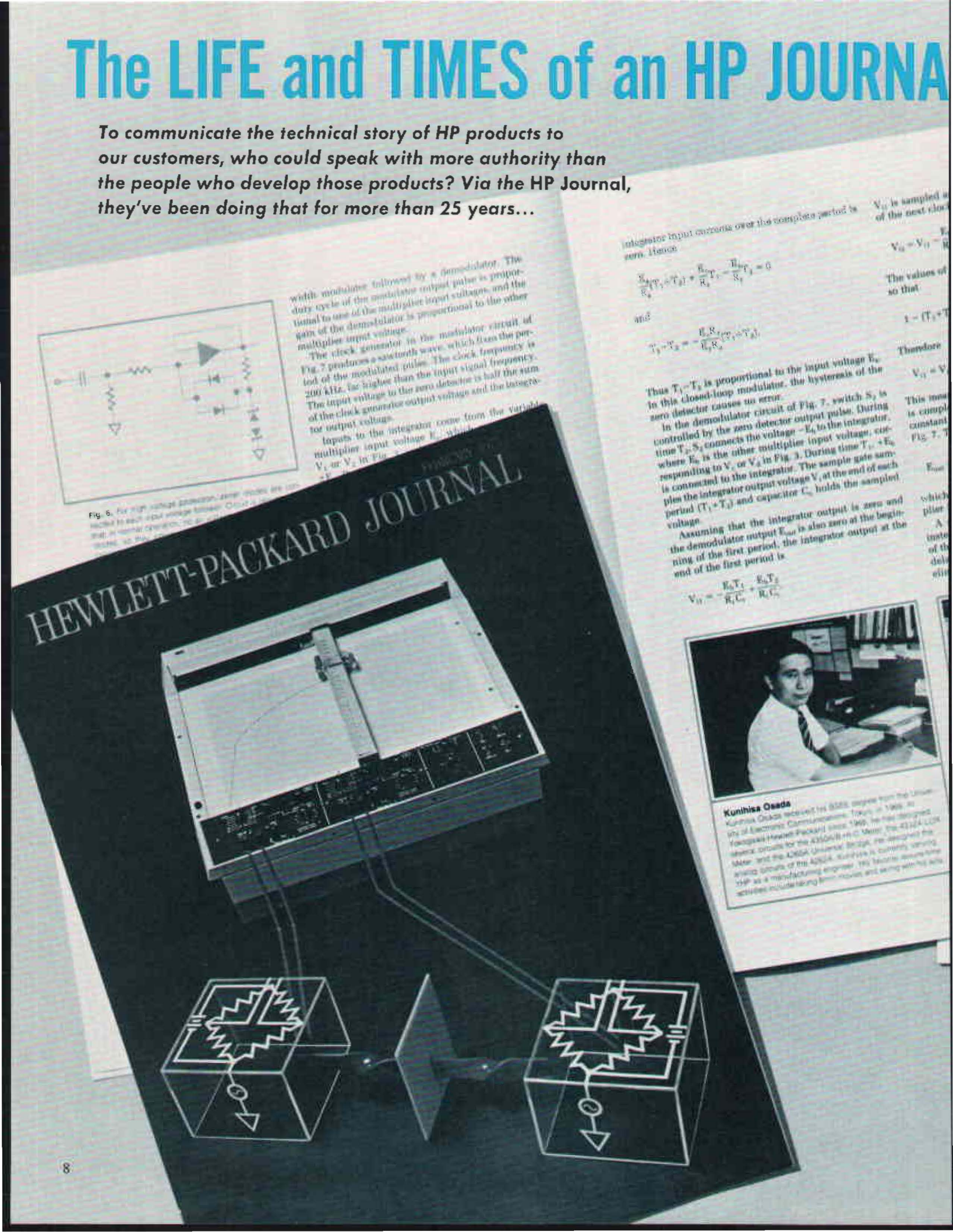
Then, it seems, they felt the tug of ambition leading them on into strange new programming paths. Under the guise of an organization called Platypus Productions, the youngsters set out to Beat The System. Here's the secret plan they prepared—

