

# Computer Advances

November/December 1982

## Choose the right tool for the job

Personal computers can be powerful tools that optimize your productivity and minimize the drudgery of many business and technical tasks. But as with any kind of tool you use to do a particular job, you will be most if you use the right tool for the job.

That's why Hewlett-Packard designed six very different families of personal computers — each with its own special focus, and an extensive library of software and range of peripherals. And now HP's two newest personal computers described inside add significant capabilities to these personal computing families. If you're looking for a personal computer to help optimize your professional skills, HP gives you a surprising breadth of choice:

Series 10 professional calculators — pocket sized, pre-programmed calculators dedicated to solving problems that professionals and students face daily in science, engineering and business.

Series 40 handheld computers — versatile tools bridging the gap between calculators and desktop computers, supplying surprising power in a compact package. Over 5,000 programs are available.

Series 70 portable computers — self-contained battery-operated personal computers designed for the professional on the move.

Series 80 personal computers — general purpose personal computers designed for the analytical professional or small business. A broad range of software is available.

Series 100 personal office computers — easy-to-use workstations especially designed for the manager or the administrative staff to give them local power with access to central information files.

Series 200 personal technical computers — high performance machines powerful enough for complex scientific and engineering applications.

Until now, professionals had to sacrifice one thing for another, such as power for size or capability for portability. But with the wide variety of computers in our six families, chances are you can find exactly what you want and need in the size you want.

HP personal computers give you not only a choice of technically advanced tools for your job, but also the quality and reliability that HP has established over the years.

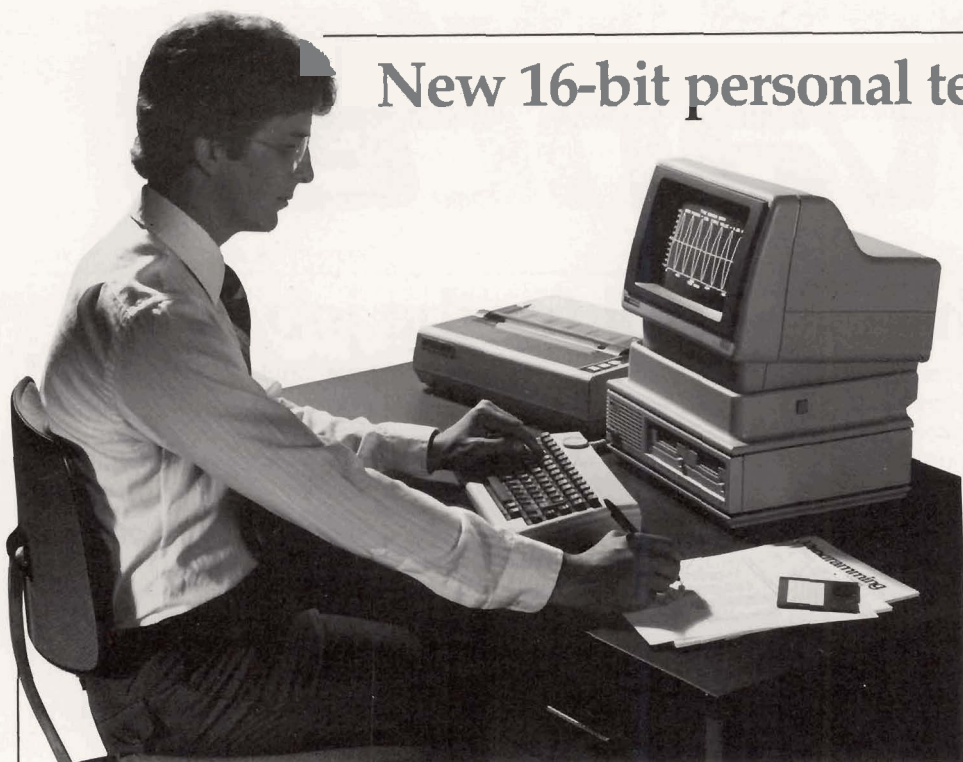
You can purchase HP personal computers from your Sales Rep or a local computer store.

