The thoroughly modern mini.

HEWLETT PACKARD 2100

HEWLETT **hp** PACKARD

DISPLAY REGISTER

15   14   13   12   11   10   9   8   7   6   5   4   3   2   1   0

LOADER ENABLE   INTERNAL PRESET   EXTERNAL PRESET   FETCH   IND   EXECUTE   PARITY   A   B   M   MEMORY DATA

RUN   HALT CYCLE   INSTR STEP   INTERRUPT SYSTEM   EXTEND   OVF   CLEAR DISPLAY   S   P   DECREMENT M   INCREMENT M
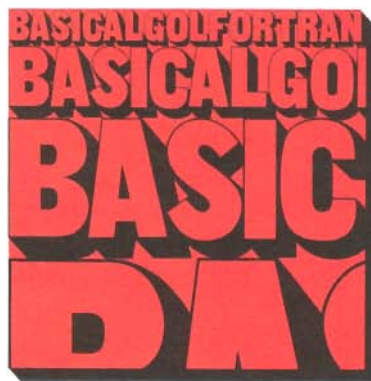
hp 2100A COMPUTER
HEWLETT · PACKARD

POWER OFF   LOCK ON

The thoroughly modern mini.

Thoroughly modern, HP's new minicomputer embodies the industry's latest technology—in design, circuitry, components, material and manufacturing methods. The result: new levels of performance from a small machine built to handle big jobs now. And bigger jobs tomorrow.

HP's 2100 evolved logically, from successful parents — our 2114, 2115 and 2116 computers. Over 4000 computers in the 2100 series are at work world-wide, delivering HP's promise of performance, reliability and field support. From concept to completion, the 2100 represents a distillation of all the lessons learned on earlier machines. Embodying the refinement of classic HP design: it is thoroughly modern by every measure — specifications, processor performance, efficiency, peripheral and option availability, software, reliability and field service. This balanced 2100 equation represents an optimum solution to minicomputer price-per-

formance. Young enough to be modern, fast enough to meet heavy demands without excessive cost. Yet its proven techniques provide a solid basis for predictable performance. That's the 2100. That's the HP way.

The HP way means a complete system. Fully integrated and compatible. Thoroughly engineered and and tested. Meticulously manufactured and quality assured. To support these claims, HP made the 2100 fully compatible with software and peripherals available on previous HP computers. To HP, these are matters of design, not default—a commitment to the past as well as the future.

Put your 2100 where it hurts. Down in the oil field, sweating in a steaming ship's engine room, hammering across the outback in a seismic truck, fighting the elements for oceanographers, kicking around on the production floor of factory or steel mill. Or in your computer room. It makes no difference to the 2100. Delivering performance is what it's designed to do and does best. Regardless of the environment.

In essence, the 2100 is the problem solver for today's businessman. The minicomputer that delivers real value at a low cost. And when your applications grow up and need more computing power, the 2100 can grow modularly with your needs. Are we serious? Why else does the 2100 come with the most comprehensive warranty in the small computer business. The largest software library. The most extensive parts inventory. The finest world-wide service team. It all adds up to the "thoroughly modern mini."
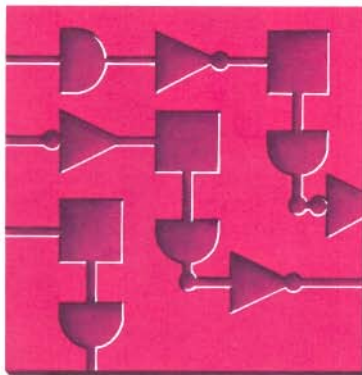
HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

Its advanced hardware is designed for you.

The 2100 architecture has an integrity that makes it compatible with the entire HP minicomputer family. It is as relevant and effective today as when originally conceived. The key to this "modern classic" lies in the use of the latest circuit devices, components and materials. Plus value engineering, assembly and manufacturing methods. And in-process testing, quality control, final test and evaluation. These features reinforce the basic design concept. And they maximize performance at a remarkably low cost.

Sound business sense is the key. Because hardware – typically less than half the system cost – can only work in context with its software in the real world of computer use. That's why HP would not abandon an established software library just to satisfy an incremental update in architecture. That's why the 2100 uses the same instruction set and interface characteristics of its predecessors. It uses the same systems and applications software, and will work with the peripherals and instruments available on earlier HP computers.