HOW TO ROB A BANK

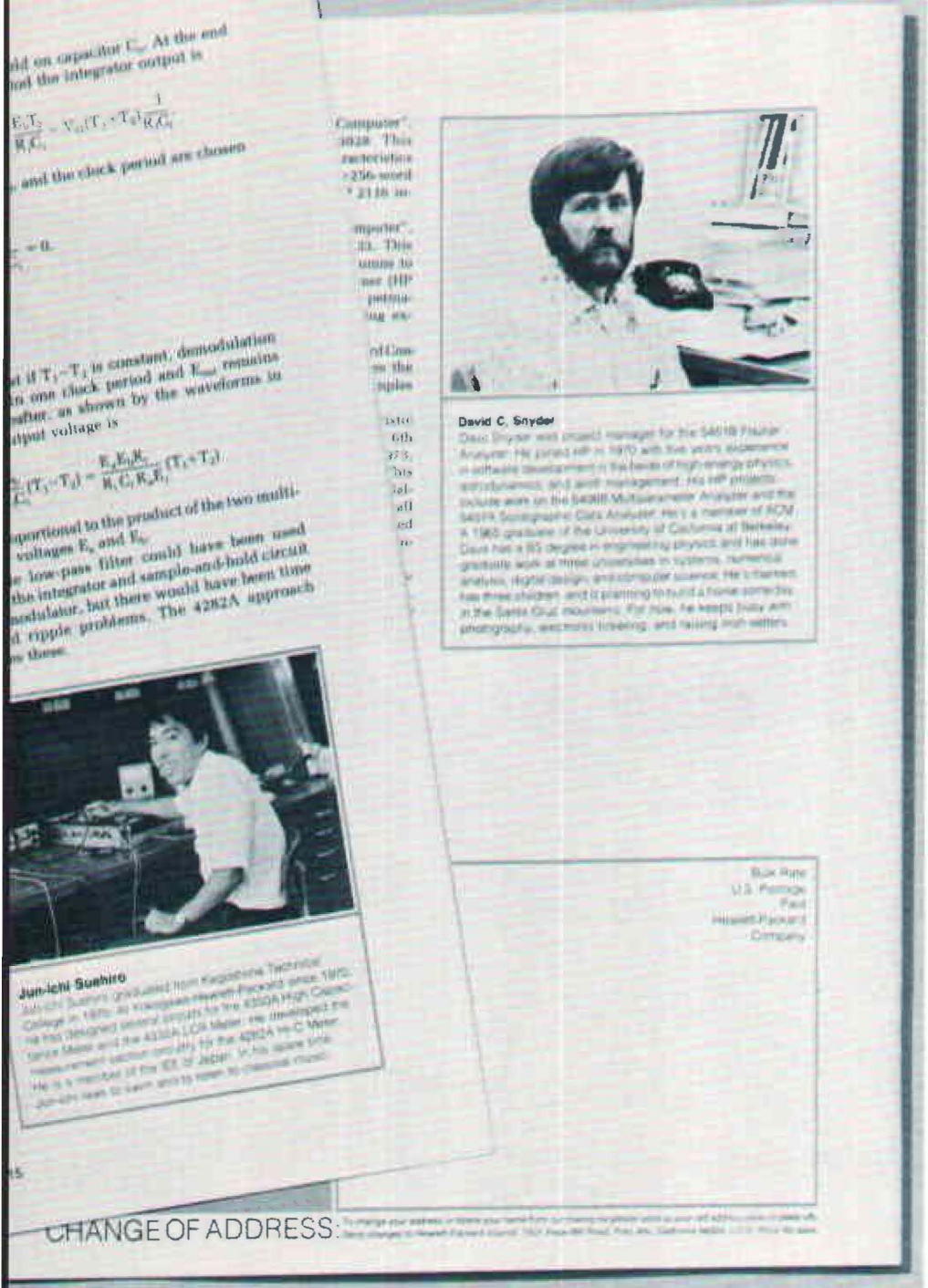
While one may tremble at the possible fate of the young geniuses responsible for this simple but brilliant scheme, one is also both pleased and saddened that an HP computer system (complete with BASIC language and instructional materials) was involved in the plot. With the help of the Hewlett-Packard (computer) Users Group Educational Newsletter, which tipped us off in the first place, we promise to keep readers informed of any relevant news that may come to us from South Hill and environs. □