 **HEWLETT  
PACKARD**



HP's six families of personal computers include the new Series 100 personal office computer (left foreground) and the new Series 200 personal technical computer (right foreground).

## New 16-bit personal technical computer



The keyboard includes five user-definable softkeys (10 with shift) and a special rotary control knob for fast editing of programs, cursor positioning or analog control of instruments.

### Languages and software

The Model 16 is available with three powerful language systems — BASIC, HPL and Pascal. HP BASIC includes enhancements characteristic of more powerful languages such as FORTRAN or ALGOL.

Numerous HP applications software packs are available. These include computer-aided engineering tools such as AC Circuit Analysis and Digital Filter Design, mathematics modules such as Numerical Analysis and Statistics; and business aids such as Project Management, Graphics Presentations and VisiCalc®.

You can purchase it from your Sales Rep or at retail computer stores.

*VisiCalc is a registered trademark of VisiCorp*

A compact and low-cost personal technical computer, the HP Series 200 Model 16, is Hewlett-Packard's first 16-bit personal computer.

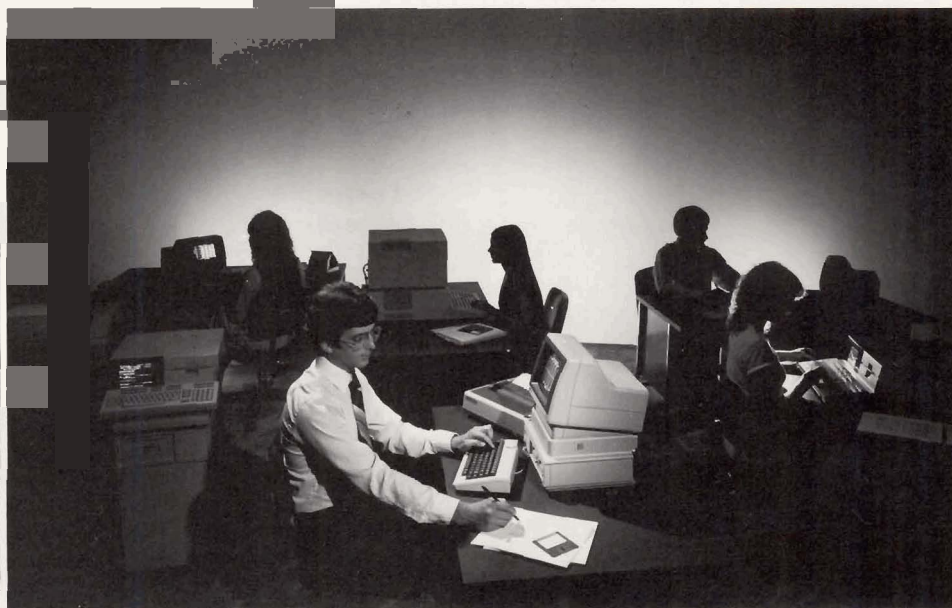
Occupying about as much area as an open three-ring notebook, the Model 16 is based on the Motorola MC68000 microprocessor, a 16-bit "computer or a chip" with 32-bit internal architecture, which has become an industry standard for computation-intensive applications.

While it was designed for scientists and engineers, the Model 16 can be used by anyone who needs a personal computer with maximum computing power. Despite its small size, the Model 16 contains more power than anything in its class. Its 16/32-bit processor; 8 MHz system clock and software power provide very fast program execution.

### The Model 16 system

The Model 16 consists of a 9" (229 mm) diagonal CRT, a detached ASCII keyboard and a choice of single or twin 3½" microfloppy drives. Each one provides 270Kb of storage per disc. A single 3½" microfloppy also is available with a 4.6Mb Winchester hard disc.

A standard 128Kb of memory is expandable to 768Kb, and with an external expander can be increased to 4.6Mb. The Model 16 has built-in graphics, and the CRT features an 80-character by 25-line display.

