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Looking something like a robot octopus, the intelligent peripheral controller routes data to the appropriate device. Illustration by David Diaz.

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ProFiles

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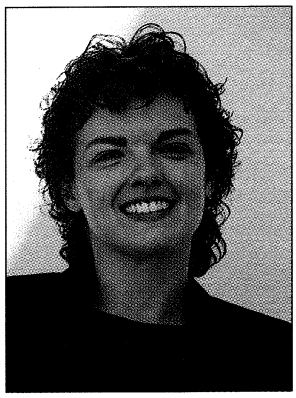

CONSUMER INFORMATION: PROFILES SECOND PURPOSE

PROFILES readers rely on the magazine for two fundamental things: tutorial material to help them learn how to use software and hardware, and consumer information to help them make sound purchases.

In recent months we've taken steps to provide you with more of the former: expanded "Q&A" and "On the Practical Side" departments and feature articles geared to a wider spectrum of users.

Now we're also adding departments and features that focus on helping you learn more about the products you're apt to be most interested in. The "Kaypro Product Spotlight," which began in the May issue and continued in June with Kaypro price lists, this month focuses on a new model, the Kaypro Micro 1.

And starting with this issue, we'll offer a series of buyer's guides to peripherals and software that you won't want to miss. The series kicks off with a look at printers, and whether you're thinking of upgrading your own printer or you're scouting for your office, this article should help you learn more about the various types available, their advantages and limitations, and how to decide which one will best meet your needs. We've included two detailed checklists--one to help you carefully and thoroughly determine your needs, and another to take shopping so you can ask all the right questions and bring home the right product.

The series will continue in coming months with guides to modems, monitors, and more, and each one will be accompanied by lists of questions to ask yourself and your dealer to make sure you make the right buy.

Also in this issue:

- If you've ever considered installing a local area network in your office, but perhaps felt that solution was more than you really needed and more costly than you could really afford, you may have wished for an alternative--and there is one: see Robert Sawyer's article on the "Poor Man's LANs," intelligent peripherals controllers that give you a relatively sophisticated yet inexpensive way to share peripherals.

- William Murdick's two-part article on the fundamentals of MS-DOS began last month with explanations of internal and external DOS utilities. It continues this month with explanations of wild cards, batch files, and, for hard disk owners, the basics of hard disk management. If you're new to MS-DOS yourself, or if you need to help others learn it, this series can serve as a handy basic training

Our basic one-year subscription rate is $19.97 for 12 issues. If your first issue does not arrive within eight weeks after ordering, or you miss an issue, please write to us: PROFILES Magazine, P.O. Box 2889, Del Mar, CA 92075. We'll extend your subscription or send the issue. To direct PROFILES to a new address, attach a recent mailing label plus your old and new addresses. Allow eight weeks for processing. International subscriptions are available through PROFILES Magazine only. Our regular yearly international rate is USD $40 (includes postage). Checks MUST be drawn on a U.S. bank in U.S. dollars only.
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guide and reference.

- For more on hard disk management, see Joseph Comanda's guide to creating, organizing, and manipulating subdirectories in "Making Your Hard Disk Work For You." The new hard disk user can learn to work with the disk at the operating system level and how to use it more effectively with various applications.

- If you have a small business, you may be looking for the right accounting program--one with enough features to meet your needs, but not so complicated you have to be a CPA to use it. Checks & Balances, a venerable checkbook balancing program that has become much more, may be your solution, as David Mills explains in "Beyond Checkbook Balancing."

- CP/M readers who received the Perfect software bundle may have been intimidated by Perfect Filer, but Joseph Mortensen explains how to convert PF files to ASCII format and export them to other programs for easy manipulation. If you have a cache of information in Perfect Filer files that you've never been able to readily use, this article will show you how to make it accessible.

- Finally, one of the things our MS-DOS readers have clamored for most is information about upgrades, and in this month's "On the Practical Side," technical editor Marshall Moseley takes a look at the Kaypro PC bus board and power supply, and why they can determine how you upgrade. This two-part column will continue next month with a look at Kaypro's 286 upgrade kit and hard disk controllers for the Kaypro PC.

Gwyn Price

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HOW BERNOULLI BOXES WORK

On page 22 of the April issue, Brock Meeks writes about Bernoulli Boxes, and it seems to me that his understanding of the way they work is incorrect.

Bernoulli Boxes are supposed to be incapable of head crashes, but not because the read/write heads "rest on the disk," as Meeks explains it. Instead, the flexible disks approach the read/write heads by virtue of their rotational speed, plus an air cushion that pushes the spinning disks up toward the heads (the Bernoulli principle in fluid dynamics). If the disks stop spinning because of motor failure or a power outage, the air cushion disappears also, causing the disks to drop away from the heads, and eliminating the possibility of head crashes.

Jonathan D. Miller
St. Louis, Missouri

Brock Meeks replies:

"Mr. Miller is correct. Like the Read/Right head in a hard disk, the Bernoulli read/write never actually touches the media itself; the rotational speed and 'flex' of the disk bring it to within micro-inches of head. However when disaster strikes, as Mr. Miller points out, the media "falls away" from the head in the Bernoulli box, making head crash (theoretically) impossible. In a hard disk disaster, the read/write head 'flying' at micro-inches above the hard disk platter actually 'crashes' into the platter. No survivors in a hard disk head crash.

"For comparison, a floppy read/write head is in constant contact with the media. Although floppy head crashes are rare (unless someone tosses a hand full of sand into your disk drive), the constant action of the head on the media will eventually wear it out."

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PC TOOLS CLARIFICATION

I want to clarify something concerning the review of PC Tools in my article on file recovery utilities in the May 1988 issue.

For the article, I reviewed version 3.4 of PC Tools; however, after the article was submitted, Central Point Software discontinued PC Tools and sent me a copy of their new product, PC Tools Deluxe. Thus the article describes a product that has been superseded. Only the last paragraph describes PC Tools Deluxe (along with a passing mention earlier in the article).

This paragraph was inserted after the article was submitted, and it was my intention that it appear italicized, as a parenthetical addition, with an editorial note indicating that it was a bit of last-minute news. Unfortunately, this distinction was not made when the article was printed.

I hope that this did not cause any confusion among readers, or irritation to Central Point Software.

T.F. Chiang
Providence, Rhode Island

PROFILES *regrets the error.*

MORE KAYPRO SPECIFICS

Lately I've been thinking about whether or not to renew my subscription to *PROFILES*. I came to the conclusion that loyalty to the brand was not enough, (I own a 4-84 and loaded Kaypro 8088-2 systems) as I seldom find anything of interest anymore. This is probably more a consequence of perspective than anything else, so I want you to know that this is not intended to be a criticism. I do, however, offer it as a suggestion of a direction for a small proportion of the magazine.

My particular interest at the moment will serve as an example of what I have in mind. I would like you to present a comprehensive evaluation, with technical comparisons and prices, of the various possibilities available for upgrading the Kaypro PC (8088) systems. Compatibility is important for access to software, as is the ability to co-exist gracefully with a wide variety of sub-systems such as

modems, multi- standard video boards other than the one(s) the company has supplied, laser printers, networks, and all the others. There are those who will only be interested in increased speed or AT compatibility or the remote possiblity of OS/2 compatibilty or whatever, so you might consider organizing the article by function itself rather than by price.

I would hope to read about the Kaypro solutions presently being offered or considered (I remember the things my dealer told me about the plug-in processor card and how that would make upgrades so much easier and less expensive), as well as ones from Orchid, AST, and whoever else you can find that does a good job.

I would renew my subscription just on the strength of this demonstration of the company's awareness that there are lots of us out here who supported the company in the early days and that we deserve some long-term support in return. This would also increase the likelihood that my 386 system (yet to be selected) will be a Kaypro. My experience as an early Kaypro user, organizer of a Kaypro user's group, and small-time consultant suggests that many Kaypro owners are (or could easily be encouraged to be) like Volkswagen owners used to be--that is, loyal to a fault.

Ken Keep
San Francisco, California

Believe us, you are not alone. Nearly every response from Kaypro PC owners to our recent readership survey indicated that the users wanted the same information.

In the May 1988 issue, Marshall Moseley began an ongoing series on upgrading the Kaypro PC. See this month's "On The Practical Side" for information on bus boards and power supplies.

Also, watch for the cover story next in the September, 1988 issue. Steve Gilliland will be covering several options for increasing the speed of your PC in his feature on accelerator boards.

We will continue to keep you informed as new Kaypro-compatible peripherals and parts become available.

CHEERS FOR HIGH TECH RESEARCH

Thank you for your excellent magazine. *PROFILES* is most helpful!

After reading Ted Silveira's article "CP/M Only," in the current issue, I began to feel abandoned. My investment in a Kaypro 1 and a Kaypro 2X began to seem an unwise one. I welcome Mr. Silveira's future articles to help the CP/M user in maintenance, repair, etc. of our machines.

It wasn't until I read the "Dateline" article entitled "In Search of Speed for CP/M" that my fears of abandonment were lifted and a feeling of euphoria dawned. A resounding *yes* to Mr. Bill Nesting of High Tech Research and the work they are doing. CP/M is not dead! I, for one, demand that you continue your research. Thank you, thank you!

Ray Robinson
San Pablo, California

I was truly delighted to see your profile on Bill Nesting of High Tech Research. Bill and his colleague, Dan Zempel, and High Tech Research provide outstanding service and support.

The High Tech Research product line includes a Kaypro 10 with their superb High Tech Handyman board (a hard-wired "super" SideKick), and a 20-megabyte Seagate ST-225 hard disk installed. We were so pleased with their initial upgrade of my original K-10 with *two* 20 megabyte hard drives that we bought another new machine so equipped.

Spencer Software in Chemung, New York, is another excellent supplier to the Kaypro CP/M world. When they could not improve on Perfect Filer as requested, they immediately refunded my money.

With such excellent suppliers as High Tech Research and Spencer Software, CP/M will be a long time dying. Onward and upward with the High Tech Ultra-Board!

Channing H. Lushbough
Glenview, Illinois

A REBIRTH OF CP/M?

Your latest issue again speaks about CP/M continuing to exist, as well as parts and

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John G. Scherb
Tokyo PC Newsletter

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repair availability.

About December 1, 1987, C.O.M.B., a liquidating company in Minneapolis, sent us a catalog advertising Kaypro 1s for $199 plus $18 shipping. These had two DSDD disk drives (vertical).

We phoned them, but we were too late. People were ordering the units six at a time! So CP/M units *do* sell. Couldn't Kaypro produce new ones again somewhere around that price? Our old [Kaypro] II and 4 do a fine job on our specifications and all correspondence. The 10 still will serve our purposes, when we find someone to repair it. It looks as if we will just have to mail it off because we haven't located anyone in Santa Fe or Albuquerque who can get it to go.

Kenneth D. DeLapp
Santa Fe, New Mexico

Sorry, but it's not likely that Kaypro will again manufacture the CP/M line of transportable computers that made the company so popular in the early 1980s.

Kaypro announced its decision to discontinue manufacturing and marketing the CP/M line in November 1987 in order to "focus its sales and marketing efforts on a smaller group of mainstream technology computers."

The announcement also stated, "The company will continue to provide technical support and will maintain available spare parts to support out-of-warranty needs of [CP/M] end users."

Although there frankly are not a whole lot of Kaypro dealers who still service CP/M Kaypros, the ones who do are quite committed to the CP/M user.

Check the CLASSIFILES section to find Kaypro dealers who advertise their CP/M repair services. Also, don't miss Ted Silveira's continuing series, "The CP/M Survivalist," in his "CP/M Only" column.

ACSII CONVERSION WITH PIP

You noted in your May 1988 "Q&A" column that WordStar files can be converted to ASCII using PIP's "z" (zero high bit) option and pointed out that print controls like S (underline) and B (boldface) needed to be manually deleted.

A sometimes-overlooked point is that soft hyphens need to be removed as well. These are the hyphens that result from word division, and WordStar has two types: an ASCII character 31 (1F hex) where the hyphen occurs at the end of a line, and an ASCII 30 (1E hex) where the hyphen falls within a line.

These characters can be interpreted by terminals and printers in weird ways and may cause application programs to misbehave. For instance, 1E hex homes the cursor on the CP/M Kaypros, causing text displayed on the screen using the TYPE command suddenly to overlay what has already been printed. And when sent to an Okidata ML92 printer, 1E hex turns on double-wide printing. If manually searching through a file looking for all soft hyphens and print controls seems too tedious, the MBASIC (or GW-BASIC) program enclosed will automate the task. It runs pretty slowly (a good incentive to learn another programming language!), but it gets the job done.

Stephen S. Mitchell
Alexandria, Virginia

(Ed. note--Stephen Mitchell's program listing appears below.)

PROFILES BINDERS UNAVAILABLE

The slip cases for back issues of *PROFILES* advertised in the May 1988 and June 1988 issues of the magazine are not available at this time. Orders will be returned as they are received, and the cases will be offered again in September. We apologize for the inconvenience.

```
10 ' ASCII.BAS -- converts WordStar file to ASCII
20 INPUT "Name of file to convert";F$
30 ' make name all caps
40 FOR I=1 TO LEN(F$)
50    C$=MID$(F$,I,1)
60    IF C$>="a" AND C$<="z" THEN C$=CHR$(ASC(C$)-32)
70    MID$(F$,I,1)=C$
80 NEXT I
90 OPEN "I",#1,F$
100 OPEN "O",#2,"B:TEMP.$$$"
110 WHILE NOT EOF(1)
120    C$=INPUT$(1,1)
130    ' strip high bit
140    C$=CHR$(ASC(C$) AND 127)
150    ' don't copy ^S, ^B, or mid-line soft hyphen
160    IF C$=CHR$(19) OR C$=CHR$(2) OR C$=CHR$(30) THEN 110
170    ' change end-of-line soft hyphen to hard hyphen
180    IF C$=CHR$(31) THEN C$="-"
190    PRINT #2,C$;
200 WEND
210 CLOSE
220 ' rename original file to .BAK
230 P=INSTR(F$,".")
240 IF P=0 THEN B$=F$+".BAK" ELSE B$=LEFT$(F$,P)+"BAK"
250 ON ERROR GOTO 310
260 NAME F$ AS B$
270 NAME "B:TEMP.$$$" AS F$
280 PRINT "... finished"
290 END
300 ' deal with .BAK file that already exists
310 IF ERR=58 THEN KILL B$:RESUME 260
320 IF ERR<>58 THEN ERROR(ERR):RESUME 280
```

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THE TECH CORNER

PC owners are always asking us how they can improve the performance and usefulness of their systems. The KAYPRO PC's modular design allows for a wide range of upgrades. The following list, with approximate costs, assumes a bare bones EXP model. Most PC's will already have some of these features installed.

1. A real-time clock ($29).
2. Memory upgrade to 768K ($100-$200).
3. If communications is desired, a modem ($79-$179).
4. A hard disk ($325 and up).
5. A mouse ($69). Mandatory with some programs.
6. Video upgrade to graphics or color ($100-$1000).
7. Replace the processor with a 80286 board ($1000).

The list is endless and depending on your needs could include expanded memory, a larger hard disk, a tape back-up unit, 3.5" diskette drives, special video equipment, and networking.

Q & A

BY MARSHALL L. MOSELEY

INSTALLING VGA

I have a Kaypro PC with a monochrome board. How do I go about installing a VGA board?

Installing a VGA board in a Kaypro PC, 286i, 286, or 386 is a fairly simple procedure. Unlike the older monochrome display adapter (MDA) and color graphics adapter (CGA) standards, both VGA and its immediate predecessor, EGA, have their own onboard memory and BIOS (Basic Input/Output System). For this reason the parts of MS-DOS associated with video control have to be disabled, because under VGA the video board takes care of everything.

Before I tell you how to install a VGA board, a word of warning. Preliminary testing indicates that certain VGA boards behave erratically in Kaypro computers whose clock speeds exceed 8 Mhz. So if you have a 10 Mhz 286i or Kaypro PC, make sure the board you purchase is thoroughly tested in your computer *before* you purchase it.

Installation instructions for various machines follow.

The Kaypro PC. Place the computer on a flat, stable surface and make sure it is unplugged. Remove the five screws on the rear panel that hold the cover in place. If you have a newer Kaypro PC, remove the screws along the bottom edge of each side and the ones along the top and side of the rear panel. Slide the cover toward you until it is almost off, then angle it up and pull it away.

Install the VGA board according to the instructions that came with it. Once the board is installed, find the Kaypro PC's processor board. It is on the far left side of the chassis and has a speaker mounted on it. Set switches 2 and 3 at position SW1 on this board to the ON position. This disables the built-in video portion of the computer and allows the VGA BIOS to function. Reconnect the power cord, turn on the computer, and test the VGA board *before you put the cover back on*.