The LIFE and TIMES of an HP JOURNA

To communicate the technical story of HP products to our customers, who could speak with more authority than the people who develop those products? Via the HP Journal, they've been doing that for more than 25 years...



author



In its February 1975 issue, the Hewlett-Packard *Journal* presented three major technical features variously authored by six HP lab engineers—a fairly typical issue. Shown are Santa Clara's Dave Snyder (above) who wrote an article on improving computer performance, and YHP's Kunihisi Osada and Jun-ichi Suehiro, authors of "Digital High-Capacitance Measurements to One Farad." The cover illustrates a feature on high-sensitivity X-Y recorders by San Diego's Don Huff, Dan Johnson and John Wade.

□ In June 1969, MEASURE carried a story headlined "Everybody reads the *HP Journal*—almost."

It's time to say it all over again: The *HP Journal* is received and read by a tremendous number of people; worldwide circulation presently is 150,000. On the other hand—and here's where the "almost" comes in again—a great many HP people have never heard of the *HP Journal*, let alone read it.

The reason for this is simple: The *Journal*'s basic mission is to tell the technical story behind our products and our technological accomplishments to an audience of customers able to understand and appreciate those developments.

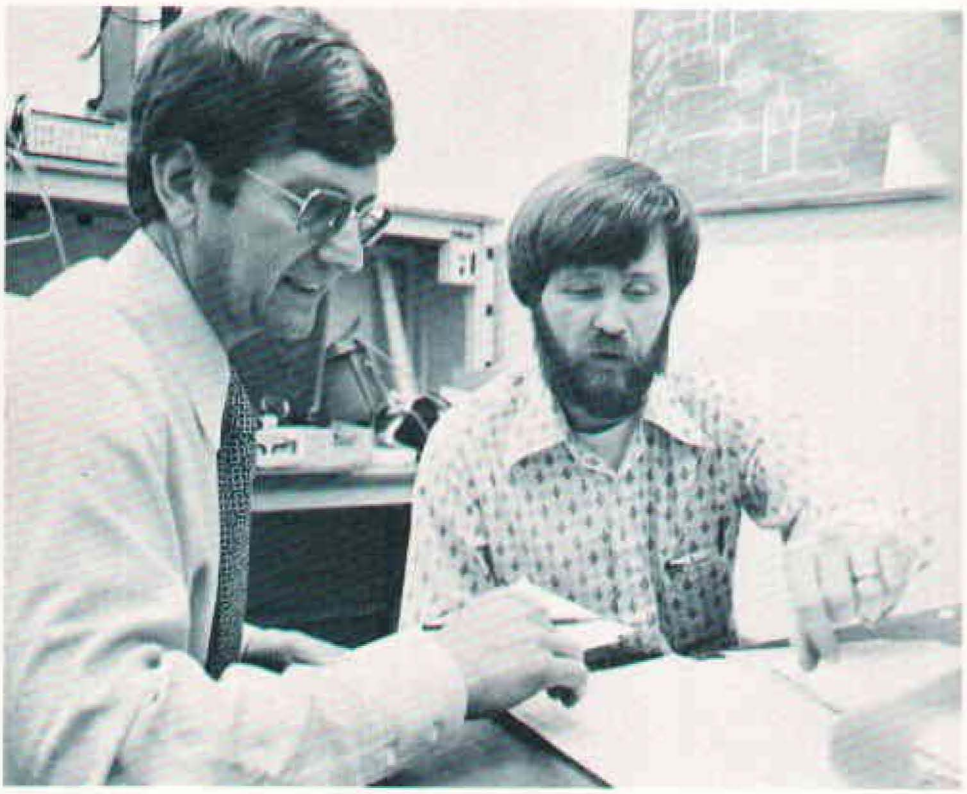
To receive the *HP Journal* a customer must send a written request and also indicate some professional interest in HP product technology. The magazine is also well read in HP's product development labs which receive bulk quantities. Of course, the lab people really are customers, too—the best, in fact, considering the extensive use they make of each other's product developments.