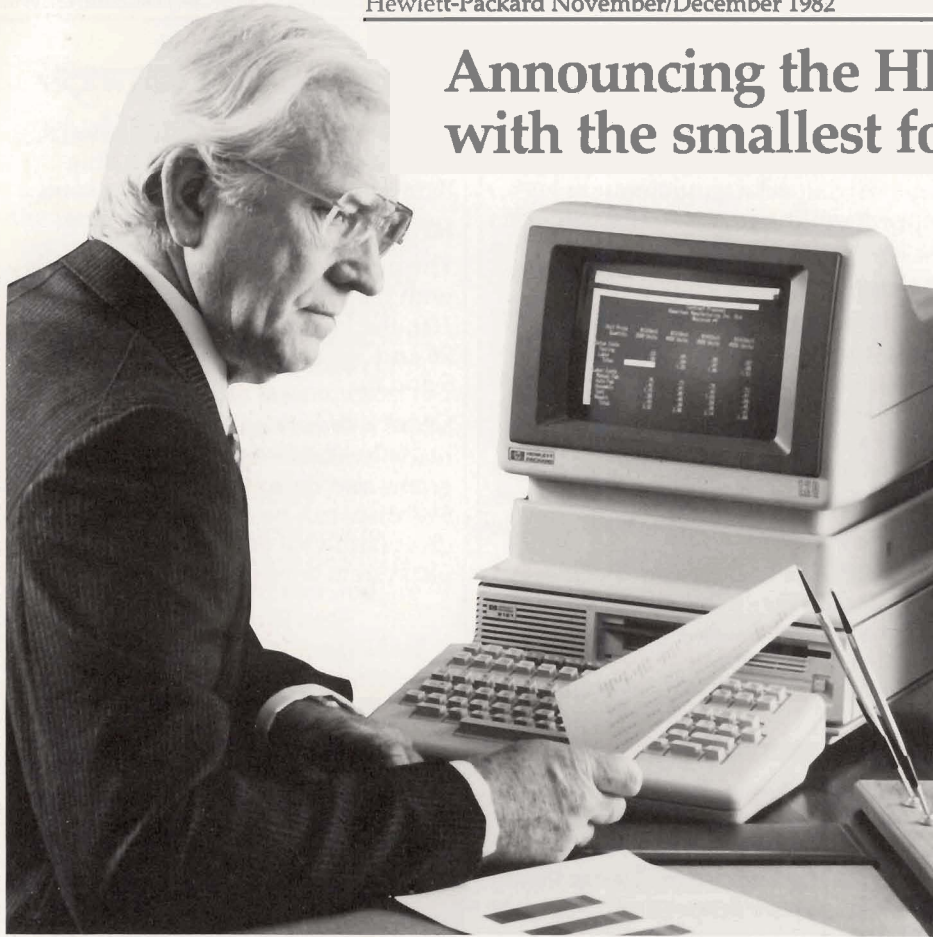




Hewlett-Packard November/December 1982

**Computer  
Advances**

## Announcing the HP 120 with the smallest footprint ever



The HP 120 is a new personal computer from HP which fits comfortably on your desk. The entire system — display, electronics, keyboard and disc drives — takes up only 1.7 square feet, about the same amount of desk space that an open loose-leaf binder takes.

The HP 120 is completely software- and data-compatible with the HP 125. Both Series 100 Personal Office Computers are tools to help managers, business professionals and administrative personnel perform day-to-day tasks more effectively. Software solutions include word processing, decision support, information management, graphics presentation, communications and accounting.

The HP 120 and HP 125 have built-in terminal features to communicate with larger systems in a network. In addition to intelligent terminal features, newly enhanced communications software allows you to transfer files between the HP 3000 and the Series 100.

Block error checking and automatic data re-transmission are now performed when information is sent to the HP 3000. An automatic logging mode allows data from other computers to be sent directly to a Series 100 disc file.

Series 100 Personal Office Computers are designed to produce results without making you learn programming. Screen-labeled function keys let you execute commands by pressing a single key, eliminating the need to memorize long key sequences.