With the VGA board installed and the switches set, replace the computer cover.

The 286i, 286, and 386. All of these computers are AT compatibles, which means that they use a special portion of memory called CMOS RAM to hold system information, including video information.

Before removing the computer cover to install the VGA board, run the utility program SETUP.COM. From the setup main menu choose **F7 Display**. When presented with a list of displays to choose from, select EGA. This disables the computer's built-in video routines. Now turn off the computer, disconnect the power cord, and remove the cover as described above. Install the VGA board according to directions. Reconnect the power cord, turn on the computer, and test the VGA board.

USING CHMOD

One of the many programs I received with my Kaypro PC was CHMOD.COM. Unfortunately, I have no idea what it does. What can I use it for?

CHMOD is a program for changing file attributes. Every file has four attributes, or characteristics, which can be switched on or off. Their purpose is to either impart information about the file or to limit access to the file in some way. Attributes are either "cleared," meaning they are inactive, or "set," meaning they are active. The four attributes are archive, read-only, hidden, and system.

An archive file is one that has not been altered since the last time it was backed up (copied to a disk for safekeeping). When you run a backup program, it will usually clear the archive attribute on the original file as it makes a copy. Then when you alter the original--edit a text file, update a database--the archive attribute is set. The presence of an active archive attribute indicates that a file has been altered and needs to be backed up.

A read-only file cannot be changed, and you make a file read- only to protect it. You can copy it, view it, or list it on your screen, but if you attempt to change even one byte of the file, you'll get an error message. You can't delete read-only files, either.

A hidden file is shielded from most standard computer operations. If you list a directory using DIR, the hidden files won't show up; the COPY command will not affect hidden files. You can run programs that are hidden, however, and hidden data files can be accessed by their parent programs. Hiding files is a form of security--you can hide a file that you don't want others to see or know is there.

System files are similar to hidden files, but they are completely concealed from the operating system--they're even more protected than hidden files. System files that are programs cannot be run. You cannot access system files in any way except to change them back to a more malleable file type. The system attribute is usually used to protect the vital MS-DOS system files IO.SYS and MSDOS.SYS.

CHMOD has the syntax CHMOD FILENAME.EXT +/- ATTRIBUTE, where the attributes are R for read-only, H for hidden, A for archive and S for system. If you wanted to change the file COMMAND.COM to a read-only file, for example, you would type **CHMOD COMMAND.COM +R**. To remove the attribute, you would type the same command using the minus sign (-R). To see a listing of the files in the current directory along with their attributes, type CHMOD and a file specification without specifying an attribute. For example, to see all files and their attributes, type **CHMOD *.*** and press Enter. To see a quick summary of CHMOD's commands, type just **CHMOD** and press Enter.

PRINTER MUFFLERS

I am quite pleased with my letter-quality printer, except for one thing. It's noisy. I work in a fairly small room, and the clattering of the printer interferes with any phone calls I make. A conversation with someone in the room is impossible. Is there a solution?

I recommend that you try a printer muffler--a padded box with a hinged lid, into which you put your printer. With the box closed, printing noise is reduced to a minimum. To get to the printer, all you do is lift the lid and reach inside.

There are several printer mufflers on the market. Two good ones are the Kensington Microware Printer Muffler and

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Printer Muffler 132 (for wide-carriage printers). Both feature solid noise suppression, transparent lids, and optional stands that let you place paper underneath the printer. They cost $59.95 and $79.95, respectively.

If you are good with tools, you can easily build a printer muffler. All you need is some 3/4-inch plywood, some three-inch foam rubber, and a small AC fan. (That's right, a fan. In non-air conditioned offices, a printer clattering away for a couple of hours can generate a great deal of heat. Put it in an insulated box and you increase the chances of heat-related failure exponentially.)

If you do build your own muffler, there are a few things to keep in mind. Put two slots in the back of it, one to feed the paper in and one to feed it out. Make it wide enough so that you can place your hand between the printer and the muffler wall with ease (this lets you adjust the platen and any other settings on the side of the printer). Finally, make sure the hinged top is large enough for you to reach in and adjust the tractor feeder and change ribbons.

SMALL BUSINESS PROGRAMMING

I own a small retail business and a new Kaypro PC. I am interested in programming and I wonder what would be the best language with which to begin?

A lot of people begin with BASIC, but to my mind BASIC is a horrible language for beginners--it allows you to do things that don't work and then doesn't tell you where the errors are, and it lets you write "spaghetti code": tangled programs that may get the job done, but nonetheless are not good work.

Some software jocks I know are going to be upset with me, because they would want me to recommend a classic language such as C or Pascal, but I recommend that you learn the programming language that goes with dBASE III Plus (or dBASE IV if the latter is available by the time you read this) for a couple of reasons.

For one, it will let you do immediately practical things because it's designed from the ground up to manipulate text and numeric data in a business environment. The data with which you will learn can be that generated by your own business. With dBASE you can analyze inventory and estimate what you'll need to order next month; you can assign part numbers and costs to individual items and break those items down by category. You can do just about anything you want in terms of tracking inventory and data processing.

Also, the dBASE language encourages the use of structured programming techniques--methods for processing information that, by their nature, require you to think a problem through before you start programming. You *can't* just sit down and hack away at dBASE. You have to have a clear idea of what you want to do and how you want to go about it before you write one line of code. Thus the language itself encourages you to program well.

Structured programming is also part of professional languages like Pascal and C. (BASIC itself didn't achieve any respectability as a serious language until Borland and Microsoft brought out versions of it that implemented structured programming.) Pascal and C programs run much faster than dBASE programs, and once you move past the beginning stage, they can do more (like graphics for example). So if you want to become a professional programmer, buy Turbo C, but if you want to learn how to program quickly and do some effective work in the process, buy dBASE. The suggested retail price is $695, but you can find it discounted to as low as $399.

VENTURA PRINT FILES

We've just started using Ventura Publisher in our office and have run into a problem. When a Ventura document prints, the computer is tied up for as long as 15 minutes. Is there a way to print and continue working?

There are several. One is to use a print buffer, which I described in last month's Q&A. But if you have access to more than one computer, the answer might lie in the MS-DOS COPY command.

First select the Options menu in the upper right corner of the Ventura screen. From that menu, select Set Printer Info. A dialog box will appear in which you can designate the type of printer you have and the output port to which it is attached. Move the pointer down to the line titled "Output to:." Click on "Filename." Now click on "OK."

The next time you attempt to print a chapter, Ventura Publisher will stop and prompt you for the first part of a filename. Then, instead of sending output to the printer, it will create a file containing all the printer data. That file will have the name you designated and an extension of C00.

Copy this file to a floppy disk and go to your secondary computer. Put the disk in the A drive, make sure your printer is connected and online, and type **COPY A:FILENAME.C00 LPT1: /B**, replacing FILENAME with the filename you designated. The /B parameter is important because COPY usually strips any end-of-file markers, which are part of every Ventura print file. The /B parameter overrides COPY's default setting and allows end-of-file markers to be sent.

THE MYSTERIOUS DAMAGED DISKS

I often swap data disks with a fellow computer user and we've run into a problem. Many of the disks I receive from him are unreadable. He swears that the copies he makes are viable. Still, I put them in my Kaypro PC and get "Error Reading Drive B" messages. What could be the problem?

Several things could be the problem, but let's look at the possibilities in order, from most to least likely. The most likely culprit is magnetism. Whenever a floppy disk encounters a magnetic field, the data on that disk is destroyed. You would be surprised at all the ways a disk can be exposed to magnetism.

First of all, any electrical device radiates a magnetic field. Do you or your friend store disks under or next to a telephone? Do you stack them on top of a modem or an answering machine? How about a television? Any of these can des-

CONTINUED ON PAGE 11

KAYPRO PC UPGRADES

BY MARSHALL L. MOSELEY

In last month's column, I described in general terms the types of upgrades possible for the Kaypro PC. This month and next, I'll get into specifics: In this issue I'll examine two internal components of your computer--the bus board and the power supply--and explain how knowing about them can determine how you upgrade. Next month I'll discuss specific products for enhancing your Kaypro PC.

First and foremost, you must find out if your bus board uses 8-bit or 16-bit expansion slots.

TAKE THE BUS

The bus is a series of electronic circuits inside the computer that act as a channel for transmitting data. Every piece of data that the computer manipulates travels through the bus at some point.

The bus is further subdivided into four sections, but I'll discuss only one of them here: the control bus. The control bus is the channel through which information can be exchanged with an external device such as a video adapter or a serial port expansion board.

The control bus is located on a circuit board called--appropriately enough--the bus board. The bus board contains expansion slots, which are special connectors that electronic components, called expansion boards, fit into. Once an expansion board is fitted into a slot, that board becomes part of the control bus; the PC can access the board and use it as easily as any other part of the machine.

The Kaypro PC departs from traditional microcomputer design in that every component of the system, including the processor and memory, resides on an expansion board, providing "snap-in technology." When you want to change processors, you just remove the old processor board and snap in the new one. There are some things you need to take into consideration before making a purchase, though.

First and foremost, you must find out if your bus board uses 8- or 16-bit expansion slots. A bit is a binary digit, either 1 or 0, and is your computer's most basic unit of information. An 8-bit slot transmits 8 bits at a time, while a 16-bit slot transmits 16 bits. You can recognize an 8-bit slot because it consists of one connector about 2.5 inches long (see figure 1). A 16-bit slot has two connectors, the 2.5-inch one and a smaller one about 1.5 inches long next to it (see figure 2).

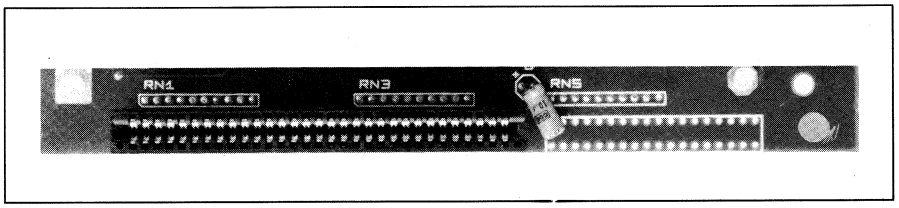

FIGURE 1

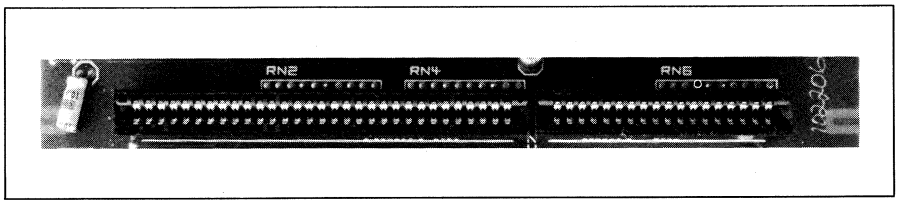

FIGURE 2

By upgrading to a processor board based on the 80286 microprocessor, you can effectively turn your computer into a fully functional AT-compatible *if you have 16-bit slots*. If you have 8-bit slots, you can still upgrade and achieve a degree of AT compatibly, but the shorter slots limit you. True AT compatibility requires that the computer read and write to external devices, such as AT hard disk controllers and extended memory boards, 16 bits at a time.

The first Kaypro PC bus boards had 8-bit slots. In mid-1986 Kaypro switched to a bus board with two 16-bit slots, and as of this writing (April 1988) that board is still being used. To reiterate, *you can upgrade to an 80286 microprocessor even if you have 8-bit slots*; but you are limited in your choice of expansion boards to those designed for PC and PC-XT compatibles.

If you are interested in obtaining a bus board that does have 16 bit slots, there are several courses open to you. First, you could go out and buy the necessary connectors and solder them in place, converting your old 8-bit board to a 16-bit board. For those experienced with a soldering iron it is a fairly simple procedure. Others could pay to have this done, but that isn't really a good idea, because for the amount of money it would cost you could buy a brand new bus board.

The newer PC bus board with two 16-bit slots is available from your Kaypro dealer (part number 4344). Prices vary, but it should be somewhere around $100. A smarter move might be to spend a few extra dollars and order the bus board for Kaypro's new PC-286, which has four 16-bit slots (part number 5659). With one of those slots used by your new 80286 processor board, the other three are available for extended memory boards, AT-type hard disk controllers, and all kinds of 16-bit goodies.

Next month I'll take a look at Kaypro's 286 upgrade kit in depth. For now let's move on to another component of your system that affects upgrades: the power supply.

POWER TO THE PEOPLE

The power supply is the part of the computer that accepts current from a wall

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outlet and translates it into current that the PC can use. Power supplies are rated according to wattage, a measurement of the power available, because that describes how much power can be drawn from them.

Each expansion board and disk drive is rated according to how many watts it requires. Most 5.25- inch floppy disk drives and hard disk drives require about 20 watts (some big hard disks require more; 3.5-inch floppies require less). The wattage requirements of expansion boards vary according to what the board does. Memory boards draw a great deal of power because each 256K DRAM chip pulls .2 watts. A two-megabyte board with 72 DRAMS on it pulls 15 watts for the memory chips alone; with its other circuitry it pulls about 20.

The original Kaypro PC had a 132-watt power supply, which provides more than enough power for the computer and any expansion boards you might install. Load your machine up with power-hungry expansion options, however, and you may run into limitations. For example, if you have an early Kaypro PC (1985 to late 1987), and you install a hard disk, you should remove one of the floppy drives. This is because in certain situations two floppies and a hard disk could demand power simultaneously, which the 132-watt supply might not meet (depending on how much power is used by expansion boards). The least harmful result would be a frozen machine; the most harmful would be a hard disk whose once-sleek surface would now resemble a topographical map of Ecuador. Additional serial ports also pull power.

Upgrading to a single item-- such as a more modern processor or a faster hard disk--won't require you to replace your power supply. But if you plan to install a host of new options, a new power supply should be on your list of things to buy. You can purchase a 160-watt unit, which will drive anything you can stuff in a PC, from your Kaypro dealer (part number 5800). Third- party power supplies are also available through mail-order firms and from computer dealers throughout the United States.

Next month I'll a look at Kaypro's 286 upgrade kit and discuss hard disk controllers for the Kaypro PC.