Why is the *Journal* so well received? Why would many readers even be willing to subscribe to it if they had to?

Without any question, the basic strength of the *Journal* lies in the fact that its authors are the very HP engineers and scientists who develop the products and technology that are the chief editorial fare of the magazine. Their articles, therefore,

(continued)

HP JOURNAL



Engineer-author Dave Snyder at right reviews final art work prepared for his article with the *Journal*'s managing editor, Dick Dolan, himself an engineer with extensive postgraduate studies in engineering. The *Journal* represents an opportunity to introduce new HP products and technology to hundreds of thousands of readers in a broad range of industry, science, and business.

reflect the latest and best technical information available on the subject of measurement techniques.

Authorship in the *Journal*, in fact, is looked on as part of the responsibility a lab leader has on successfully completing a major project—the responsibility to communicate the thinking that went into the project.

That kind of first-hand authorship—or authority—has been a *Journal* hallmark since its first issue was published in September 1949. In that four-page issue, author Norm Schrock wrote about "A New Amplifier For Milli-Microsecond Pulses," the then-new 460A wide band amplifier. His approach set a standard that is still followed by almost all *Journal* articles: A general opening statement that helps establish the need and purpose of the project, followed by material—including any necessary circuit diagrams, charts, graphs, mathematics, and supporting photographs—that describes how the product works. This approach was maintained all through the tenure of the *Journal*'s first editor, Frank Burkhard, and established as a written objective by his successor, Ross Snyder.

Norm's article also established what appears to be another characteristic of *Journal* authorship—subsequent long service with HP. He joined HP in 1942 and now is quality assurance manager at Colorado Springs Division. Others still with the company who authored articles during the *Journal*'s first five years include Bruce Wholey, Art Fong, Al Bagley, Jack Petrak, Bob Brunner, Ray Demeré, Ed Hilton, Barney Oliver, Bob Grimm, Bill Girdner and Dexter Hartke. Still others such as Brunton Bauer and the late Horace Overacker remained with HP until retirement.

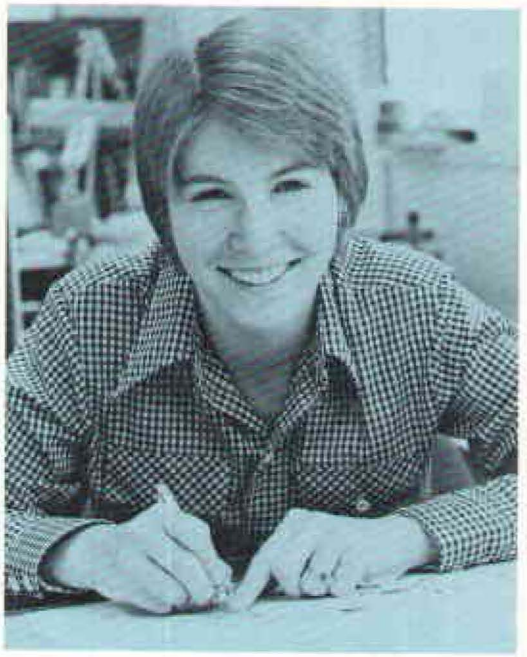
Actually, becoming a *Journal* author does not mean long hours laboring over a script. Editorial director Howard Roberts and managing editor Dick Dolan are quite accustomed to projects that start out as rough raw data.

According to Howard, "We don't expect to receive a polished script. We would rather see the engineers get on with their engineering and let us worry about the prose. After all, they've already done the hard work in creating the product. Our job is simply to reflect their ideas in terms that will be most useful to the readers."

How they and their associates on the *Journal* go about that task is portrayed in the accompanying photographs:

Editorial director Howard Roberts tunes in to taped interview made during a visit to one of the international divisions. From this interview Howard will prepare a draft of the proposed article, in this way accommodating the would-be writer who lacked confidence in his usage of the English language. Because of the many new HP products coming out of the laboratories and onto the market in 1975, *Journal* space is in high demand this year.