How modern is modern? The 2100's ROM (read-only memory) uses semi-conductor LSI (large-scale integration) to control instruction executions. The entire logic uses the latest IC devices. Core memory is optimized to deliver sub-microsecond cycle time. New long-life components are specified, packaging has been refined and updated. The result: a system more efficient, less costly, more reliable, easier to service.

Standard features unique in its class, normally found only on large-scale computers, come with the 2100. Like hardware multiply-divide – a time-saving feature that performs arithmetic operations in a fraction of the time it takes with software subroutines. Plus parity check/interrupt, and status retention with automatic restart after power failure. Also memory and I/O protect. All these features are standard. All help to make the 2100 a truly unique mini.
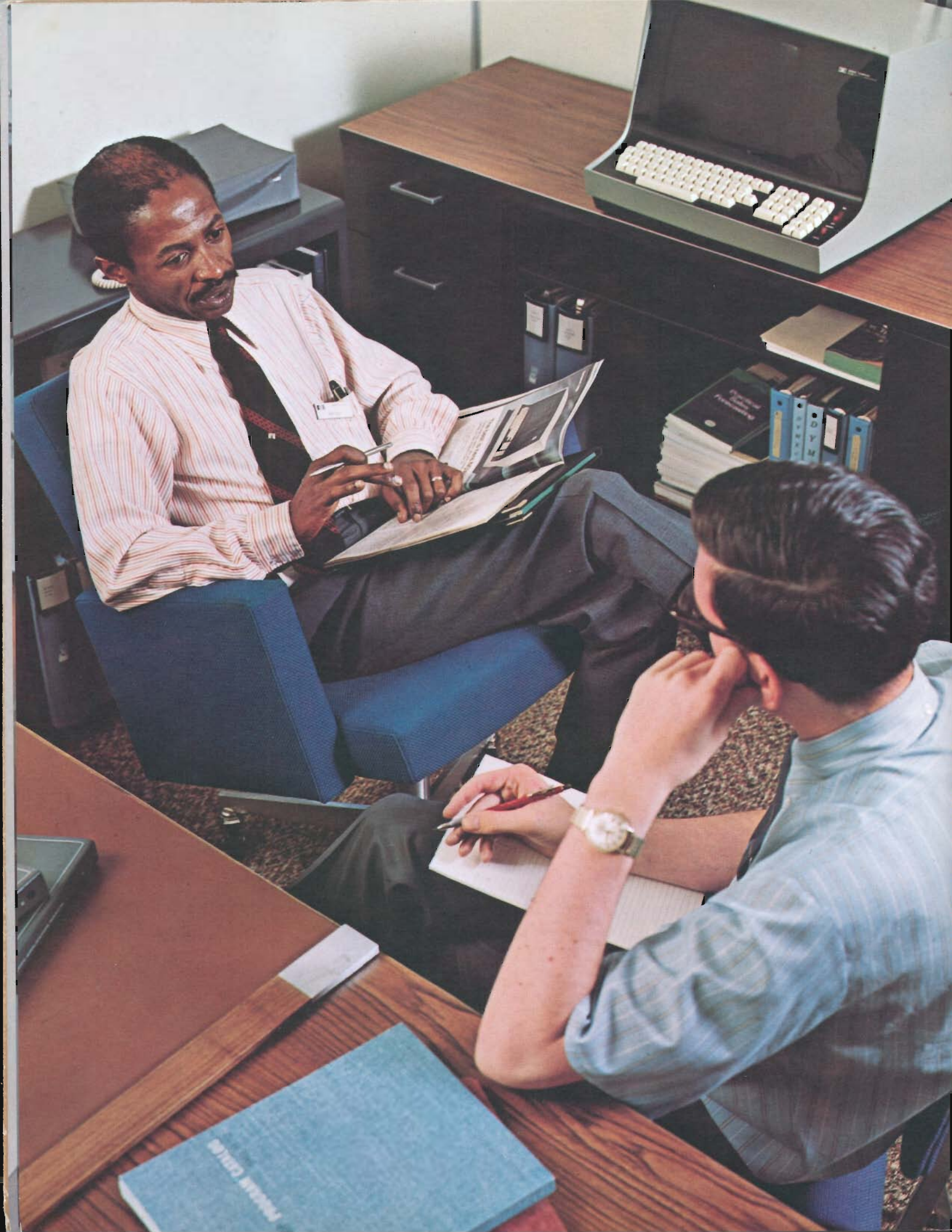
You get hundreds of man years of compatible software.