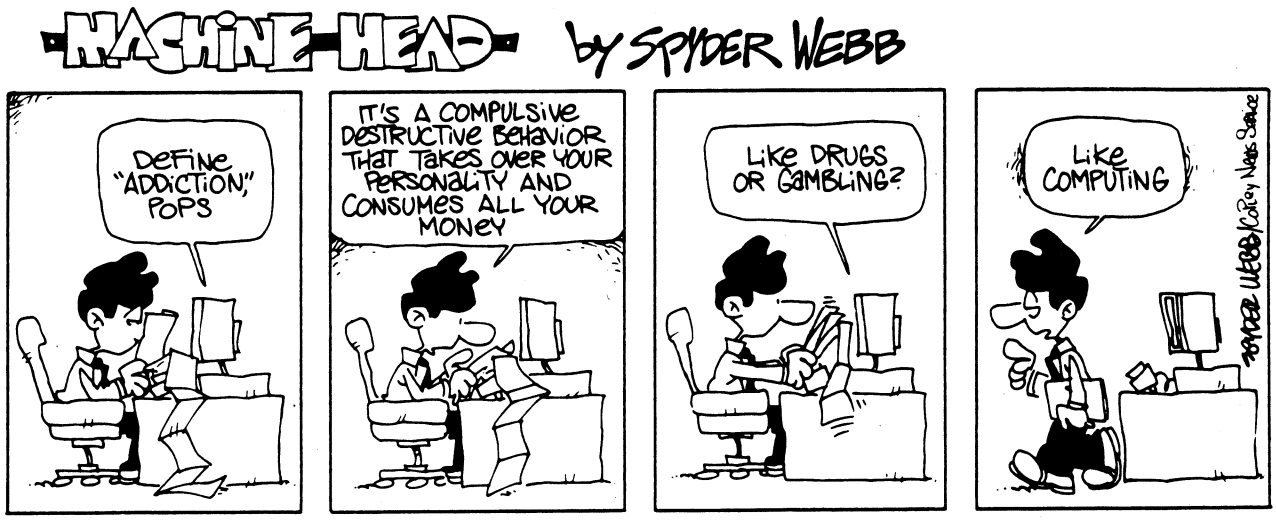
Q & A

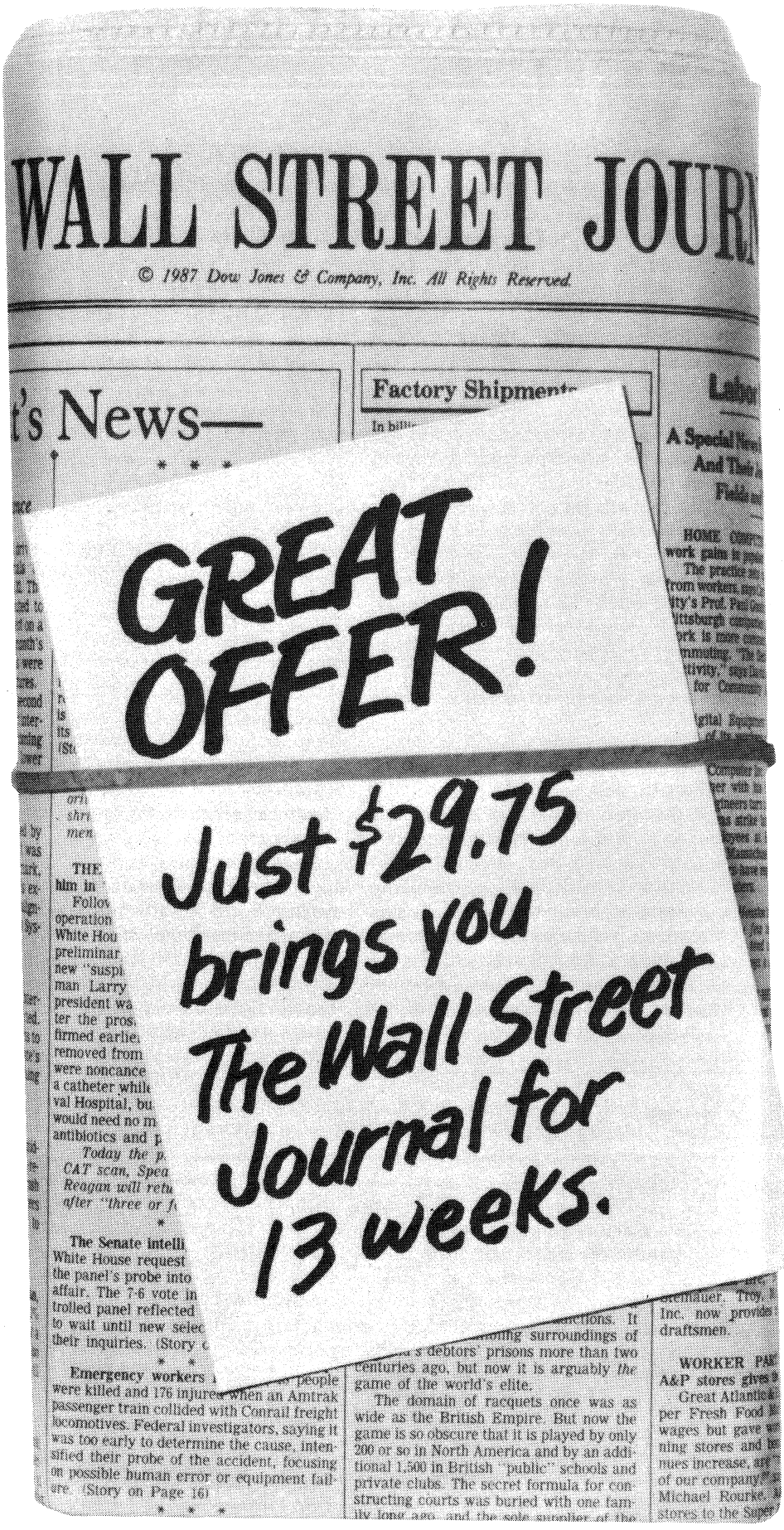
CONTINUED FROM PAGE 9

troy data. One odd situation I ran into was that of a PC trashing its own disks. The designers of the computer chassis (not Kaypro) mounted the computer's speaker near the front left corner of the unit and did not provide sufficient shielding in the chassis material itself. Computer users would lean disks up against the left side of the computer and the magnet in the speaker would radiate through the chassis, thus destroying the data on the disk.

If you eliminate magnetic problems as the cause, look to the environment. Are the disks stored in a dry, reasonably cool (50 to 75 degrees is optimum.) area? Is the environment fairly dust free? Always store disks in disk boxes. Never store or carry disks without dust covers, and try to keep them away from cigarette smokers. If you smoke yourself, be doubly careful about dust covers and disk boxes. One microscopic smoke particle can ruin an entire disk.

Lastly, try to determine whether either your drives or your friend's are drifting out of alignment. Format a disk on your machine, copy data to it, and then see if a computer other than your friend's can read it. Do the same for his computer. Whoever produces a disk that can't be read should have his disk drive looked at by his computer dealer.





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DATELINE

BY BROCK N. MEEKS

NEWS FROM THE FIELD

SHIRT-POCKET PORTABILITY

The hard disk drive of the near future is a classic paradox: It will be tiny and huge at the same time. According to Tim Mahoney, vice president of Rodime, a major manufacturer of hard disks, the future of hard disks lies in extremely high-density data storage on a tiny disk.

How tiny? The next major advance in hard disks is likely to be a two-inch hard disk, "and that opens up some interesting possibilities," says Mahoney. One possibility is a two-inch hard disk drive about 0.7 inches high. A hard disk drive that size would fit in a shirt pocket, barely taking up as much room as a 3.5-inch floppy.

The transportability of these small hard disks will also have an impact on the exploding laptop computer market. In laptops with hard drives, the extra weight of the drives compromises portability.

"In applications where laptop 'real estate' is crucial, you can really cram a lot of disk space into a small area," said Mahoney.

Mahoney said he was restricted by OEM confidentiality and could not give a timetable for when the tiny drives would start to show up in the mass market.

Color Me Small

Hard drives aren't the only component that's shrinking. Color monitors tiny and portable enough for laptops may soon be available, too.

For a peek at the possibilities, take a look at Casio's new TV-400, a shirt pocket-sized color television. The brochure that comes with the TV-400 calls the unit's two-inch screen a "twisted nematic type" color LCD, complete with internal backlighting. (Backlighting is a popular technology that gives laptop computer screens high readability.)

The TV-400 fits into the palm of your hand, and when you've dialed in decent reception, the screen is viewable from three feet away. The TV-400 costs about $180 on discount. That's some $100 less than a regular small color TV with a "real" tube in it.

All this points to color LCDs that are not only practical, but affordable, too. The combination of low price and practicality means that color LCDs for laptops can't be too far behind, according to a spokesman form CAP International, a marketing research firm.

Scan by Hand

With the rise in popularity of desktop publishing and facsimile (fax) machines, optical scanners are becoming more popular, too. Scanners let you input photos and other graphic images into your computer. These images can then be manipulated with various graphics packages or transferred to another computer via a modem. The drawback: the cost. Stand-alone scanners typically cost around $2,000. But smaller, hand-held scanners are becoming popular for smaller jobs, such as scanning logos, line art, signatures, and letterheads. These scanners typically cost around $300.

Stand-alone scanners are cost-prohibitive for casual use, but hand-held scanners have not been sufficient for scanning large items—until now, hand-held scanners could handle only images up to three inches wide. But Mitsubishi Electronics has introduced a model that can scan a full page at a resolution of 200 dots per inch.

A standard interface board allows the scanned image to be input into the computer. You can also set the scanned image width and resolution, and you can select scan modes that recognize up to 16 gray shades.

Hand scanners suffer from two problems: speed and direction variations caused by operator inconsistency. The Mitsubishi model solves these problems using rotary encoders and two sets of rollers to provide uniform spacing between scanning lines and to keep the scanner moving straight down the page.

Books by Baud

Calling it the "new American bookstore," entrepreneur Samuel Bleeker introduced his PubTronix Inc. publishing company at a recent free-lance writers' convention in Pompano Beach, Florida. PubTronix publishes books on floppies and as hard copies and offers a database of published works.

Bleeker says that his new publishing company combines computer and modem technology to create "the country's first home-shopping service for book buyers."

Called, appropriately enough, "Bookmark Data-

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base'' the database service is a 24-hour-a-day online service. It was slated to be fully operational by mid-June. Bleeker says the service will ''forever change the way publishers market and distribute their reading material to the general public.''

The system will use a mainframe computer from RAC Information Systems. The full system will eventually include terminals inside book stores. The advantages: Customers can browse through a massive selection of books, and the book store can provide access to a large number of titles with having to maintain a large inventory.

Bleeker says his system will give small publishers a ''fighting chance'' at reaching the book buying mass market. ''Until Bookmark came along, the stores only carried the most popular or most well-known books and authors. Small publishers have almost no chance of placing their books with a major book store chain such as B. Dalton. They just don't have the clout to demand the shelf space.'' But with Bookmark, those drawbacks disappear.

Modem users or in-store terminal users can call up the database and search by title, subject, keyword, or author. Once a search is completed, the database returns a synopsis of the book and the first five pages to the computer screen. If the viewer wants to buy the book, it can be delivered on floppy disk or in regular book form.

Bleeker said the system will also provide an inexpensive way for authors not backed by big publishers to promote their work. Because online storage for these independent authors' books costs almost nothing, it provides ''a chance for national exposure that most would never be able to get on their own,'' Bleeker said.

You're My Type

As anyone in publishing will tell you, the choice of typefaces is crucial to the overall style and readability of a publication, and it's something desktop publishers can't afford to ignore. The problem is that the fonts available for use with desktop publishing programs don't always give you enough selection. What's needed is a ''font-editing'' program.

A font editing program allows you take a typeface that you like, but that doesn't happen to be available as a Postscript or bit-mapped font, and actually scan it into your PC. One such program is ZSoft's Publisher's Type Foundry.

''You use PTF to scan the chosen font into the PC,'' said Mark Zachmann, ZSoft founder and CEO. ''Then, with the bit-mapped editor, you can convert the characters into a 'vectorized' outline form.'' The bit-mapping breaks down each character into individual pixels, or dots on your computer screen, and vectorized outline form lets you manipulate the font in extremely exacting detail.

With a font editor you can smooth the font's outline and save it as a Postscript font, and then convert it to any type size.

Though you can also buy disks full of fonts that someone else has already scanned and edited, there are apt to be some irregularities, and a font editor can help there, too.

In addition to editing fonts, you can create your own fonts from scratch using a similar type of editor.

I'll Take the Database and the Diamond Bracelet

Probably you're familiar with the idea of transmitting programs between computers via serial cables, modems, and local area networks—but via conventional television? It's possible—and it's in the works.

The Home Shopping Network (HSN), one of the new ''home shopping channels'' that hawk everything from diamonds to lava lamps, plans to use an unseen portion of its television signal to transmit commercial software for purchase. Not known in critical circles for its tact, HSN is, however, an ultra-aggressive company when it senses a new market.

HSN plans on using television's ''vertical interval'' for transmitting data. The black horizontal line you see scrolling from the top to the bottom of your screen when your TV goes haywire is the vertical interval. It's used for more than just interrupting that crucial instant-replay you've been waiting for—TV engineers use it for picture synchronization. Using it for transmitting information isn't new; the networks use it to send messages to their affiliates, and it also carries the information used for ''close captioning'' for the hearing-impaired. But these applications only use about 10 percent of the vertical interval capacity. It was a marketing vehicle waiting for exploitation, and HSN didn't hesitate.

Much of HSN's broadcast is actually still pictures of merchandise. To cram even more information into the vertical interval, HSN is planning to digitally ''freeze'' these still pictures, thus freeing up even more to the vertical interval. This technique will allow data transfers in bursts of up to 38,400 bits per second.

Just what type of data HSN will transmit hasn't been decided yet, but inside sources at HSN say the company is seriously seeking to distribute commercial software. What's to stop ''video pirates'' from ripping off software? HSN plans to use coded copy protection that would allow distribution only to those who actually pay for the products. In other words, no check, no data transfer. Actual data transmission is beginning as this goes column goes to press. Will there be an HSN service in your area? Probably. HSN recently bought 12 television stations in major TV markets and is negotiating for 14 more. All will carry the same programming, reaching an estimated 30 million viewers.

FOCUS

There is a host of mass storage devices on the market for personal computer users, and digital audio tape (DAT), which offers a huge amount of data storage in a small space, plus fast access to that data, is joining the ranks. The size of a typical audio casette, a DAT cartridge is read by a tape drive, much as a floppy disk is read by a disk drive.

A typical DAT cartridge will store a gigabyte (1,000 million bytes) of information. The DAT cartridge is similar in size and shape to that of the popular DC-2000 quarter-inch tape backup. However, the DC-2000 cartridge can only hold a maximum of 320 megabytes of information.

In addition to offering greater storage capacity, DAT drives can transfer data quickly, an important factor when recalling information from a storage device. DC-2000 cartridges are infamous for their slow speeds and clumsy file access software; DAT drives can read and write data at a rate of 200K per second.

Typical DAT drive performance is hard to quantify because of differences in error correction schemes and proprietary software used by the various manufactures, but on the average, DAT drives can access any file on the cartridge in 20 seconds.

DAT cartridges are expected to compete directly with the other forms of tape-storage devices, though industry analysts expect sales to be slow until the technology gains an acceptable reputation with users.

Acceptance should be spurred by the fact that several manufacturers are currently developing DAT storage devices. The DAT market is moving so fast that even market researchers have trouble keeping track of the latest developments. "The amount of activity is very high for such a young industry," said an analyst from Link Resources, a New York-based market research firm. "No one is sure just where it's going to be a month from now, let alone a year."

As evidence of the interest in DAT, the Link Resources analyst pointed to a recent meeting of a special group attempting to set standards for the DAT industry. "Almost every U.S. tape-drive manufacturer sent representatives to that meeting," said the analyst. "No one wants to be left behind."

Dataquest, a market research firm in San Jose, estimates that the DAT market will grow to $56 million this year and to $348 million by 1991. Despite such an optimistic outlook, however, Dataquest sees only 3,000 DAT drives being sold this year. Part of this is because the DAT market isn't going to be primarily the end user. According to Dataquest, most DAT drives will be sold as part of complete computer systems, and it will probably be awhile before "system integrators" (those selling computer systems equipped with DAT drives) embrace DAT in any large numbers.

DAT technology involves a method of data recording called "helical-scan." It's based on technology developed years ago for videotape. The recording of data uses two rotating record heads, instead of a single stationary head. The tape is wrapped around these rotating heads and moves very slowly, allowing much more information to be stored on the tape. Information is stored diagonally on the tape instead of in the more conventional longitudinal tracks used by other tape drives. This increases tape track length and allows higher-density information storage.

Like other mass-storage technologies, DAT suffers from a lack of industry standards. Although all DAT drives must adhere to certain hardware format standards established for the audio industry (DAT is also a popular technology in the audio world, due to its CD-like fidelity), file formats and error correction schemes are anything but standardized. Industry observers say that unless such issues are addressed early in the DAT drive evolution, the market will stagnate.

Users should have the freedom to move DAT cartridges between drives from different manufacturers. This is a prime consideration in choosing a backup method, yet the DAT industry has yet to settle on any such standard.

Hewlett-Packard and Sony have teamed up to develop a proposed standard. Dubbed the Digital Data Storage (DDS) format, the joint HP-Sony standard features a capacity of 1.3 gigabytes and an average file access time of 20 seconds. Although the standard has received high marks for technical merit, manufacturers aren't happy about what it will cost them to use the HP-Sony technology: a cool $10,000 in license fees, as well as a royalty of $2 per unit sold.

Hitachi has come up with an alternative to the HP-Sony standard that seems more acceptable to manufacturers, mainly because Hitachi isn't going to charge for its technology. A spokesman for Hitachi says that the company is taking this course to "spur the industry on, and help it gain widespread acceptance."

The Hitachi standard doesn't allow as much storage as DDS—it holds 980 megabytes—but it allows for random rewriting of files (like a regular floppy), which DDS doesn't do. Despite the differences in format, the standards aren't that far apart and industry observers maintain that the standards battle will be won with advertising dollars, not technological superiority. ■

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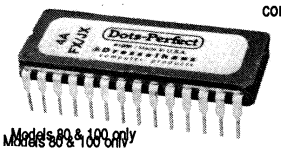

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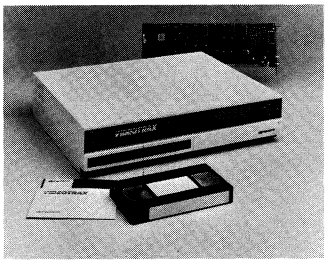

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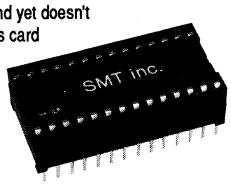

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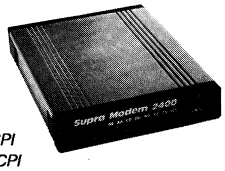

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THE POOR MAN'S LAN

Intelligent Peripheral Controllers: An Inexpensive Alternative

BY ROBERT J. SAWYER

Local area networks are powerful, useful, business tools. Depending on your needs, however, they can be somewhat expensive and complex. Also, you may not be able to justify devoting one or more members of your staff to administering a LAN. Does that mean you have to give up all those neat ideas like sharing your expensive laser printers, high-speed dot-matrix printers, or modems? Not at all. There's a whole breed of hardware out there aimed at those who want some of the power and convenience of a LAN without all the hassles of networking. We'll explore the world of these devices--called intelligent peripheral controllers--in this article.