Journal art director Arvid Danielson doubles as photographer. Note the setup as seen on the cover reproduced on page 8. Befitting the products and people it represents, the HP *Journal* is published to very high quality standards of design and printing. To save shipping costs and customs, Europe's 50,000 copies are printed in Holland.



Illustrator Sue Perez is responsible for the preparation of the many charts, circuit diagrams and other graphic illustrations used extensively throughout *Journal* articles. Sue is a member of a well-established HP family; not only her husband Tony (microcircuits) but also his parents, Joe and Emma Perez, are HP employees. □

Anne LoPresti works on the *Journal*'s photo typesetting system that it shares with other publications of Corporate Marketing Communications. The highly technical typographic requirements of the *Journal* are readily seen on almost any of its pages.

Handsome new U.K. headquarters

□ Opening ceremonies for HP's attractive new UK sales and service headquarters in the west-of-London village of Winnersh on January 24 were highlighted by some examples of British and American humor. Introduced by Dennis Taylor, managing director of HP Ltd., president Bill Hewlett opened the proceedings by admitting that at one time he called the Winnersh site the "Fort Knox" of Hewlett-Packard because it seemed such an expensive property to buy.

"However," he added, "I'm now tremendously impressed with this facility. It is clearly a wonderful place to work, and we hope it will serve the community as well as we feel it will serve our company in Great Britain."

Speaking for the community, Air Commander Sir Louis Dickens observed that, as chairman of the Workingham District Council, "I am delighted in welcoming a firm of this standing—international standing—into our district. After all, we don't anticipate any difficulty at all in receiving our rates [taxes] from a firm of this caliber."

Sir Louis recalled that some 25 years ago "we had the pleasure of hearing the representative of this district, a Mrs. Davis, talk about the vaporized fat that used to settle on surrounding landscape as a result of the operations of a firm then occupying this property.

"We do not anticipate any such problems in the future, and I'm sure the spirit of Mrs. Davis is looking down benignly and happily on the gathering here today."

After these formalities, some 70 guests including visiting HP people looked over the handsome 84,000-square-foot building, and were given demonstrations of the principal HP product lines. The Winnersh building replaces facilities at Slough that became overcrowded as a result of growth that saw HP annual sales in the United Kingdom climb almost thirty-fold from 1961 to 1974.

Mrs. Hewlett (Flora) welcomes Doug Edgar, chairman of the Winnersh Parish Council and "house master" at the local public school.

Bill Hewlett greets the Honorable Mrs. Peter Samuel, County Councillor for Winnersh and Hurst, now home for HP's headquarters in the United Kingdom.

Dennis Taylor, managing director of HP Ltd., and Bill Hewlett display plaque noting the date of the formal opening of Winnersh building. □

Palo Alto, Feb. 3 – The HP-21 scientific calculator, first of a new generation of Hewlett-Packard pocket calculators, was introduced today. It is priced at $125 (domestic U.S.).

The six-ounce HP-21 is the smallest and lowest priced model in HP's line. It is designed primarily for scientists, engineers and students. Scientific calculators like the HP-21 also are finding increasing use in marine and aircraft navigation, surveying, medicine and education.

The new HP-21 has all of the trigonometric and logarithmic functions of the HP-35. In addition, the user can calculate in either degrees or radians; convert from polar to rectangular coordinates and vice versa; format and round the display in either fixed or scientific notation; and perform register arithmetic (+, −, ×, ÷) with the contents of its single addressable memory.

While introducing the HP-21, HP also reduced prices of the HP-35 and the HP-45 pocket models from $225 to $195 and $325 to $245, respectively.

All are available to HP employees at the standard employee discount of 30 percent with a limit of one each per lifetime.

News in Brief

Chicago, Ill. – Dave Packard has been named to receive the 1975 "Washington Award" by the Western Society of Engineers. The HP chairman will become the 52nd recipient of the award which has been given to such notables as Herbert Hoover, Henry Ford, Orville Wright and John Volpe.