Your computer hardware investment only pays off when coupled to powerful software. HP's 2100 comes with a background of hundreds of man-years of advanced systems and applications software that make your system a hard worker the moment it's plugged in. HP's 180-page user program catalog, for example, contains 400 programs in 60 functional categories, including a 52-program statistical library.

Time sharing is an important ingredient delivered by the 2100. Originally, computing power was available only to the few with big needs and bigger budgets. In the '60s time sharing brought computing power simultaneously to many remote users with small jobs. But the sophisticated software, high overhead and communications problems delayed user acceptance. Hewlett-Packard introduced its first time sharing system in

1968, tested and debugged it thoroughly, and now has over 200 systems installed. In-house time sharing can provide services more economically than equivalent rental services. Without the hardware, software, service and security problems of external services. And HP's time sharing software is available for the 2100 without modification. Because the new machine's architecture is fully compatible with prior HP systems. And our time sharing concept is proving cost effective even for users with large batch systems—

systems that would require complex time sharing/batch operating systems to perform both functions.

Disc operating systems, living optionally in the memory 'hierarchy' between tape and core (in terms of speed and cost) provide rapid and economical access to large data files. HP's DOS, originally created in 1968, is also available with the 2100. It's a proven software system with more than 100 successful installations—to guarantee user confidence.

Applications software from Hewlett-Packard means a set of problem-solving tools honed for the specific need in the actual operational environment of the user. As new applications are generated, inside and outside HP, they are added to the program library and made available world-wide. HP commits strong, growing software support to new and established users alike. It's all part of the HP way.