Special menu-driven programs are standard with your Series 100. These programs help you perform operations without having to learn operating system commands.

Results that can be produced using your Series 100 include forecasts, presentations, reports, budgets, mailing lists and graphs. HP-supplied software packages include:

*VisiCalc*® — a spreadsheet package for "what if" analysis of any numerical problem. This package is ideal for such applications as forecasting, budgeting and planning because it allows you to manipulate rows and columns of numbers while the computer makes the calculations and retains the totals and averages.

*Graphics* — for creating graphs and slides on paper or transparency. A menu-driven application makes bar charts and linear or logarithmic graphs simple.

*Series 100/WORD and WordStar*™ — to create and revise anything from memos to major reports. There are special features which help you create custom form letters and mailing lists (optional on WordStar).

*Series 100/CONDOR* — to keep track of information, such as customer lists, survey results and personnel files. CONDOR lets you create a form to organize and enter the data you want to store.

*DSN/Link* — to transfer files between the Series 100 and a host computer, as well as to access information from external sources. With a phone call, you can get news, airline reservations or financial information.

*BASIC* — for users who want to develop their own applications.

All software packages have been tailored to use the Series 100 screen-labeled softkeys for step-by-step guidance.

Along with the size of the computer, the cost of putting a computer on your desk has decreased, too.

WordStar is a trademark of MicroPro International Corporation  
CONDOR is a trademark of Condor Computer Corporation.

## New 3½" microfloppy family provides low-cost mass storage

If you need a smaller, lower cost flexible disc system, but can't sacrifice performance, take a look at our new 3½" microfloppy family for HP personal computers: HP 9121D and HP 9133A.

The family uses Sony Corporation's 3½" drive, a new design which is gaining acceptance as an industry standard. Combined with HP electronics and packaging, the 3½" technology offers you high quality mass storage.

### Small package, big performance

The HP 9121D is a low-cost, dual 3½" system which gives you 540Kb of high speed storage (it can transfer 17.8Kb of information per second). Yet it occupies only one square foot on your desk.

The HP 9133A combines a 4.6Mb Winchester with a 3½" microfloppy in a single package, giving you high speed, on-line performance with the convenience of removable media.

### Media protection system

The 3" media is packaged in a hard polymer housing (instead of the traditional vinyl jacket) with a protective metal guard to slide over the read/write opening when you're not using the disc. This guard protects your data from damage and contamination.

The 3½" media is also hard-centered for consistently precise centering of the read/write head. Furthermore, we have an exclusive new Media Monitor which tells you precisely

when to replace an old disc, so you don't have to worry about losing data on overused media.

### HP system compatibility

The new 3½" systems are compatible with the HP Series 80, the HP Series 100, the HP Series 200 (Models 16, 26 and 36) and the HP 1000 (Models 5 and 6).

Major software pacs from HP are already available on 3½" media. Programs and data currently stored on 5¼" discs can be easily copied to 3½" discs (and vice versa) through simple system commands or utilities.

## New low-priced daisywheel printer for word processing

A general-purpose word processing printer, the HP 2602A can be used on many HP systems. A low-priced, letter-quality printer designed for high reliability, it can handle reports, letters and multipart forms.

Printwheels for the HP 2602A are available in a variety of typestyles and languages with 10- or 12-pitch and proportional spacing. Proportional spacing gives you more professional output.

Designed to be easy to use and maintain, the HP 2602A offers 2,500 hours mean-time-between-failures

and 15 minutes mean-time-to-repair under typical office conditions. Printing at a peak speed of 25 cps, the HP 2602A meets most single-user output requirements.

Features include an RS-232-C interface with an optional HP-IB interface, bi-directional printing, and 132 columns at 10-pitch (158 at 12-pitch). Optional bi-directional forms tractors accommodate multipart forms up to 15.2" wide.