The engineering society, headquartered in Chicago, selected Packard "for his outstanding contribution in the field of electronics and measurements . . . and for his humanitarian activities." Named for the first U.S. president, George Washington, who was an engineer, the Washington Award is conferred for accomplishments which pre-eminently promote the happiness, comfort and well-being of humanity. Presentation of the award is planned for February 18 during National Engineer's Week.

Loveland – HP's Chuck McAfee has been elected president of Colorado Open Space Council, the state's largest environmental action organization. McAfee is manager of quality and reliability for the Loveland Calculator Division. He is the council's first chief executive from outside the Denver area, and one of his stated goals is to broaden activities throughout the state of Colorado.

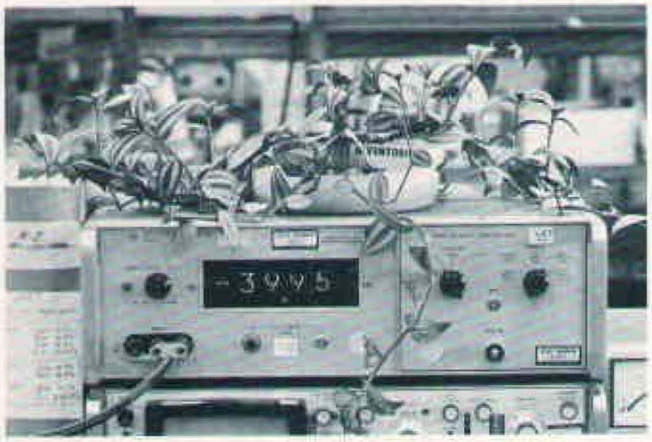
Colorado Springs – A club has been formed by people within Colorado Springs Division to reduce off-the-job accidents among employees and their families. Known as "Life is Fragile," the program aims at building awareness of the fact that 94 percent of bodily-injury accidents occur away from work. Headed by Dutch Herchle as president, the club will also go outside the HP organization with its safety message.

Meet Febetron 705—

It has been suggested by someone with an overdeveloped sense of melodrama that a spectacular event might be staged in pitting HP's two largest products against one another gladiator style. Imagine the program: "ESCA vs. FEBETRON 705—heavyweight electron spectroscopy machine against massive X-ray machine."

While HP's ESCA out of Scientific Instruments Division is certainly best in its own field, it would be hard pressed in coming up against the size (14 feet in length), weight (6,700 pounds), and pulsed power of the 705. The latter, a product of the McMinnville Division in Oregon, is clearly the largest device ever produced within Hewlett-Packard. Emitting high-intensity pulses of X-rays or electrons, to produce radiographs (X-ray photographs) of extremely fast-moving objects, Febetron 705s are widely used in the study of radiation effects and high-speed transient phenomena.

Is the Green Revolution taking over at HP?



Almost in the same mysterious overnight manner that saw so many men cultivate more and longer hair on their heads, one now sees great numbers of indoor plants sprouting inside HP buildings. Desks, benches, ceilings and even test equipment now are adorned with mini-jungles of potted plant life.

How and where did it all start? Of course, some people have been at it for years, but certainly some of the surge is explained by the practice adopted several years ago at Stanford Park: While experimenting with possible new approaches to area design for the new Santa Rosa facility, potted plants were placed around the perimeter of various work areas as a means of defining and decorating them while also preserving openness.

Visitors to corporate headquarters can see the ultimate of this approach in Building 3-Upper. Meanwhile, this pleasant movement is rapidly spreading its roots into other divisions and departments.

Measure

EDITOR
Gordon Brown

ASSOCIATE EDITOR
Dennis Cresswell

ART DIRECTOR
Tom Martin

PRODUCTION ASSISTANT
Teri Ocegueda

MEASURE Correspondents — [illegible] Atlanta, Nancy Baird; Texas area, Helen Hobson • STANFORD PARK, Joanne Engelhardt • WALTHAM, Janet Dale • YHP, Misako Harada

1501 Page Mill Road, Palo Alto, California 94304

HEWLETT-PACKARD COMPANY
1501 Page Mill Road
Palo Alto, California 94304