This violent shake test,
is just one of the ways we assure
continued computer performance
in tough environments.
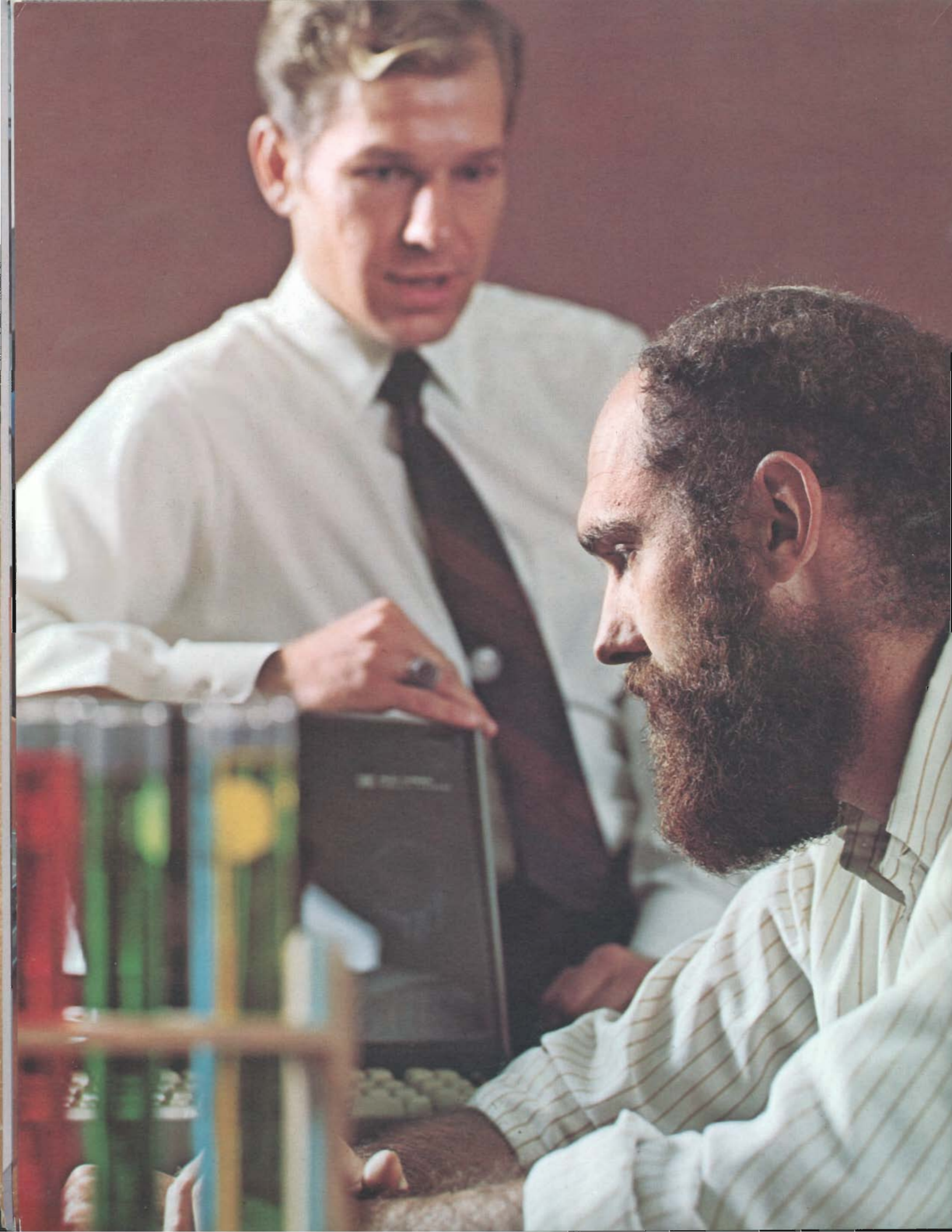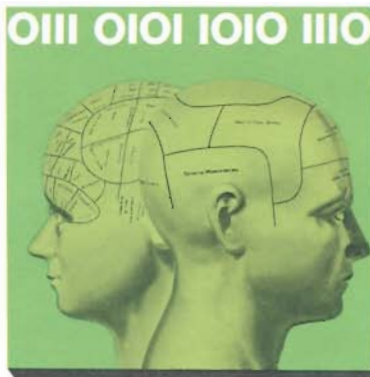It's