## Automatic sheet feeder for HP 2601A saves time, money

A new automatic sheet feeder for the HP 2601A Daisywheel Printer eliminates the need to hand feed and position single sheets of paper into the printer. With the HP 26010D, correspondence can be printed with a minimum of attention and less expensively by using cut-sheet paper instead of continuous paper.

The sheet feeder is controlled via a word processing device or locally, by using control buttons on the feeder. Rollers pull each sheet out of



the tray and position it on the platen.

Once the sheet has been printed, a second set of rollers feed the sheet out of the printer and into a basket.

Separate trays allow letterhead paper to be stored in one tray and plain bond in another. Also available are trays for legal, government, monarch, wide or European-standard paper. Each tray holds 200 sheets of 20-lb paper.

## New minicomputer triples performance of existing A-Series processor family

A third member has been added to the family of HP 1000 real-time automation processors. The new HP 1000 Series A900 adds an unprecedented three million instructions per second capability to the existing line of A600- and A700-based computers making it the fastest, most reliable low-cost minicomputer that HP knows of on the market today.

### Versatility and flexibility

All A-Series processors execute under identical software products, use identical I/O interfaces and are packaged in common. These similarities make the A-series ideal for real-time applications where total program portability and flexible distributed communications are required.

In addition to full compatibility with the current A-Series instruction set, the A900 incorporates many enhancements, such as a two-level pipeline architecture and a cache memory scheme.

### High performance

Three A900 floating point chips are designed as an integral part of the

CPU for maximum performance and efficiency. A typical mix of floating point operations will execute at 560,000 instructions per second.

With the built-in instruction sets for transcendental functions, the A900 is capable of nearly one million operations per second. To complement the high processing power, the A900 supports up to 6Mb of error-correcting main memory and up to 200Mb of mass storage.

The A900 I/O system is based on separate processing of I/O instructions and other CPU operations. Each interface card handles direct memory access transfers at an input rate of 3.7Mb/sec.

### Real-time software

As with all A-Series computers, the A900 executes under the new RTE-A.1 real-time operating system. A virtual memory addressing scheme enables programs to transparently access data arrays much larger than main memory — up to 12.6Mb.

RTE-A.1 supports application programming in FORTRAN 77, Pascal, BASIC and Macro Assembly languages.

The A-Series line supports Graphics/1000-II 2D and 3D graphics libraries, Image/1000 data base management software, DS/1000-IV networking software for interconnecting other HP 1000 or HP 3000 systems and X.25 packet-switching data communications software.

### Advanced peripherals

You can equip the A900 with a choice of seven HP CRT terminals, including two color graphics terminals, a variety of graphics printers and plotters, or several disc drives, including HP's newest 3½" microfloppy flexible disc drive (see page 4). The A900 is ideal for high speed 3D graphical analysis and display, image and signal processing, data acquisition, reduction and control, process simulation and optimization, and numerous other applications requiring high performance computation.

## Third maintenance price reduction for HP laser printer results in 82% cut

For the third time since introduction, Hewlett-Packard has announced a monthly maintenance price reduction for the HP 2680A Laser Printer. The monthly maintenance prices are now 82% lower than they were when the product was introduced in December, 1980.

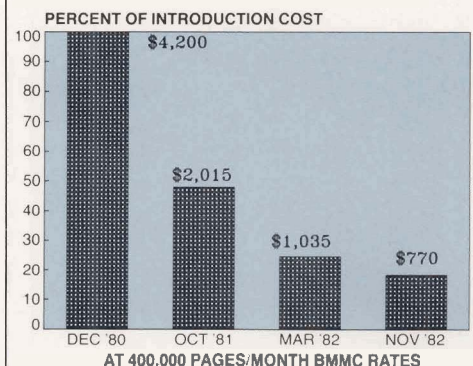
Maintenance prices are based on the number of pages printed each month. At a typical usage level of 400,000 pages per month, the basic monthly maintenance price is now only 18% of the original charge.

"Because of the laser printer's reliability, we have been able to re-

duce our monthly maintenance price in a day when maintenance prices are increasing for other non-impact printers," states Chuck Jepson of HP.