The first thing to realize is that you shouldn't feel bad about rejecting a LAN. According to a survey of *Fortune* 3000 companies by Creative Strategies International, 50 percent of departments have printer sharing as their main connectivity priority. For these people, intelligent peripheral controllers are the way to go, providing more efficient device sharing than most LANs do and at a much lower cost.

The same survey says that another 30 percent have broader needs, including disk and file sharing, but still cannot justify the cost of a large local-area network. For these workers, intelligent peripheral controllers will be an important part of their office- automation solutions. Only 20 percent of departments really need a LAN. The rest can get buy with a simpler approach to peripheral sharing--what the pundits like to call a sub-LAN solution.

Today, the most commonly shared peripheral is a laser printer. After all, given that a laser can spit out eight pages a

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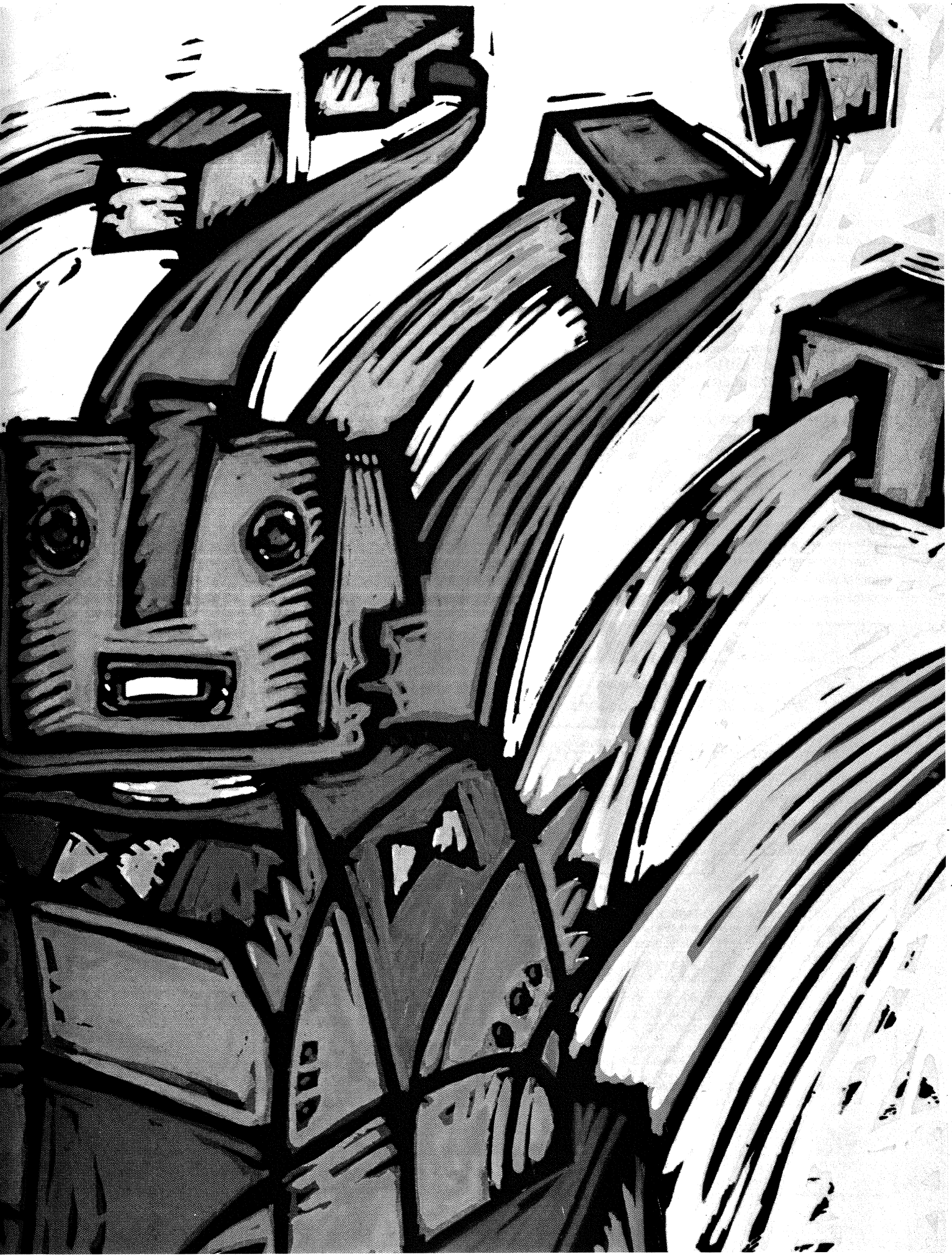
Illustration by David Diaz



minute, no one person can type fast enough to keep a laser humming all day. Most experts agree that, in a typical office, one laser for every three to ten personal computers is about right.

A VARIETY OF METHODS

The crudest way to share a laser printer is to have it hooked up to one computer and let other users bring their documents to it on disk. This is cheap and easy, but users have no way of knowing whether the laser will be free until they get there. Standing in line holding a floppy hardly seems the picture of the automated office.

A step above this is the A/B switch, a simple mechanical device that sells for under $100. You plug two computers and one printer into it, and by throwing a switch you can choose which of the computers connects to the printer. (A/B switches can also be used in reverse, hooking one computer into two printers. That used to be common in the days before multimode printers when people needed a dot-matrix unit for speedy draft copy and a daisywheel for finished work.)

The A/B switch is simple, but unsophisticated, requiring manual intervention by the user. For transparent operation and access to a variety of output devices, an intelligent peripheral controller is called for.

Such devices allow significant flexibility. For instance, an office could use one to give every user access to a variety of output devices--dot-matrix, daisywheel, and laser printers, plus a plotter or two. A second scenario--and one that's increasingly common--is one in which every computer has its own inexpensive dot-matrix printer, but there are peripheral controllers to provide shared access to one laser printer.

SERIAL PORTS ARE THE KEY

Most computers come with at least one serial port (sometimes called an RS-232, or modem port). These ports are the key to intelligent peripheral controllers, for through them your computer can carry on two-way conversations with other devices. Most peripheral controllers are boxes that are hooked up by cable to the serial ports on up to two dozen computers. They then pass the information received from the computers along to one or more printers, using either serial or parallel printer cables. Looking something like a robot octopus, the controller acts as traffic cop, routing data to the appropriate printer.

It's largely because of this reliance on standard computing equipment--the serial port--instead of on expensive add-in networking cards that a sharing system based on intelligent peripheral controllers is so much less expensive than a LAN. Typically, you can set up an office full of intelligent peripheral controllers for between $125 and $250 per station, about a fifth of what a comparable LAN would cost.

Although the controller's ability to automatically connect your computer to the right printer makes it possible to share peripherals, in and of itself it won't let you share them *efficiently*. You see, your computer's serial port is a bit of a chatterbox. It can send data to a printer, even a speedy laser one, much faster than it can be printed. Some peripheral controllers do nothing more than shout "Stop!" when your computer has fed as much as the printer can take. Most, though, have their own memory, which they use for storing the excess until the printer is ready .

The size of this storage area, or buffer, is a crucial consideration. Some peripheral controllers offer as little as 64 kilobytes of storage space. It's more common to get at least 256K, and there are machines on the market that offer two or more megabytes. That may sound like a lot, but a megabyte of memory is just enough for *one* full page of high- resolution laser-printer graphics. Not surprisingly, the amount of buffer a device offers is directly related to its price. My advice: shell out for as much as you can afford.

AVOIDING TRAFFIC JAMS

With a bunch of computers all sending information to the peripheral controller, something has to be done to keep it from getting jumbled together. Most peripheral controllers poll--that is, ask in turn--each computer if it has anything to send. If the answer is yes, the controller then gives its full attention to that computer until the computer stops sending for a predetermined length of time, usually 10 or 15 seconds. Taking that as a signal that this computer has nothing more to say, the controller then

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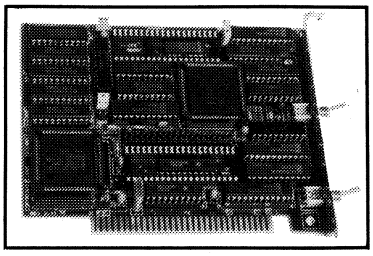

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polls the next one. The data from the various computers is queued--a British term for "lined up"--and fed out to the printers in an orderly fashion.

This is fine if you live in a democratic office, where everybody's work is considered equally important. Unfortunately, the time will come when the boss will remind you that Rank Hath Its Privileges and insist that his or her work be done right now. For occasions such as these, you need a way to let a new set of input butt in at the front of the line without hopelessly mixing up everyone else's work. Only some controllers can do this, so if you think you will need this capability, look for one that lets you set job priorities through software.

From time to time you will probably need multiple copies of a document. Without a peripheral controller, most software handles requests for extra copies the way WordStar does: if you specify that you want two copies, WordStar sends the complete document to the printer twice. That ties up a fair bit of your computer's processing power. With an intelligent peripheral controller, you only have to send the document once. It's stored in the controller's buffer, and when the time comes to print the second copy, it's sent again from the buffer, without having to bother your computer. Not all controllers offer this multi-copy feature, and some limit the number of copies you can make.

Intelligent controllers are by no means restricted to printer sharing. Many models can also allow communal access to separate modems, eliminating the need to install such devices for each machine. If you're just uploading a batch of electronic mail, this method works fine, since your data can be stored or "spooled" in the controller's buffer until a modem is free. On the other hand, if you want to undertake an interactive, two-way communications session, you will have to wait for a modem to be available before you can begin.

Like any piece of computer equipment, your controller should be easy to use. Most still insist on having their initial parameters set with DIP switches. I suppose that's okay if you only have to do it once, but unless you've got a surgeon's fingers, stay away from devices that don't let you temporarily change parameters any other way. Fortunately for the ham-fisted among us, most controller makers have copied an idea that's now popular in printers, providing easy-to-use front-panel control buttons. And, like printers, many peripheral controllers can take instructions directly from software, either transparently interpreting the instructions from standard packages, or by providing a pop-up utility that allows you to talk directly to the controller.

LOTS OF PRODUCTS TO CHOOSE FROM

Now that we understand what an intelligent peripheral controller is, let's look at a few of the many products on the market to get a better idea of what's available.

Western Telematic Inc. of Irvine, California, makes Lasernet, a line of products that provides access for four or eight users to any one serial output device and one parallel output device. Models are available with 256K, one-megabyte, or two-megabyte buffers. The model PSU-82C for eight users, a sheet-metal shoebox with buff sides and black front and back panels,

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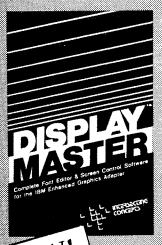

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measures 12 x 3.5 x 9 inches and weighs five pounds. All connectors are on the back and a simple three-button control panel and a line of LEDs are on the front. Prices range from $249 for a four-user model with no buffer to $1,695 for an eight-user model with a two-megabyte buffer.

Integrated Marketing Corporation of Sunnyvale, California, has a range of peripheral sharing devices. The Data Manager series offers six to eight ports, supporting serial and parallel interfaces. You can upgrade the standard 256K buffer to a megabyte without having to take the unit into the shop. Prices start at $449.

Integrated Marketing also has a series of Auto-T switches that do what our old friend the A/B switch does, but automatically instead of requiring the user to manually throw a switch. Switches feeding three or six serial or parallel inputs to one output start at $169.

The Buffalo SX, from Buffalo Products of Burlingame, California, provides ten ports, five parallel and five serial. Half the ports can handle either input or output, so you can configure your system in a variety of ways, ranging from two PCs sharing eight printers to seven PCs sharing three printers. Need more possibilities? You can daisy-chain SX units together for unlimited flexibility.

Buffalo provides a pop-up, memory-resident utility that shows you the names of your printers. Just choose the one you want and the SX does the rest. And if you've got appropriate telecommunications software, you can even route files between two computers through the SX. The SX currently carries a $475 price tag, but Buffalo considers that an introductory offer and plans to raise it once it has moved 5,000 units. Buffalo offers a free 45-day, risk-free evaluation period.

THE SYSTEMIZER: AN UNUSUAL APPROACH

Most peripheral controllers are all-your-eggs-in-one-basket solutions, relying on one central device to do all the switching for an entire department. Applied Creative Technology Inc. of Dallas, Texas, takes a radically different approach. Each computer plugs directly into its own Systemizer box. In turn, each Systemizer is connected to all the other Systemizers in the office using standard telephone cable in either a parallel branch layout or a serial daisy-chain layout. The combined total length of the phone cable should not exceed 800 feet. Printers are plugged into the Systemizer of the nearest computer and are accessible to all users. Using Systemizers, up to 15 computers can share up to 15 printers.

Physically, the Systemizer is a simple gray metal unit, measuring 6 by 8 by 2 inches and weighing a little over two pounds. On its front is a 12-button keyboard that lets you select which printer you want to print on, how many copies you want, and so on. You can even subdivide the buffer so that at print time you can merge data from separate sources, perhaps joining text and graphics.

The Systemizer's back is even simpler, providing a phone jack for hooking up to another Systemizer, a universal 25-pin input connector that can take either a parallel or serial cable, and a matching output jack that can be hooked up to a printer or left empty if this unit is going to use printers that are already hooked up to other Systemizers. Each systemizer provides 64K of buffer--but remember that amount is for one user. It is not shared.

Controllers are an interim technology; peripherals are starting to provide sharing capabilities.

AN INTERIM TECHNOLOGY

Are intelligent peripheral controllers an interim technology? The answer, I think, is yes. For one thing, the prices of peripherals continue to drop about as fast as Gary Hart's popularity. It doesn't make a lot of sense to spend big bucks trying to share an inexpensive product. For another, peripherals are starting to provide their own sharing capabilities.

Take the Okidata Laserline 8, for instance--an inexpensive laser printer that offers a multi-user module for $600, automatically switching access between up to three PCs. Although this module doesn't offer any buffering capabilities, its availability is a clear indication that equipment manufacturers recognize that users want ways to share hardware. I suspect others will follow Okidata's lead and we will see a shift away from the need to buy separate, third-party intelligent peripheral controllers.

Until that happens, though, there are many products to chose from. The accompanying list should help you begin your search. ■

Robert J. Sawyer is a frequent contributor to PROFILES. *He lives in Toronto, Canada.*

QUICK REFERENCE SUMMARY

Product: Print Master Print Controllers
Manufacturer: Bay Technical Associates, Inc.
200 N. Second St.
Bay Saint Louis, MS 39520
Phone: (800) 523-2702
Sugg. List Price: Without buffers from $395, with buffers from $795

Product: Buffalo SX
Manufacturer: Buffalo Products
859 Cowan Road
Burlingame, CA 94010
Phone: (800) 345-2356
Sugg. List Price: $475

Product: Angel II Print Buffer
Manufacturer: Computer Age, Ltd.

P.O. Box 730
Nobleton, Ontario, Canada L0G 1N0
Phone: (416) 859–0370
Sugg. List Price: from $295 (Canadian)

Product: Metro Switch Modular Printer Sharing System
Manufacturer: Datacom Technologies
3303 112th Street SW
Everett, WA 98204
Phone: (206) 355–0590

Sugg. List Price: $495
Product: Com series of communication sharing boards
Manufacturer: DigiBoard
6751 Oxford St.
St. Louis Park, MN 55426
Phone: (612) 922–8055
Sugg. List Price: from $969

Product: PrintDirector
Manufacturer: Digital Products, Inc.
108 Water Street
Watertown, MA 02172
Phone: (617) 924–1680
Sugg. List Price: from $495

Product: ShareSpool
Manufacturer: Extended System, Inc.
6062 Morris Hill Lane
Boise, ID 83711
Phone: (203) 322–7163
Sugg. List Price: from $495

Product: Data Manager
Manufacturer: Integrated Marketing Corporation
1031 H. E. Duane Ave.
Sunnyvale, CA 94086
Phone: (408) 730–1112
Sugg. List Price: from $595

Product: Mega–Link
Manufacturer: Intellicom, Inc.
9259 Eton Ave.
Chatsworth, CA 91311
Phone: (818) 882–8866
Sugg. List Price: from $349

Product: Sierra Exchange I
Manufacturer: Reliable Communications, Inc.
136 South Wolfe Road
Sunnyvale, CA 94086
Phone: (408) 733–1787
Sugg. List Price: from $595

Product: EasyPrint
Manufacturer: Server Technology, Inc.
140 Kifer Ct.
Sunnyvale, CA 94086
Phone: (800) 835–1515
Sugg. List Price: from $160

Product: Lasernet
Manufacturer: Western Telematic, Inc.
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Irvine, CA 92768
Phone: (800) 854–7226
Sugg. List Price: from $249

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HARDWARE REQUIREMENTS
CP/M: 64K (53K TPA) & CP/M 2.0 or higher.
MS-DOS: 128K (or more) & MS-DOS/PC-DOS 2.0 or higher - ANSI.SYS.
Printer: 132 columns (compressed pitch supported), continuous forms.
Disk/s: Dual Floppies/Hard Disk/Both - 191K recommended, less works.
CRT: 80/24 with Clear, Home, Clear to EOL, Up, Down, Left, Right.