just part of the HP way.
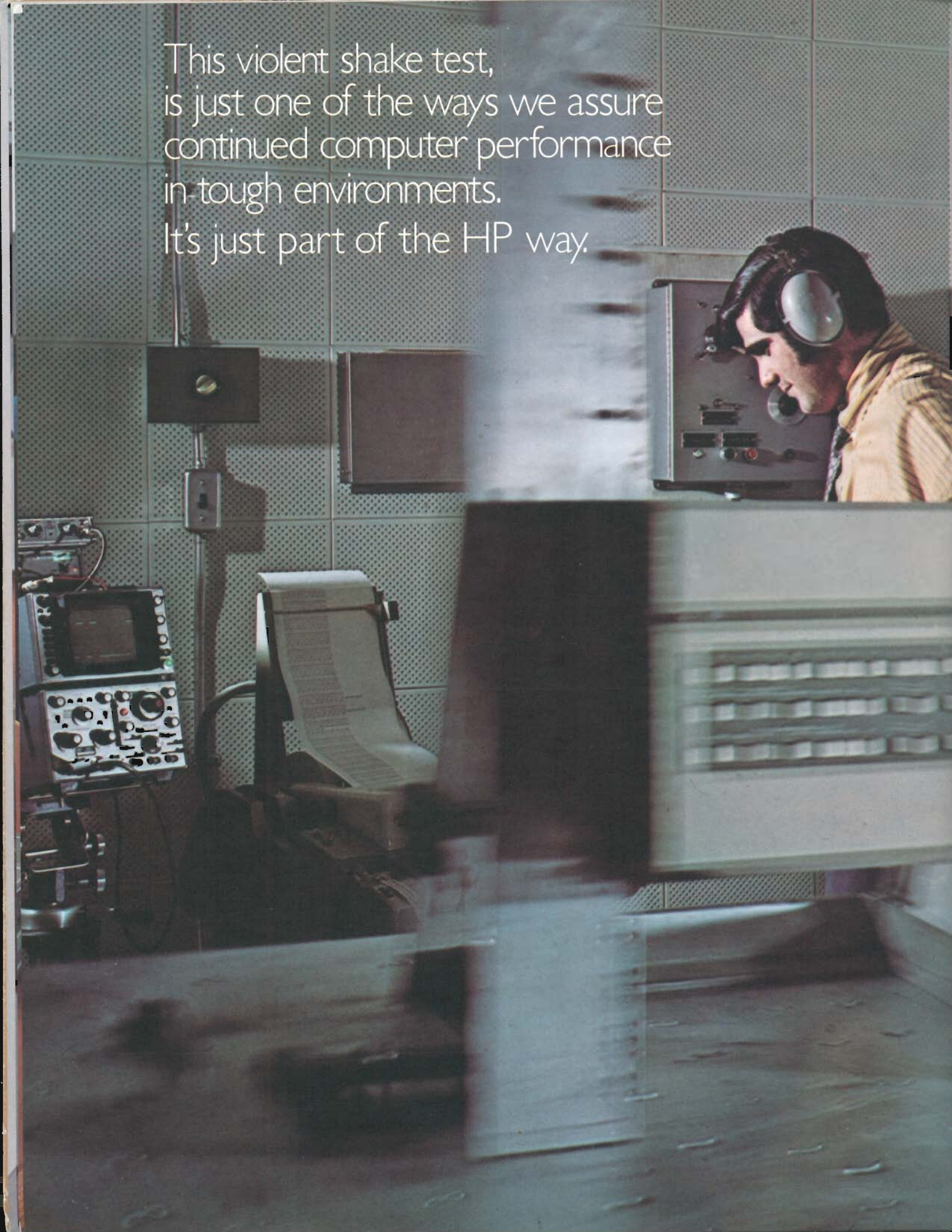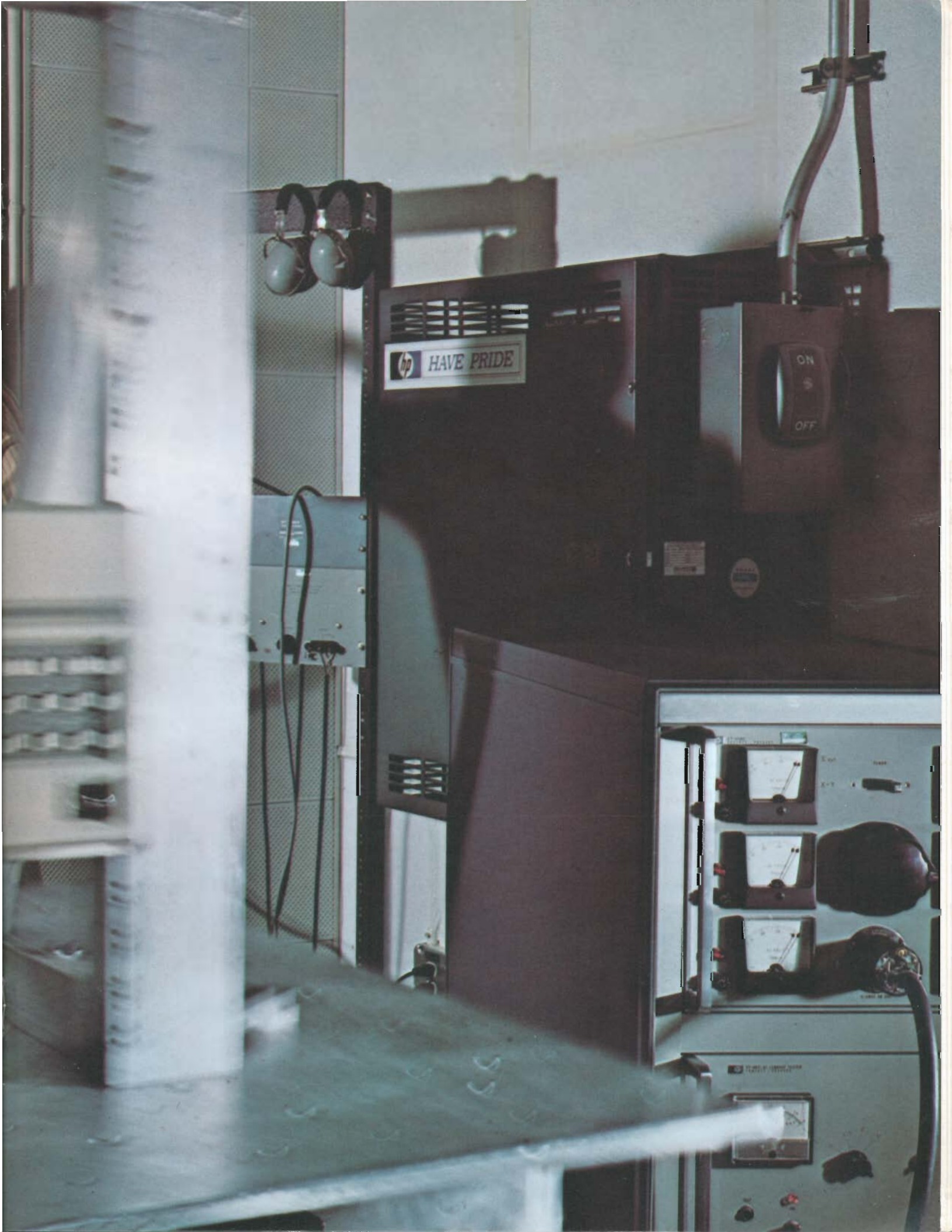
The 2100 minimizes difficult, costly programming.