The HP 2680A Laser Printer, which prints at 45 pages per minute, can produce high quality output including specialized forms, reports and correspondence. With new graphics capabilities (July/August 1982 *Computer Advances*), the laser printer can now print manuals and other documents that have text merged with business graphics, illustrations, logos, signatures and a variety

of electronically designed custom graphics.



**HP Computer Museum**  
**[www.hpmuseum.net](http://www.hpmuseum.net)**

**For research and education purposes only.**

## Graphics made easy on the HP 2700

Two powerful and easy-to-use software packages are available for the HP 2700 series of high performance color terminals.

### Invent your own charts

AUTO PLOT/2700 is a powerful application software package which offers you a friendly menu-driven interface. The result is high quality decision support graphics including pie charts, bar charts, line charts, log charts and scattergrams.

Since all the chart types use the same data menu, you can choose a pie, bar or line chart and see the results in seconds. Text slides may be designed in a totally interactive environment as well. You avoid costly and time-consuming software development, and no CPU time is needed.

In addition, the menu-driven interface allows you to point to a portion of a chart with the graphics cursor and then change its color, size, shading or font in seconds. Whole charts can be moved, scaled and combined with other charts and text to form a complete graph.

Once designed, the chart can be copied to a plotter, video output camera or raster printer. AUTO PLOT/2700 allows unattended plotting and printing on HP plotters and printers which have chart advance. You can specify multiple copies for up to 17 different charts.

Fast chart generation with AUTO PLOT/2700 increases your productivity and results in better decision making.

### Paint your own pictures

PAINT BRUSH/2700 does for the creative chart maker what word processing has done for the typist. It provides a means for drawing, editing and combining pictures, including AUTO PLOT/2700 charts. You can also edit pictures generated by host software.

The HP 13273 Graphics Tablet is an ideal companion to PAINT BRUSH/2700. With the graphics tablet, you select the color and "brush tip" de-



sired and then draw freehand, as if using a paintbrush on paper. If you make a mistake, just hit the "UNDO" key!

For precision drawing, you can use aids similar to a ruler and compass on graph paper. Straight lines, circles, rectangles and arcs are at your fingertips to help build that perfect picture. No programming knowledge is required, and the cost to generate quality graphics is cut dramatically.

While using PAINT BRUSH/2700 you can select pictures or parts of

pictures to move, rotate, scale or copy. Since you can also add and edit graphics text labels, modifications to pictures such as an organization chart, pie chart or storyboard are achieved using little or no CPU time.

As with AUTO PLOT/2700, the final picture created in PAINT BRUSH/2700 can be copied to a plotter, video output camera or raster printer, or be saved on disk. The result is impressive speed and flexibility for generating of professional quality, presentation graphics.

## Triple I/O, memory slots on desktops

HP's new bus expander is believed to give the HP 9826A and HP 9836A more memory and I/O capability than any other personal computer on the market. This new HP 9888A Bus Expander increases the number of memory and I/O slots on the HP 9826/36 desktop computers from eight to 23.

Designed for I/O intensive or memory-consuming applications, such as production test applications, engineering instrumentation laborato-

ries and design analysis, the HP with an integral I/O card.

The HP 9826/36 can handle up to four expanders at once. This permits up to 7 Mb of user memory and 24 I/O cards. The desktops and the expander can accommodate 16-bit parallel cards, RS-232 cards, HP-IB cards, BCD cards and additional memory boards.



## HP 1000 links to Allen-Bradley PCs for better control of factory floor

Programmable controllers (PCs) are frequently used to automate individual pieces of factory equipment. Are you aware of the benefits of managing manufacturing production with a central computer that obtains data from PCs?