A SHORT COURSE IN MS-DOS: PART 2

Wild cards, batch files, CONFIG.SYS, and hard disk management

BY WILLIAM MURDICK

Last month, in Part 1 of this two-part article on the fundamentals of MS-DOS, we developed a definition of MS-DOS and explained how to use some of the most useful internal and external operating system programs. Here, in Part 2, we'll first explain how you can extend your ability to use programs like DIR and COPY by employing wild cards--devices for limiting what is viewed with DIR and for extending what is copied with COPY.

Next we'll explain batch files (files that contain commands for automating various processes) and the CONFIG.SYS file, which alters the characteristics of MS-DOS to better meet your particular needs.

And finally, we will explore some of the basics of hard disk organization and management. All but the last section will be of interest to owners of dual-floppy systems; owners of hard disk Kaypros will benefit from every section. [*Ed. note: For more information on hard disk management, see Joseph Comanda's article, "Making Your Hard Disk Work For You", in this issue.*]

WILD CARDS

You know from Part 1 that typing DIR at a system prompt will give you a list of all the files on the disk (or in the case of a hard disk, all the files in the immediate working area). If you wanted to find out if a particular file, such as CHAP7.BK, were on the disk (or in the working area), you could type DIR <ENTER> and then search through the list that showed up on the screen. Or, more quickly, you could type:

dir chap7.bk <ENTER>

Your monitor would immediately tell you whether the file existed on the disk (or in the hard disk work area). Try it out. Get a system prompt--an A: or a C:--and use DIR to search for a file you definitely know is on the disk, and then for a goofy filename that you know definitely won't be found.

Suppose now that you don't know the exact name of a file you are looking for, but you know it is a business letter and you give all such documents a .LET extension when you name them (JONES.LET, PROJECT2.LET, etc.). Here is where wild cards can be of use.

Wild cards in the computer game are similar to wild cards in poker: each can represent any character in the deck. The asterisk (*) is the most commonly used wild card. It stands for "any number of legal characters, from none to whatever the limit is." Here's how you would search for your business letter using the asterisk:

dir *.let <ENTER>

The above command would produce a listing of all files ending with a .LET extension because the asterisk stands for any characters at all. Likewise, you could search for all your JONES files (JONES.LET, JONES2.LET, JONES.MEM, JONES, JONES-A.22) with this command:

dir jones*.* <ENTER>

The asterisk immediately after JONES allows for both JONES.LET AND JONES2.LET by standing in for both the 2 and for nothing. The asterisk in the extension position allows any extension in the listing of your JONES files.

Using wild cards, you could easily copy all your JONES files to drive B: by typing:

copy jones*.* b:

Or, you could use the asterisk to copy all the files on a floppy disk in drive A: onto your other disk (B: or C:). Let's suppose that you wished to copy the files from a floppy disk in A: to C:, your hard disk. First you would obtain a C: prompt. Then you'd type:

copy a:*.*

In the above operation, you could also designate the C: target

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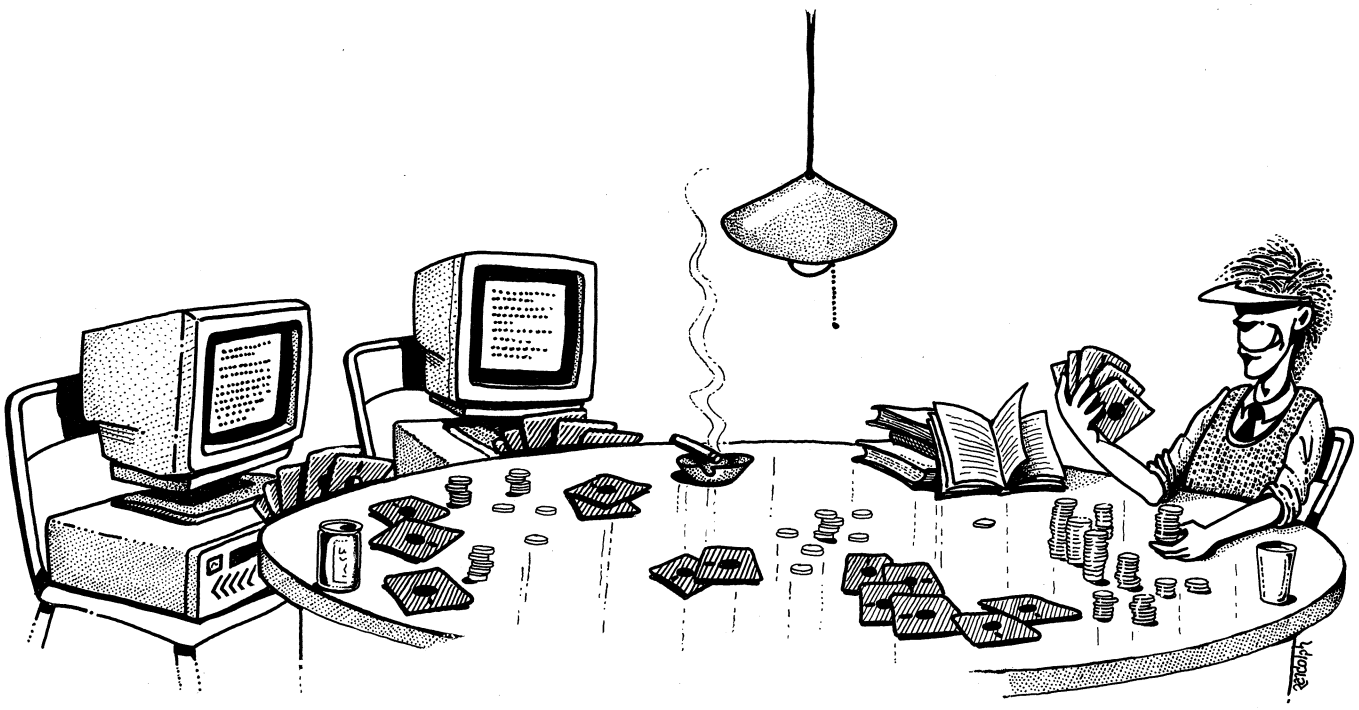

drive (COPY A:*.* C:), but when you don't designate a target drive DOS assumes you want the files to go to the drive indicated by the system prompt. (Later, hard disk owners will learn that files go not only to the hard drive in the operation above, but specifically to the particular hard drive work area from which the command was given.)

As you know, WordStar automatically retains your next-to-last version of each file, giving it a BAK extension. You could erase all the BAK files from a document disk in drive B: like so:

del b:*.bak

The one other wild card, the question mark (?), occasionally comes in handy. The ? stands for one character only. Thus if you wanted to sort out JONES.1 and JONES.2 from all your JONES*.LET files, you could do so with this command:

DIR JONES.?

The single ? would limit the search to files with a one-character extension.

BATCH FILES

If you have ever written a "Things to Do" list and taped it to the refrigerator door for your spouse or roommate, then you have written a batch file. Except instead of telling your companion the little chores s/he must do before s/he can head for the country club for that round of golf, your batch file tells your *computer* the several things you want it to do.

Batch files are like programs. You save them on disk and you run them from a system prompt by typing in the main part of the filename and hitting <ENTER>. However, batch files have the extension BAT--not COM or EXE, like regular programs. And *you* write them--not some professional programmer. You can write them with WordStar using the nondocument mode (use N instead of D to open a document from the Main Menu). Or, as we will see, you can also write them directly from the system prompt. A simple four-item batch file might look like this:

```
DEL B:*.J
CHKDSK B:
PAUSE
A:WS
```

What does it do? Suppose you kept such a batch file on all your document floppy disks, and suppose you were in the habit of using a **J** (for "junk") extension on all files you didn't intend to keep. If, after loading WordStar and logging on drive B:, you happened to notice that your disk in drive B: had a large number of J-files on it, you could exit WordStar and execute your batch file from the system prompt. The batch program would (1) delete all J-files from the disk in drive B, then (2) check the disk space on drive B:, then (3) pause, asking you to hit any key to continue, thereby giving you time to read the CHKDSK information, and finally, after you hit a key, (4) re-load WordStar.

If you've ever written a "Things to Do" list for your spouse, you've written a batch file.

When writing batch files in WordStar's nondocument mode, make sure that you start in the upper left corner of the screen and that each "Thing To Do" is on a separate line, beginning at the far left edge. You do not have to hit <ENTER> after the last line; in fact, it is better not to.

Note that the order in which things are done is often important in writing a batch file. You wouldn't want to check for disk space

until after you had cleared away the junk. Notice also the safety precaution of always indicating the target disk drive in a batch file, expecially when an operation like DEL is involved (DEL B:*.J, not DEL *.J).

You make up your own names for batch files. You must, however, use a BAT extension in the filename. Suppose, for example, you decided to use the name DJ.BAT for the sample file above (DJ for "dump junk"). When opening the nondocument file in order to write the batch file, you would enter DJ.BAT as a filename. But when executing the completed file from the system prompt, you would enter only DJ.

We will next look at a very important type of batch file, one that will execute automatically whenever you start up your computer. All you have to do is give it the name AUTOEXEC.BAT.

THE AUTOEXEC.BAT FILE

At start-up time, in the course of booting your Kaypro, DOS always looks for a batch file called AUTOEXEC.BAT. If it does not find such a file, it produces the time and date stamp messages (which many people ignore by hitting <ENTER>). If it does find a batch file with the name AUTOEXEC.BAT, then it carries out the Things To Do list in that file.

If DOS finds a batch file named AUTOEXEC.BAT, it carries out the "Things to Do" list in that file.

You can write your own AUTOEXEC.BAT file for every floppy disk you use to boot your system, or for your hard disk (though hard disk owners should *not* do that just yet, not until they've learned a little more from this article).

An AUTOEXEC.BAT file will bypass the time and date stamping, unless those processes are specifically requested in the batch file itself (check your DOS manual for standard batch file commands). Thus, you could write an AUTOEXEC (automatically executing) batch file that, on a dual drive system, would load WordStar automatically. Let's create such a disk. If you are a hard drive owner, you may be able to follow the instructions below and create a floppy-disk copy of WordStar that will boot your system. Try it, making adjustments as required.

Step 1. Use DISKCOPY to make a copy of your WordStar disk. You will need to end up with a disk that boots the computer. Your WordStar disk should already do that, but if it doesn't you can copy the WS*.* files on it over to a disk that you have formatted using the /S option in formatting (see Part 1 in *PROFILES*, June 1988). Again, if your WordStar disk is capable of starting your system, you are all set.

Step 2. Put your new WordStar disk in drive A: and load WordStar by typing WS at the A: prompt.

Step 3. Once you see WordStar's OPENING MENU, type N to open a nondocument file and call the file AUTOEXEC.BAT. You want to use the nondocument mode so that the resulting file will be in ASCII (American Standard Code for Information Interchange) format. This is because the part of DOS that executes batch files (the command processor) expects them to be in ASCII format--the universal format for text.

Step 4. Starting in the upper left corner and hitting <ENTER> after each line, type in the following list of Things To Do. This file will bring up an alternative to the standard DOS prompt, send a friendly message to the user, and load WordStar automatically. The CLS command clears the screen. The ECHO OFF line instructs DOS to display on the screen only those lines followed by the word ECHO. ECHO followed by a period produces a blank line. The prompt line can be adjusted to say what you like, though the pg part should probably remain--it will give you a full system prompt (a full system prompt shows you what work area you are in, important information for hard disk users). I will use the name Lucy in the example below, (but of course you would substitute your own name):

```
prompt $P$G Make a wish, Lucy:
cls
echo off
echo.
echo.
echoHi, Lucy, you cutie!
echo.
ws
```

Step 5. Save your file and then reboot your system to try out the autoexec file (CTRL-ALT-DEL will reboot).

It would be easy to make a small change in the batch file that would result in drive B: automatically becoming the logged drive. At the end, instead of just WS, put:

```
b:
a:ws
```

As mentioned earlier, it is possible to write batch files from the DOS system prompt without using WordStar. To create an AUTOEXEC.BAT file right from the A: prompt, for example, you would type **copy con autoexec.bat** and then hit <ENTER>. You have told DOS to COPY to a file named AUTOEXEC.BAT anything which now appears on the CONsole (the monitor). You then type in each line, using the back arrow key to erase mistakes. Finally, execute **<CTRL> Z <ENTER>** at the end of the last line to save the file.

CONFIG.SYS

A CONFIG.SYS file is an important batch-like file that tells DOS how you want your computer's memory organized and lists what "devices" you want installed as part of the computing system. You create a CONFIG.SYS file exactly the same way you create a batch file--you write it using WordStar's nondocument mode.

CONFIG.SYS is a batch-like file that tells DOS how you want your system configured.

Before looking for an AUTOEXEC.BAT file, DOS checks to see if you have written a CONFIG.SYS file and saved it onto the start-up disk. If a CONFIG.SYS file exists, DOS follows the commands in it; if not, DOS runs using default values.

There are nine commands you can include in a CONFIG.SYS file, but we'll discuss just three--BUFFERS, FILES, and DEVICES. (For information on the others, consult Appendix C of your MS-DOS manual.)

The BUFFERS command designates the number of disk buffers (memory used to hold data before it's read from or written to the disk) used by MS-DOS. The default is two buffers, but some applications require more--WordStar 4.0, for example, insists on at least 20 buffers.

The FILES command designates the number of files that MS-DOS can have open at one time. An open file is one that is ready to be read from or written to. The default value is eight, but again, some programs demand more; dBASE III needs at least 20 to operate efficiently. The DEVICE command installs devices in MS-DOS. (A device is a part of your computer system that can send and receive data.) There are some devices that MS-DOS already knows about; these include disk drives, serial ports, parallel ports, and the input and output consoles (the keyboard and screen respectively). If you want to install some new device that DOS doesn't know about, you use the DEVICE command. A mouse, for example, would be a new device, and if you bought a mouse you might install the software for it by putting a line in your CONFIG.SYS file that read something like: **device=mouse.sys**. (The documentation for the new device would tell you what to include in the CONFIG.SYS file.)

As another example, your DOS disk comes with a graphics definition file called ANSI.SYS that you can install in your CONFIG.SYS file: **device=ansi.sys**. To complete the installation, you would have to copy ANSI.SYS onto that start-up disk. If you buy an art or font program and it requires ANSI.SYS, now you'll know what to do.

It is a good idea, on all start-up disks, to have a CONFIG.SYS file containing the following lines:

```
files=20
buffers=15
```

HARD DISK ORGANIZATION

MS-DOS organizes hard disks into hierarchical tree structures, in which various work areas can be created; each work area can have sub-areas, and those sub-areas can have sub-areas, and so on.

The work areas are usually called directory areas because if you type DIR when you are in one, you will get a directory listing of only the files in that area. A directory area has no particular size, and you don't assign space to it. A given directory can be as big as you need it to be, within the limits of disk size. Your computer can use whatever space is left on the hard disk for any additions to any directory area.

The main purpose of the organizational system is to allow you to group files according to type. Thus, if you followed the Kaypro company's procedures for installing the bundled software on your hard disk, your word processing files are in one area and your external DOS programs are in another. One reason you want files grouped is so that you can make sense out of the directories. What good is a file directory if it has hundreds of file names in it? It's a lot easier to find a planet (file) by zeroing in on its solar system (directory area) than by gazing at the Milky Way (the whole hard disk).

Having different directory areas also allows you to duplicate file names. Thus you could have two different versions of WordStar on your hard disk, one set up for business correspondence, another for manuscripts. (You would use the WSCHANGE program to set up the different versions.)