FORTRAN, a widely used compiler language, helps users to concentrate on solving problems without excessive programming distractions. Hewlett-Packard's 2100 minicomputer has a fully supported FORTRAN II and IV compiler. It meets all the requirements of the American National Standards Institute, assuring long-term usefulness and compatibility with similar conventions in use internationally.

ALGOL is the scientist's programming tool, a mathematically-oriented compiler best suited for solving his problems. HP supports an ALGOL package on the 2100 with all major elements of ALGOL 60 (described in the 'ACM Communications' revised report, January 1963). But HP adds many more features – increasing the flexibility, power and utility of this effective programming language.
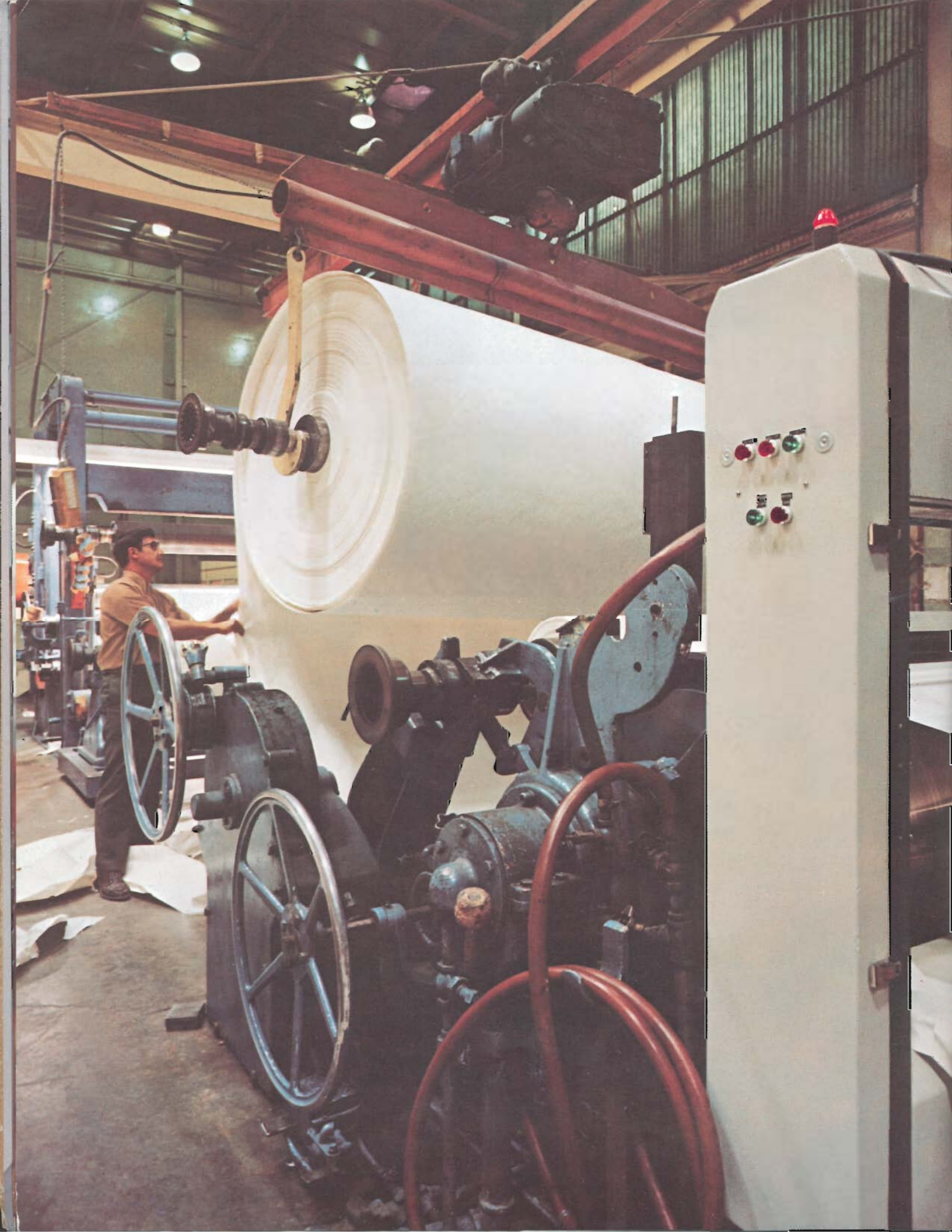
BASIC started as a 'conversational' time sharing language to provide easy access to computers for the maximum number of people. Somewhat similar to FORTRAN, it is easier to learn and offers almost the same capabilities. HP's BASIC interpreter, as used in the 2100, is modular and can work with up to 32 terminals simultaneously. As a higher-level language, it is especially useful in management, education and analagous situations.