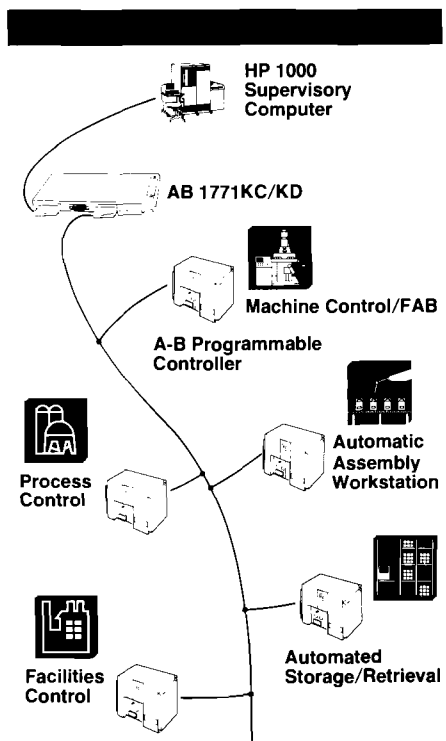
PC Link/1000, Allen-Bradley (PCL/1000-AB) interfaces HP 1000 E- and F-Series industrial automation computers to PCs which are connected to the Allen-Bradley Data Highway. The new link can couple up to eight data highways to a single, micro-processor-based interface card. Each data highway can address 63 PCs, for 504 PCs per interface card.

The HP 1000 ties these machines into a network to gather data and report on current station cycle times, yield rates and piece part count status on up to 504 individual PC-controlled machines.

The key product features of PCL/1000 include:

- real-time access to PC status and control information
- high level language subroutine access
- loopback verification routines
- the capability to upload and download PC programs under software control.

PCL/1000-AB adds up to simple program access and control of factory floor machines. The HP 1000 streamlines the manufacturing process for top performance and minimum down time.



## New pens enhance drafting capability

HP now offers liquid-ink pens which enable computer-aided drafting and camera-ready plotter art to be generated on HP's B-size (A3) plotters: Models 9872, 7220 and 7221. HP also announced vellum and polyester drawing media, in A (A4) and B (A3) sizes, to use with the new pens.

With eight pens selectable under program control, the plotters can combine different line widths and colors on the same plot. This capability, coupled with the liquid-ink pens, makes HP plotters ideally suited for applications such as manual illustrations, reports and

engineering drawings.

The plotter pen points are available in six line widths: .18mm, .25mm, .35mm, .50mm, .70mm and 1.0mm. These are the same line widths now available for the HP 7580A and the HP 7585A drafting plotters.

You can use the new pens with all of HP's currently installed four- and eight-pen plotters. The pen boots in the plotter stalls must be changed to a newly designed boot, which comes with the pens.

### In Brief

- On October 1 more than 1,700 HP employees celebrated production of the 10,000th HP 3000 by releasing 10,000 helium-filled balloons into the sky over Cupertino, Calif. The computer will be used by a Volkswagen dealership in Houston, Texas, where it will be part of a nationwide network for Volkswagen of America and its dealers. According to a recent survey by Computer Intelligence Corporation the HP 3000 has become the fifth most widely used business computer in the United States.

- Do you own an HP 9826/36 desktop computer? If so, you'll want to know that the 98256A memory card price has dropped 50%. That means just 0.4 cents per byte.

- Now you can order protective dust covers for your HP terminals, plotters, printers, personal and desktop computers. U.S. customers may call toll-free 800-538-8787. From California, Alaska and Hawaii call (408) 738-4133.

You can order the new Autumn 1982 *Computer Users Catalog* by calling one of the above numbers, too. The new catalog features 70 pages of supplies, from thermal paper to workstation furniture.

- Are you thinking of upgrading your HP 9845S to a 9845T? The HP 98401A Upgrade Kit includes a 512Kb memory board. You now get 576Kb of read/write memory when you upgrade your system.

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*Computer Advances is published every two months for Hewlett-Packard computer customers to keep you informed of new HP products and services and help you get more out of your investment in HP equipment.*

*For further information on any of the products and services discussed herein, please contact your local HP Sales Office.*

*Note: Not all HP computer products are sold and supported in countries other than the US. Please check with your local HP Sales Office.*

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