Sometimes two different programs will use the same filenames, and adding the second program to the hard disk will overwrite and destroy existing files unless the new program is added to a different work area. Before copying new programs to your hard disk, you should always create a directory area for them.

The start-up directory area--the one DOS goes to first--is called the root directory. Think of it as the trunk of a tree, from which there will be major branches. Some of those branches (directory areas) will have twigs (more directory areas). The branches can be of any size. To reach a particular branch or twig, you follow a "DOS path" from trunk to branch to twig. The route you want to take must be spelled out starting with the root directory whenever you ask DOS to take you to a particular directory area.

CREATING A NEW DIRECTORY AREA

You invent your own directory area names. Let's run through the process of creating a new directory area called JUNK off of the root directory. We'll suppose you wish to use this area as a temporary dumping place for new programs, a safe place apart from

your important files where you can try out the new programs. Note the various commands as you go through the tutorial.

Step 1. Exit to DOS, to your C: prompt, and then type **c:** and hit <ENTER> to make sure that you are in your root directory. That command, C:\, will always take you straight back to the root, no matter how far away you are.

Step 2. Make a new directory area called JUNK by typing **md junk** (md is the *m*ake *d*irectory command).

Step 3. Change directory areas from the root to your new one by typing **cd\junk**.

If your AUTOEXEC.BAT file has a "prompt" line in it (like **prompt pg)**, your prompt will reflect your new location **(C:\JUNK**, instead of just **C:**). If you are not getting an informative prompt, you want to make sure that you are in the proper area; therefore, at the C: prompt, enter **prompt pg** right now to give yourself such a prompt.

Step 4. Put a disk with some files on it in your floppy drive; we'll pretend that this disk is a new piece of software you wish to examine. Copy those files to the JUNK area of drive C: by typing, at the C:\JUNK prompt, the command **copy a:*.***

Since you did not indicate a particular target for the copy command (for example, copy a:*.* b:), DOS copies the files to the drive and directory area you are in, in this case C:\JUNK.

Now, type DIR to ascertain that the copying process was a success; then erase all the files and clear out your JUNK area with **del *.***

You might consider leaving the JUNK area on your disk. However, if you wish to delete it, enter **c d ** to return to the root. Then enter **rd\junk**. The rd (*r*emove *d*irectory) command removes empty directory areas.

You create a twig off a branch (subdirectory) the same way you created the branch in the first place.

SUBDIRECTORY AREAS

You create a twig off of a branch the same way you created the branch in the first place. For example, suppose you wished to create subdirectories for your WordStar files. Let's suppose that your WordStar programs are located in a branch area called WORDSTAR. The two file subdirectories (or twigs) you have decided to create will be called LETTERS and REPORTS. It's easy enough. Enter:

md c:\wordstar\letters

and then

md c:\wordstar\reports.

You cannot create both a branch and a twig at the same time; you must create the branch first. You can have twigs off of twigs.

Files can be copied from the twig of one branch to the twig of another:

copy c:\wordstar\letters\ jones3.let c:\junk.

That command will copy the file JONES3.LET from its location in the LETTERS twig off the WORDSTAR branch over to the JUNK branch (which, like WORDSTAR, is right off of the root). Take a moment to study that example. It demonstrates, among other things, that branch paths can end with a particular filename (JONES3.LET) or with a directory area name (JUNK), whichever would be logical in a given operation.

EXAMINING YOUR TREE

You can examine your tree directory structure with the DOS TREE command. At your root C: prompt, enter **tree** to see a listing of all directory areas and subdirectory areas. Use ^S to stop and re-start the scrolling.

You can also display all the filenames under each directory area by entering **tree/f**.

If you turn on your printer and type ^P before entering your TREE command, you'll get a printout of everything you see.

WHERE DO YOU GO FROM HERE?

If you're going to use a hard disk, it's a good idea to obtain a hard disk management program. XTREE is my favorite, but there are many out there, some even in the public domain. A program like XTREE shows you an image of your tree structure on the monitor and then allows you to move around in it, viewing files, copying files, and even running programs. It's very important to know the basics that we have just covered, but experienced computer users always find the easiest way. (*Ed. note: see "A First Session with Xtree" in the April 1988 issue.*)

Once you feel comfortable with the kinds of processes described in these two articles, you might consider buying a book on DOS to increase your competence. DOS "paths" would be a good place to start, if you want to go further with the subject. And keep an eye out for tips and additional articles related to MS-DOS in *PROFILES*.

William Murdick is a professor of English at the California University of Pennsylvania and a frequent contributor to PROFILES.

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MAKING YOUR HARD DISK

BY JOSEPH COMANDA

Moving up from floppy disks to a hard disk can be very exhilarating. You may feel like a pioneer heading for the open spaces of the American West to start over. Or your experience may be just the opposite. Placed in front of a computer with an elaborate hard disk structure, you may feel like a small-town hick plunked down in the middle of the Los Angeles freeway system without a road map. Either way you are in new territory, and you need to know the lay of the land.

This article will help you understand the geography of your hard disk. You'll learn how it's organized, how to get around on it, and how to take advantage of it in your daily work. First, I'll cover some of the basic concepts, then I'll show you how to work with a hard disk at the operating system level, and finally, I'll show you how to use it more effectively with WordPerfect, Lotus 1-2-3, and WordStar 4.0.

DISKS AS FILING CABINETS

We use both hard and floppy disks like filing cabinets. We save our work on them in files. The main difference between them is storage capacity. A 20-megabyte hard disk, for example, has roughly 60 times the storage capacity of a 5 1/4-inch double-density floppy disk. That's a big difference, and it calls for a more elaborate filing system.

Most people who work on floppy disks tend to group their files on different floppies. Often they do it functionally: one disk for word processing files, another for spreadsheets, a third for their mailing list. As the number of their files grows, they may find that they need more than one disk for each function. They may start breaking things down further still using functional categories--one disk for letters, another for proposals, another for articles, and so on. Or they may use a more project-oriented approach--a different floppy for each job. It's not a very fancy system, but it usually works well enough.

The point is that the relatively small storage capacity of floppy disks gives us a nice way to organize our files without too much trouble. If they were too much larger--say 60 times larger--they wouldn't work as well for us. We'd lose the ability to group files easily. And that's exactly what happens on a hard disk.

SUBDIRECTORIES AS COMPARTMENTS

That's where subdirectories come in. If disks are like drawers in a filing cabinet, then subdirectories are like flexible dividers that mark off different sections in a large drawer. They give us a way to get back our old system by grouping files into compartments on a hard disk.

You don't have to use subdirectories. It's just a good idea. Not only will it help you organize your files, it will maintain good disk performance, too. After a while, on hard disks where people don't take advantage of subdirectories, disk search times increase significantly. The computer is being forced to work through the clutter of files that litter the disk, and it responds as sluggishly as a recalcitrant car on a cold morning.

A hard disk starts out without any subdirectories, but as you load programs onto it you usually end up with some. If you buy a computer with a hard disk, your dealer may create separate subdirectories for each of the programs he sells you and another one for the DOS programs like FORMAT.COM, CHKDSK.COM, and BACKUP.COM. If you install your own programs, the in-

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ILLUSTRATION BY JENNIFER HEWITSON

WORK FOR YOU

How to organize your subdirectories

structions may tell you to create a subdirectory to copy the program files into. Some programs even come with automatic installation procedures that create the appropriate subdirectories for you. However it happens, most hard disks end up with at least a few subdirectories.

Figure 1 shows a diagram of the subdirectories on a hard disk the way they might appear after you've installed a few programs. (To see a list of the subdirectories on your own disk, at the DOS prompt type **TREE**. You're not likely to be able to recall your subdirectories, but you can save this list in a file for future reference by typing TREE and a file name, or you can print it out instantly by typing TREE› LPT1. You can't see an actual diagram of your disk with-out a hard disk management program such as Xtree.)

A hard disk starts out without subdirectories, but as you load programs you end up with some.

Notice that the diagram in Figure 1 has an upside– down tree structure. The root directory is at the top, and the other directories branch out below it ––in this case providing compartments for WordPerfect, Lotus 1–2–3, and dBASE, as well as the miscellaneous DOS programs.

BRANCHING OUT ON YOUR OWN

At this point you have compartments for your programs, but you should also create separate compartments for your data. You can use the same categories for this as you would for organizing files onto floppies. In Figure 2 the subdirectories under WordPerfect are organized by users and then below that by functions. Notice that the tree has sprouted several more branches. Whenever you need a new compartment, all you have to do is add a new branch to the tree wherever it seems most appropriate.

PATHS AND COMPLETE ADDRESSES

When you start using subdirectories to store your files, you'll also need a way to indicate where the file is located. As you may know, you can indicate which drive a file is stored on by specifying the drive letter (C for the hard disk, A or B for floppy drives) followed by a colon and the name of the file. For example, if you have a file called SMITH.688 on the C drive, its address would be C:SMITH.688. Unfortunately, that's not a specific enough ad-

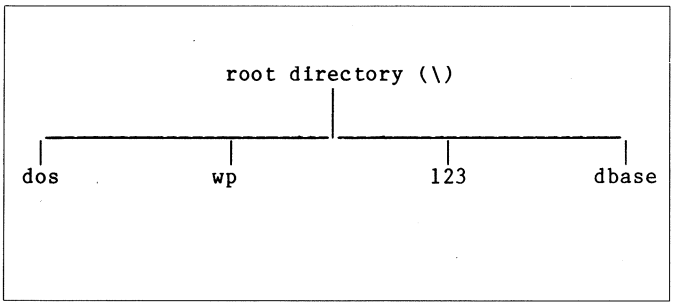

FIGURE 1

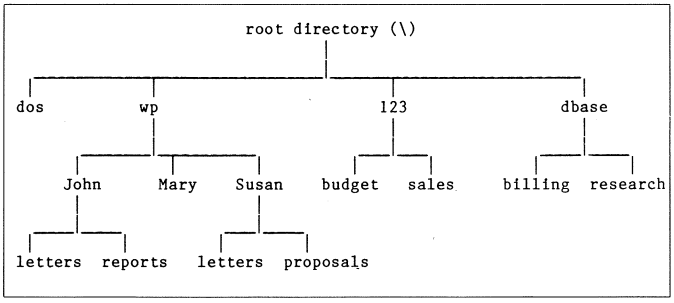

FIGURE 2

dress if you're working with subdirectories, because it doesn't tell you which compartment it's in. It would be a little like trying to find someone who lives in Philadelphia without having the street address.

That's where the idea of a path comes in. It gives you a way to indicate the complete address of a particular file. The path is the route through the directory tree, starting at the top, that you take to get to the directory where the file is stored. If SMITH.688 were in Susan's letter subdirectory, its path would start in the root directory of the C drive and come down through WP, SUSAN, and finally LETTERS. Its complete address would include the drive, the path, and the filename and look like this:

C:\WP\SUSAN\LETTERS\SMITH.688

The backslash key (\) plays an important role in designating the path. The first backslash in a path refers to the root directory itself. The rest serve as level separators so you can tell where one subdirectory name stops and another begins.

WORKING WITH SUBDIRECTORIES

You can designate the complete path of a file name whenever you would ordinarily refer to it in a conventional DOS command. For example, if you were going to copy a spreadsheet file called PROJSALES.WK1 from the A drive into the sales directory under 123, you could use the following command:

COPY PROJSALES.WK1 C:\123\SALES

Better yet, you should have indicated that the file was in the root directory of the A drive using this command:

COPY A:\PROJSALES.WK1 C:\123\SALES

Similarly, if you had printed a spreadsheet to disk in Lotus 1-2-3 and then wanted to copy that file from the sales directory to John's reports subdirectory to incorporate it into a WordPerfect document, you could use the following command *(Ed. note--The following command should go on one line. It was placed on two lines to accomodate the column width of the magazine. There is a space between PROJSALES.PRN and C:.)*

COPY C:\123\SALES\PROJSALES.PRN C:\WP\JOHN\REPORTS

In addition to the regular DOS commands like COPY, DIR, ERASE, and TYPE that recognize path designations, there are some special commands for working directly with directories: MD (for *making* new *directories*), CD (for *changing* to a different *directory*), and RD for *removing directories*. These commands work pretty much the way you'd expect them to now that you know about paths.

MAKING NEW DIRECTORIES

If a new person named Charles started using WordPerfect and you wanted to give him his own directory, you could use the following command:

MD C:\WP\CHARLES

The rules for directory names are the same as for file names--up to eight characters (no spaces) followed optionally by a period and an extension of up to three more characters--but people usually don't give directory names extensions. Besides saving you time when you have to type them, this convention also provides you with an easy way to see a list of all the directories below a certain level. For example, to see a list of all the second-level directories (the ones immediately under the root directory) in our example, you could type:

DIR C:*.

In effect, you'd be asking to see a list of all the files in the root directory that didn't have extensions. Since DOS treats subdirectories somewhat like files, you'll usually end up getting mostly subdirectories. Figure 3 shows you what that would look like. Notice that instead of the usual indication of the file size in bytes, you get the word DIR for subdirectory.

An interesting thing about subdirectories is that when you look at a directory listing of their contents, they have two bogus DIR files named . and .. respectively. They're part of the baggage that comes along with any new subdirectory, and they refer to the current directory (.) and to the one directly above it (..), also known as its parent. By typing **CD.. ⟨CR⟩** you can change to the parent directory.

```
 Volume in drive C is HARD DISK
 Directory of  C:\

DOS          <DIR>       5-08-88   9:04a
WP           <DIR>       5-08-88   9:05a
123          <DIR>       5-08-88   9:07a
DBASE        <DIR>       5-08-88   9:07a
       4 File(s)    17006560 bytes free
```

FIGURE 3

MOVING AROUND

In the same way that you can move from drive to drive by typing the drive letter followed by a colon, you can navigate through the directories of a hard disk by typing **CD** (for change directory) followed by a subdirectory path. **CD \WP\SUSAN** moves you to Susan's directory, **CD \WP** takes you to the WordPerfect directory, and **CD ** gets you back to the root directory again.

When you change drives, the DOS prompt changes to indicate the drive you are currently on. These days most dealers are setting up computers with hard disks so the prompt also shows the path. If your prompt does that, it should look like this when you're in the root directory:

C:\

and like this when you're in Susan's directory:

C:\WP\SUSAN

If your prompt only shows the drive letter followed by a greater-than sign(>), you should fix it. Traveling around the hard disk without a prompt that tells you where you are is like driving in the dark without headlights. Issue the following command to fix it:

PROMPT PG

You may even want to add that line to the end of your AUTOEXEC.BAT file with a text editor so your computer always starts up with that kind of prompt. It should go a long way toward making your hard disk explorations less frustrating.

REMOVING DIRECTORIES

In the same way that you can erase files, you can remove directories using RD, the last of the three directory commands. There are only two stipulations: first, the directory must be empty and second, you can't be in it when you issue the RD command. Suppose you had created a subdirectory called BIGJOB under 123 for a specific project. When the project was over, you could issue the following series of commands to copy all the files to a floppy, erase them from the hard disk, and then remove the directory.

```
COPY C:\123\BIGJOB\*.* A:
ERASE C:\123\BIGJOB\*.*
RD C:\123\BIGJOB
```

USING PROGRAMS ON A HARD DISK

You may have encountered instructions for running programs on a hard disk that tell you to use a CD command as part of the start-up procedure. For example, the WordPerfect manual tells you to issue the following commands to start WordPerfect:

```
CD \WP
WP
```

Now that you've learned more about subdirectories, you know exactly what you're doing. You're changing to the WordPerfect subdirectory and then issuing the command to start WordPerfect.

Most programs work that way. You have to move to the subdirectory that contains the program before you can load it. If you don't have to do that on your computer, chances are you have some kind of menu system that does it for you automatically when you select the option to run a program.

USING SEARCH PATHS

There is also a way to tell the operating system to run programs that aren't in the subdirectory you're in. You can indicate a search path so it will know where to look. But first you need to know a little more about how the operating system responds to commands you type at the prompt.

A search path tells the operating system where to look next after searching the current directory.

If the command you type is one of the internal commands like DIR, COPY, or CD, it proceeds to execute it. If not, it looks in the

current directory for a file with that name and either an EXE, COM, or BAT extension. For example, if you're in the WordPerfect subdirectory and you type WP, the operating system will find WP.EXE and start it up. If it can't find the program there, it gives up and displays a "Bad command or file name" message--unless you've indicated a search path.