ASSEMBLY LANGUAGE is the computer's interior language – vital to users who must maximize computer control for specialized applications. HP's 2100 assembler is more than merely a string of machine instructions – it provides input/output drivers to run peripherals, thus saving users from rewriting these routines for each program.

Our BASIC CONTROL SYSTEM handles loading, relocating and linking of user programs and library subroutines. It also simplifies programming and execution of all input/ output operations.

All these language and operating systems (coupled to the broad range of applications packages already on the shelf at Hewlett-Packard) provide one of the most complete sets of operating software available for minicomputers. And they are all ready for immediate use on the 2100. Refinements and additions are also being created continuously by Hewlett-Packard user groups worldwide. To make sure your "thoroughly modern mini" stays that way – for a long time to come.

The 2100 adapts to your environment.

Like the chameleon, the tough versatile 2100 easily adapts to its surroundings. It was created by HP to work long, hard and economically in just about any application. A set of powerful standard features are incorporated at a low price to save costly 'options.'

OEM customers demand competitive prices that relate to the real world of their end use. They require documented reliability that can stand critical review. And a service organization that responds no matter where the equipment may be. They also want the kind of flexibility that can deliver a system the way the OEM specifies it—on time! Hewlett-Packard welcomes these needs. With the 2100, we stand ready to satisfy OEM requirements in today's competitive markets. World-wide.

Industrial users expect the HP computer they buy to work untiringly, 24 hours a day. In rugged environments including extremes of cold, heat, humidity, shock and vibration. HP machines serve dozens of industries where conditions are far removed from a "computer room." We have helped create new applications that deliver performance and quality improvement, cost savings, higher productivity and greater precision. We serve the oil, paper, machine tool, aviation, oceanographic, transportation, medical and scientific areas, to name just a few. The 2100 has been designed and built to provide even more and better help to our widening circle of users.

Educational groups specify HP equipment because they're student tested, student proved. Applications software—fully developed—has been successfully applied in both the mathematics and scientific educational process. And it is also useful for administrative functions. Like test grading, class scheduling and attendance. All existing applications software in the HP library is available to 2100 customers. In addition, HP is staffed to service and consult with educators who are increasingly using computers to enhance the learning process.

Scientists and engineers, long accustomed to HP instrumentation, will find the 2100 ideal for integration into data sensing, collection, manipulation, analysis and monitoring systems. This is an area of acknowledged HP leadership, and the 2100 will still further enhance the reputation of our technical staff in scientific and engineering problem solving.
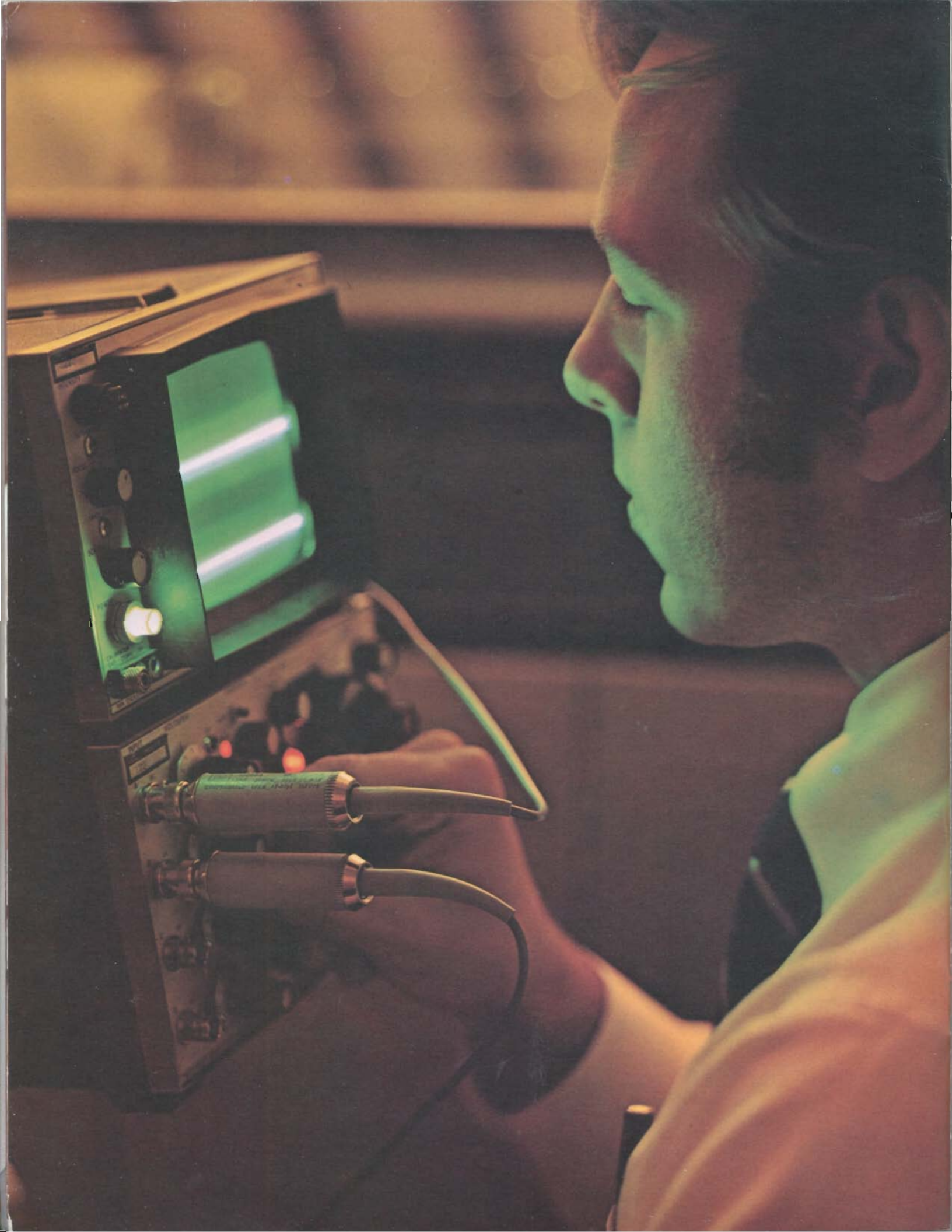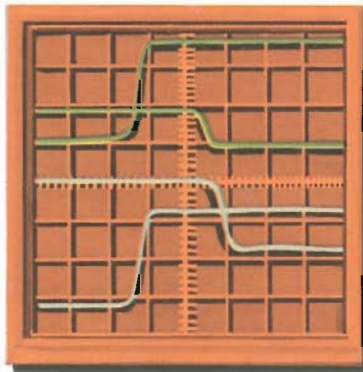
Worldwide service keeps you 'up'.

Service cannot be compromised in today's critical applications. As men and machines penetrate the furthest corners of the earth, computers from HP can help in virtually every aspect of the operation. With speed and economy. And standing behind every HP computer, based in over 100 local service/parts centers world-wide, is a team of trained service personnel and systems analysts. They're ready to respond immediately to the call for help. Three major parts depots at strategic world locations provide in-depth backup. Continuous upgrading, updating and training of HP men and women assures continuity of our high standards on new equipment and services.

HP field engineers, for example, take 3 months of formal classroom training and 6 months of field problem-solving with a senior engineer—before going it alone. When your HP field service man comes to you, he's fully trained, completely equipped. On the 2100, he can change every processor card from his kit!

Training customers to use their systems—get the most from them, grow with them and their technology—represents a historical HP commitment that continues and improves with the 2100. In today's era of rapid technological change, smart managers know that the investment in time and money to educate key personnel doesn't really cost—it pays. HP provides courses world-wide at all its data centers, to keep user personnel growing with their systems.

Systems analysts from HP, schooled and experienced in systems and applications software, are part of HP's continuing commitment to its computer customers. These computer professionals enable users to realize the full potential of the system. They stand ready to help with every aspect of the installation. It's just another problem to be solved.

HP tackles the total task. Is there any better way?

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DIGITAL COMPUTERS