A search path tells the operating system where to look next after it has searched the current directory for a program unsuccessfully. To see what the current search path is, type the word PATH. You will either get a "No path" message, indicating that you don't have a search path, or you'll see a message something like this:

PATH=C:\;C:\DOS

This search path tells the operating system to continue the search for a program beyond the current directory, first looking in the root directory and then in the DOS subdirectory. Among other things, it means that you could format a floppy from anywhere on the hard disk without having to go to the DOS subdirectory first. If you've issued the FORMAT A: command and gotten a "Bad command or file name" message, chances are the search path didn't include the DOS subdirectory or whatever subdirectory FORMAT.COM is in on your hard disk.

To define a search path, use the path command followed by the specific subdirectory paths you want. You can list several paths as long as you separate them by semicolons. To set up the search path indicated above, you would issue the line as a command:

PATH = C:\;C:\DOS

You may also want to add such a command line to the end of your AUTOEXEC.BAT file to set up the search path automatically at startup.

USING SUBDIRECTORIES FROM WITHIN PROGRAMS

The whole idea of organizing your work into separate compartments on the hard disk assumes that your programs will allow you to use different directories to save and retrieve files. These days most programs do, but as recently as last year, before version 4.0 came out, the venerable WordStar couldn't work with subdirectories. If your program can work with them and you intend to use them, you should learn how to do the following tasks from within your program:

1. Change the default directory (the directory normally used to save or retrieve files).

2. Save a file to a directory other than the default.

3. Retrieve a file from a directory other than the default.

Chances are you will have to create your subdirectories at the operating system level with the MD command, but once you've done that you should be able to get into them from the program. While it is nice to be able to save to and retrieve from other directories, it is better to change to the directory where you are planning to keep your work at the beginning of a session. It will be easier to retrieve files and you won't have to worry as much about accidentally saving files in the wrong directory.

Here's how to work with subdirectories in three popular software packages.

WordPerfect. When you press **F5** (the List Files key) in WordPerfect, it tells you the path of the current default directory. If you then press **Enter**, it shows you all the files it contains.

You can see the files in a different directory by typing in its path before you press **Enter**. That will take you there temporarily, and you can retrieve a file by highlighting it and pressing **1**.

You can also change the default directory when you first press **F5** by pressing the equals sign (**=**) and then typing the path of the new directory.

When you save a file with **F10** (or when exiting with **F7**), you can also send it to a different directory than the default one (or the one you got it from) by typing in a new path name for the file to follow.

Lotus 1-2-3. When you go to the File menu in Lotus to retrieve a file (/ **File Retrieve**), you will see the path of the default directory at the top of the screen just above the list of files. To retrieve a file from a different directory, press **Escape**, change the path name (making sure to add one final backslash at the end of the path), and press **Enter**.

Similarly, you can include a different path in the name of the spreadsheet when you go to save it, if you want to send it to a different directory.

To change the default directory, simply use the Directory option on the File menu (/ **File Directory**) and type in the path of the new default. Next time you use File Retrieve, it will take you there automaticallyl.

WordStar 4.0. At WordStar's Opening menu, you can log onto a different directory by pressing **L**, typing in the path of the new directory, and pressing **Enter**. From then on, unless you tell it otherwise, WordStar assumes you want to save files in that directory. The same goes for retrieving files. To tell it otherwise, include the path in the name of the file when you open a document with the D option on the Opening menu.

MAKING YOUR HARD DISK YOUR OWN

When you get the hang of using subdirectories as an organizing tool on your hard disk, you can make it your own and it will begin to work for you. Cleaning up a hard disk and imposing your own order on it is even more satisfying than cleaning up your desk. Maybe that's why my own hard disk is so well organized while my desk is still a disaster.

Joseph Comanda is a freelance writer and software trainer living in Philadelphia.

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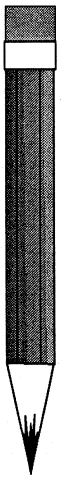

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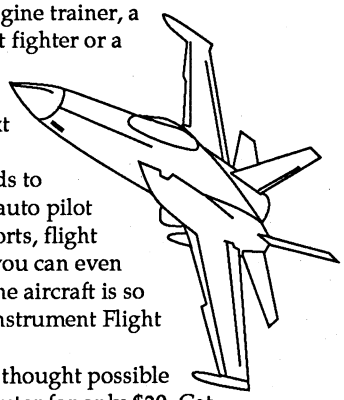

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A small business generates a lot of paperwork these days. It can be an overwhelming task to keep it all organized and to generate the various accounting and tax reports that are required--unless you have an appropriate computer program to help.

One program suitable for this job is Checks & Balances from CDE Software. This program has been around for some time and has evolved into much more than simply a checkbook-balancing tool. It lets you fill out checks automatically, for instance, and has database and Rolodex capabilities. It also has the features to function as a small-business accounting system. In this article we'll look at these features and see how the program operates in this role. We'll assume the reader is familiar with basic accounting terms and concepts, but not with the program itself.

Most accounting programs are of the double-entry type and are difficult for those with no accounting background to understand. Checks & Balances is an easy-to-use combination of single-entry accounting, checkbook, and database programs centered on your checkbook. It will use your checkbook or other entries to assign amounts to various expense accounts, help you manage bills, budget expenses, track income and receivables, and generate reports such as Net Worth and Income/Expense.

Checks & Balances is a command-driven program--menu-driven programs tend to slow the user down once the commands are learned. There's only one menu in Checks and Balances: a reminder of basic commands. The commands used are simple English and easy to remember, and once you learn them, Checks & Balances is fast and easy to use.

GETTING STARTED

Checks & Balances comes on two disks, the system disk and a data disk. (It's always a good practice to make back-up copies and then store the original disks before proceeding. The instruction manual gives good directions for copying disks and also for transferring the system and data files to a hard disk.)

To load the program, enter the word CHECK at the system prompt. The first time you run it, the program will automatically go into the configuration mode, and you will be prompted to select your monitor and printer types and choose one of four color combinations available. CP/M versions of the program ask you to select the terminal type for your computer, as well as which printer driver to use. You can change the configuration by entering the command CONFIG at the command line.

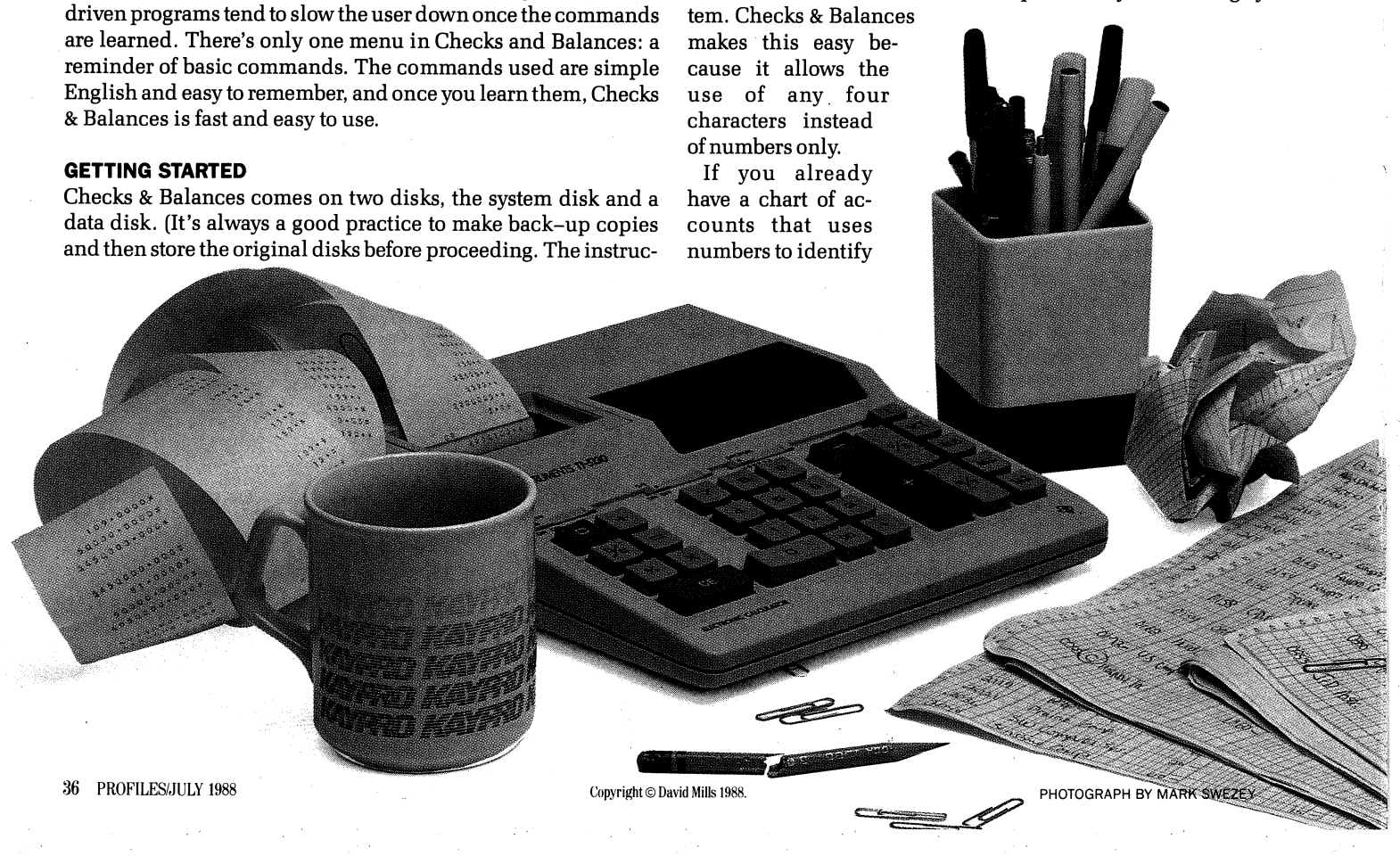
After the configuration is complete, the program will load and ask you for the name of the data file to use. Enter a name such as B:CHECKS88 and the program will create the data file. If there is an existing file with the same name it will open that file. Please note that if you are using a floppy disk system, data files must be on the disk in the B: or other drive because the Checks & Balances program files fill up the system disk.

The next prompt displayed will be one for entering the current date. It is to be entered in the MMDDYY format (two digits each for month, day, and year), with leading zeros included for numbers less than 10.

INITIALIZING THE CHART OF ACCOUNTS

A chart of accounts must be developed for any accounting system. Checks & Balances makes this easy because it allows the use of any four characters instead of numbers only.

If you already have a chart of accounts that uses numbers to identify



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Balancing

Using Checks & Balances for small-business accounting

BY DAVID MILLS

each account, you can use that chart. If you don't like to use numbers because they are hard to remember, you can use account identifiers like AUTO for your auto expense account or RCV for accounts receivable.

A chart of accounts must be developed for any accounting system; Checks & Balances makes it easy.

The chart of accounts, initial starting information, and bank balance are established by typing the command INIT at the command line. The screen will display a simple form for entering data such as name, starting bank balance, month your fiscal year begins, the carry-over bank balance from prior periods, and chart of accounts.

I suggest that you have a sample chart of accounts worked out before you start to enter it, but if you want to make changes later, the program allows you to type over any entry to change it. Checks & Balances allows up to 128 different accounts (96 for CP/M).

Press the Home key on your keyboard to enter or edit the data (CP/M machines use the ESC key). To scroll through the accounts, use the PgUp or PgDn keys (Control-C for CP/M). When you are finished, press the End key to return to the command line (ESC for CP/M).

Each account is identified as a given type. The program has 15 different types:

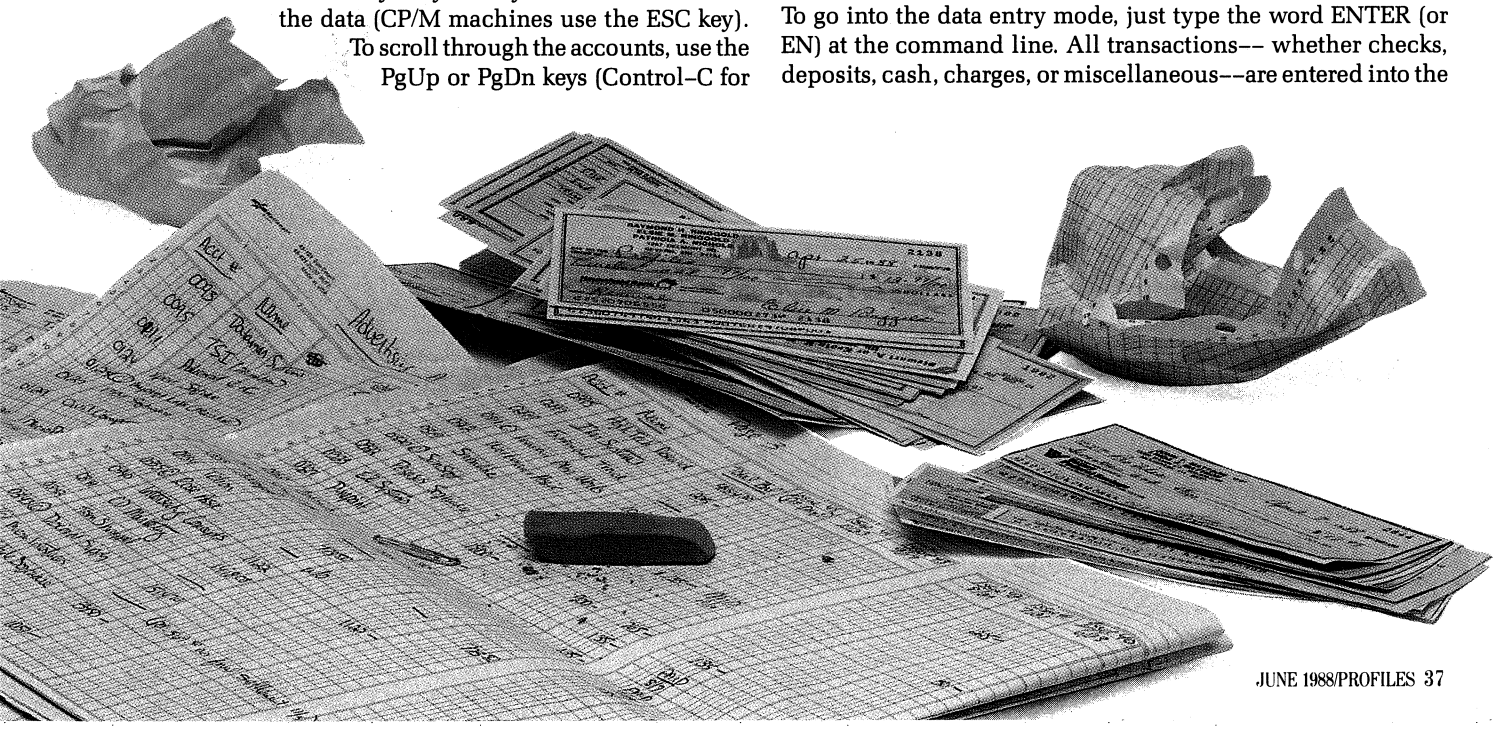
A	Assets
C	Credit card balances
E	Expense account
G	Cost of Goods
I	Income account
L	Liabilities
M	Mileage traveled (or misc. non-checkbook items)
R	Receivables (money owed you)
S	Savings accounts
V	Voided checks
Z	Unused category
1	User defined #1
2	User defined #2
3	User defined #3
4	User defined #4

As you can see, the program allows the grouping of accounting information into useful types. The reports you generate later will detail and total these types of data for you.

There is a default tax flag byte that you can set when you initialize your chart of accounts. This can be left blank so you can enter the tax status of each checkbook entry as you make it, or you can have the program automatically enter a T (taxable) or N (non-taxable) each time you specify the category.

ENTERING TRANSACTIONS

To go into the data entry mode, just type the word ENTER (or EN) at the command line. All transactions-- whether checks, deposits, cash, charges, or miscellaneous--are entered into the



files after you type the ENTER command. The bottom part of the screen will display a checkbook ledger for you to fill out. The upper half of the screen will display your chart of accounts for easy reference (remember, press PgUp or PgDn to scroll them; Control–C for CP/M).

There is room for four breakdowns per check if you want to split expenses among several accounts.

You enter the check number for each check you are logging and then enter the date, who it was written to, the total amount of the check, and the chart of accounts identifer key. A space is also provided for a memo.

If you wish to split the expenses among several accounts, there is room for four breakdowns of expenses for each check (or other type of transaction).

Let's take the example of a check for payment of principal and interest on a loan. If you wished to keep a record of the remaining loan balance (a liability) and the tax–deductible interest expense, you would just use the breakdowns to record the amounts. To do this, you must have established a liability type account for the loan and an expense account for the interest in your chart of accounts.

The original check entry would reduce the checkbook balance; the first line of the provided breakdowns could record the interest expense to the expense account set up for that purpose; the next line could reduce the principal amount due on the loan (the liability). Each breakdown has its own account number key field and its own tax flag. Breakdown amounts never affect the bank balance.

When entering miscellaneous items––for example, establishing the loan liability mentioned above––you use the word MISC in place of a check number. The word MISC in that field means that the checkbook balance is not affected.

Figure 1 shows the use of the breakdowns to record the payment of typical liabilities for payroll. The check is made out to the bank, which in turn deposits the money to the IRS. Your liability accounts (FICA & FWH) would have been established for the month when you entered the information for FICA and Federal withholding using the MISC command. Payroll programs automatically give you that tax liability information.

The following entries in the check

```
#   576 10/10/87 Pay To: VALLEY NATIONAL BANK                    $   2670.15_
Key:<    > Tax:<N> Memo:<Federal withholding and FICA deposit.    >
   <FICA>    <?>     <FICA LIABILITY-PAID                        > $  -1483.16
   <FWH >    <?>     <FED W/H LIABILITY- PAID                    > $  -1186.99
   <   >     < >     <                                           > $      0.00
   <   >     < >     <                                           > $      0.00
10/10/87  Period covers entire year                                   -- All --
File=B:CHECKS87 Names=C&BNAMES     TRUE $    5867.28 BANK $    8337.14
```

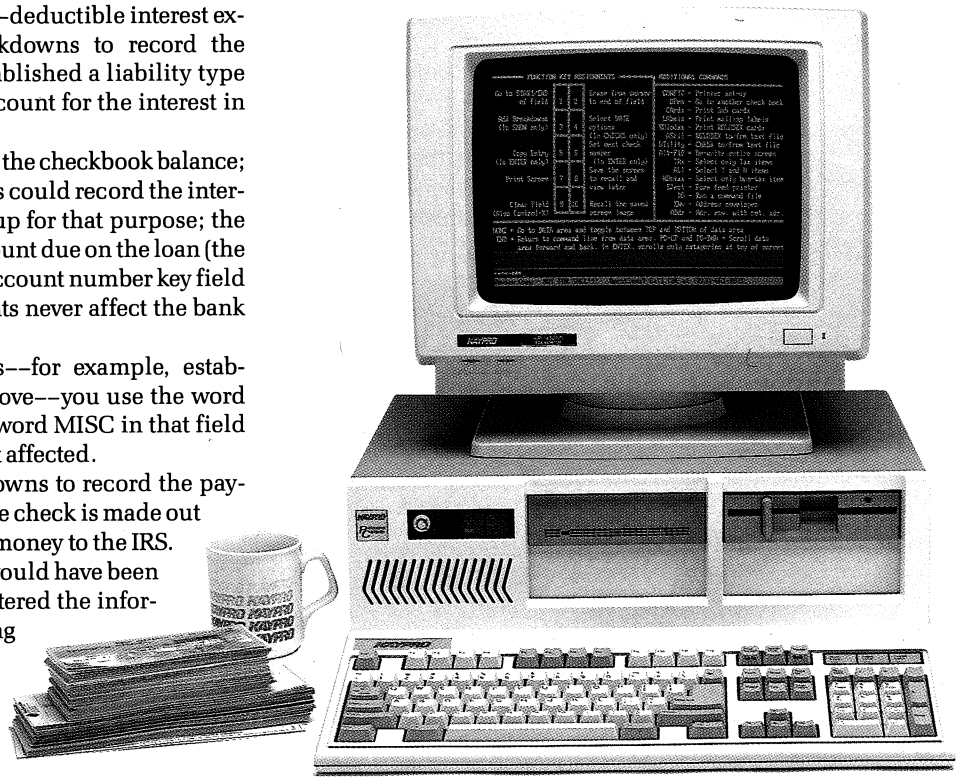
FIGURE 1: Entering a check and the breakdowns.

number field affect the bank balance:

A check number from 1 to 999990.
DEP (deposit)
Other used to record bank charges or ATM withdrawals

The following entries do not affect the bank balance:

MISC For entering amounts to an account without changing the bank balance.
CASH For cash purchases
CHARGE Credit card purchases
BILL An account payable.



DISPLAYING AND EDITING DATA

SHOW is the command used to display or edit the data in the files. With SHOW you may add breakdowns to your entries, correct mistakes, or delete entries.

Using this command you can display the whole data file (seven transactions at a time) or show only specific items. To show the entries for auto expenses, for example (the account labeled AUTO in your chart of accounts) you would enter the command:

SHOW AUTO

Each entry in the AUTO account would then be displayed. To scroll the items on the screen, you use the PgUp and PgDn keys (the arrow keys for CP/M). To edit any data shown, you can press the Home key (ESC for CP/M) when the cursor is on the data area to be edited. Editing is then done by simply typing over the items to be changed.

To add breakdowns to your entries while in the SHOW mode, press the F3 function key (Control–U for CP/M). Enter the breakdown data just as if you were in the ENTER mode.

Searching the payee or memo fields for a specific entry is also done with the SHOW command, but instead of an account number or name, you use a word or words in the payee or memo fields, as in:

SHOW Profiles
or
SHOW WITH Profiles

If the string contains spaces, punctuation, or math symbols, you must put double or single quotes around the string, as in:

SHOW "PROFILES MAGAZINE"

When searching by strings you may use upper or lower case.

If you regularly enter income and expense data, C & B gives you useful accounting information.

DISPLAYING ACCOUNT TOTALS

The primary purpose of any accounting program is to provide you with information about financial performance. If you regularly enter your income and expense data into Checks & Balances, the program will be able to give you useful accounting information.

Totals include Checks, Other, Deposits, Misc, Cash, Charges --- --- --- ---

KEY	TYPE and DESCRIPTION	PERIOD Count	PERIOD Total	YEAR Count	YEAR Total
514	= E - Repairs	3	84.72	3	84.72
515	= E - Insurance	1	169.38	11	2299.28
516	= E - Other expense	0	0.00	13	1782.50
517	= E - Workman's comp. ins.	1	233.44	6	1014.03
518	= E - Entertainment/travel	1	178.39	2	188.89
519	= E - Materials & supplies	2	842.34	17	5897.16
520	= E - Advertising	5	1608.33	21	9098.17
521	= E - Auto expenses	7	867.05	46	5028.16
524	= E - Tools	1	782.70	2	867.60
526	= E - Shipping	1	20.56	3	80.13
528	= E - Equipment rents	0	0.00	3	199.28
529	= E - Bank charges	3	90.33	15	208.37
530	= E - Accounting/legal	3	612.50	9	2916.78
531	= E - Licenses	1	25.00	7	199.80
532	= E - Dues & Subscriptions	0	0.00	5	299.37
534	= E - Office supplies	8	680.73	17	1877.00

10/10/87 Period covers July -- All --
File=B:XYZCORP Names=C&BNAMES TRUE $ 5867.28 BANK $ 8337.14

FIGURE 2: Account Total Display

The command MONTH is used to restrict the totals to a given period. For example, the command MONTH JULY restricts the totals displays to the month of July and the year to current date. MONTH JULY AUGUST will restrict totals displays to those two months.

A screen display of the account totals is done with the command TOTAL. The computer will first display the amount for each account, a cash flow screen for the period, the bills and outstanding amounts screen, a profit/loss summary screen, a transaction types summary screen, and finally a Missing and Duplicate Checks screen.

The first set of displays, the Account Totals, is displayed for each of 16 accounts that can be displayed on the screen at one time (See figure 2.). These totals are the sum of the transactions for each account for any given month, year to date, or combination period of time. The PgUp and PgDn keys (arrow keys for CP/M) will scroll the screen displays.

The tax status can be set at the command line to ALL, NON–TAX or TAX to limit the TOTAL screen display to transactions that have the tax flag set accordingly.

You can limit the display of totals to any of the major categories of Checks, Other, Deposits, Misc., Cash, or Charges. For example, the command TOTAL CASH will display only cash transactions.

The Missing and Duplicate screen is very helpful for correcting mistakes. You can use the SHOW command to display and then correct the mistakes.

PRINTING REPORTS

Financial data isn't much good unless you can print it out; we have not yet reached the point where you can hand your accountant a floppy disk and say, "Go for it." The world wants to see numbers on paper. Fortunately Checks & Balances produces a variety of printed reports.

The program will print reports based on a check number or a range of check numbers, transaction type, date, tax status, or by any of the standard categories: CASH, CHARGE, MISC, etc. You can see selected data or data for the entire year.

The three commands used to generate reports are PRINT, SUM, and TOTAL PRINT. Each command prints the information in a different way.

Checks & Balances produces a variety of printed reports using PRINT, SUM, and TOTAL PRINT commands.

Print. Type **PRINT** and press Enter and a report listing the entire checkbook will be printed. It will list each check number, the date the check was written, the amount, the check's category, and its memo.

To produce a report of only selected accounts, type the account name. For example, to print a report on all the checks written for the AUTO account, just type **PRINT AUTO** and press Enter.

A "key" is a four-character code used to denote a specific account or category. To print a report listing the checks for a series of accounts or categories, you use the PRINT command with the parameter KEY and a list of the keys you are interested in. For instance, the command **PRINT KEY=AMEX,DISC,VISA** would print all the checks you've written to pay your American Express, Discover Card, and Visa accounts.

The PRINT command is affected by the MONTH command. Print will only present information included in the times specified by MONTH. Similarly, you can specify taxable or non-taxable expenditures with the TAX and NONTAX commands, and only data that matches your specification will be printed.

Sum. Printing the most basic reports--monthly summaries--is done with the command SUM. This will produce a summary of each category (OTHER, CHECKS, CHARGES, CASH, MISC, and DEPOSITS) on a single page.

Summaries for specific accounts are printed with the command SUM followed by the key or keys that denote the accounts you wish printed. Each key must be separated from the next by a comma. You may include up to 15 of your accounts and they will be printed six to a page.

All of your accounts can be summarized with the command SUM ALL.

Total Print. Net Worth and Profit and Loss (sometimes called Income/Expense) statements are the information you and your accountant will need the most. The command TOTAL PRINT will generate a set of statements including the summaries described above plus a balance sheet (net worth) and a profit and loss statement. To print just a Net Worth statement, you use the command TOTAL PRINT NW. An Income/Expense report is printed with the command TOTAL PRINT IE.

CONCLUSION

This is only a glimpse of what Checks and Balances can do. The UTILITY command, for example, will produce comma-delimitted files suitable for use with MailMerge or Printmerge. There is much more. All in all, Checks and Balances is powerful program that can make your life much easier. ■

David Mills is a business owner, manager, and consultant in Orange County, California.

KEY	*USE*
F1	Go to start and end of a field
F2	Erase from cursor to end of field
F3	In SHOW, used to add breakdowns
F4	Select date to be printed on check
F5	Reset the next check number during ENTER
F6	Print screen
F7	Save screen for later recall
F8	Save screen for later use
F9	Terminate execution of a command
F10	Recall screen that was saved with F8

Table 1: MS-DOS function keys.

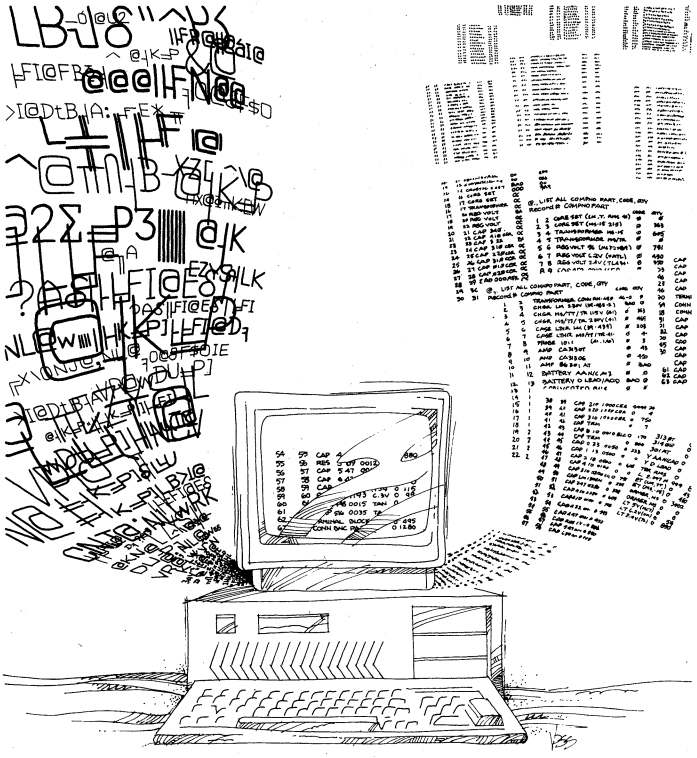
KEY	*USE*
CNTRL C	Scroll accounts forward in INIT or ENTER
CNTRL P	Print screen
CNTRL Q	Re-call last command entered to repeat or correct it.
CNTRL R	Go to start and end of field
CNTRL U	In SHOW used to add breakdowns In ENTER used to reset check number
CNTRL V	Toggle character insert mode
CNTRL W	Erase from cursor to end of field
CNTRL X	Clear field, return cursor to start of field or terminate execution of a command.
CNTRL Z	Re-write screen

Table 2: CP/M Functions

EXPORTING PERFECT FILER DATA TO OTHER PROGRAMS

How to convert PF databases to ASCII format

BY JOSEPH I. MORTENSEN



Perfect Filer came with my Kaypro II'83. I jumped at the chance to enter the database world and stashed away a mother lode of information. That wasn't too hard. But then I tried *retrieving* data. Attempting anything more complicated than mailing labels made a trip to the dentist for a root canal seem like fun by comparison. So my data stayed buried-- until I found a way to make it readily accessible and easier to work with.

The trick is to convert your Perfect Filer database files to "comma-delimited ASCII files" and export them to WordStar (as in my examples) or another word processing or database program. Comma- delimited ASCII files are a widely used medium of information exchange in the computer world. The comma- delimited file liberates you from Perfect Filer's skimpy formatting and printing capabilities to enjoy the options of, for example, WordStar 4.0's MergePrint features. You are also freed from the biggest obstacle to using merge printing: preparing the dreaded data file. (See *PROFILES*, April 1988, p. 42). Best of all, information you've stored in a Perfect Filer database gets a new lease on life.

In this article I'll explain two methods for converting Perfect Filer data to comma-delimited ASCII format. The first method works with Perfect Filer to make a list format and frees you to choose items to export from the database. If you have used Perfect Filer at all, you can handle this method. The second method employs a special utility program that sends out everything from each record. Your choice will depend on how much of your data you want to export.

A COMMON LANGUAGE

Since you will be creating comma-delimited ASCII files, an explanation of what they are is in order.

In the Babel of the computer world, there are few standard ways of exchanging information among various programs, but comma-delimited ASCII format is a common dialect in which many word processors and database programs can communicate.

ASCII stands for American Standard Code for Information Interchange, a way of encoding characters that most word processors and database programs can understand in addition to their own unique codes. An ASCII file, then, is one that can be understood by and exchanged among such programs. A *comma-delimited* ASCII file consists of *records* made up of *fields* separated by a *delimiter*.

ILLUSTRATION BY TOM VOSS

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In the following example (broken into two lines only to accommodate magazine margins), words and numbers enclosed in quotation marks and separated by commas (the delimiter) are "fields." The entire line, which must end with a carriage return, is a "record." Any number of records make up the file. The product of your labors to convert Perfect Filer data will be records resembling this one:

"Smith","Harold","J.","4312 Altair Ct.",
"Krypton","CA", "91989","800","555-3578"CR

(Note: WordStar data files don't need quotation marks except around fields that contain commas. Enclosing each field with quotation marks, however, eliminates problems caused by stray commas.)

METHOD ONE--THE LIST FORMAT

The first method for making a comma-delimited file uses Perfect Filer's list formatting feature. Think of the list format as orders you give Perfect Filer. The list prescribes what to export and what form it should take. It consists of names of the fields you have selected to extract and the quotation marks and commas needed to set off fields from each other in the comma-delimited ASCII file. Making the list is tedious, but you do it only once for each Perfect Filer database. Once it's set up, you maintain your file of client names and addresses--or any other database--adding, deleting, and revising entries as needed. Then you can have Perfect Filer ship out a new data file.

The first method for making a comma-delimited file uses Perfect Filer's list formatting feature.

Here's what you need to get started: the Perfect Filer manual, your Perfect Filer program disk, and the disk with the data file you want to extract. Have your word processor disk at hand, too.

The data disk contains a text file named DB.TXT, generated automatically whenever a new database is created. DB.TXT lists the names (Perfect Filer calls them "tags") of the fields in the database. For the purposes of this article, assume you've created a data file using Perfect Filer's pre-structured Individual Member Data Base (IMDB). The associated DB.TXT lists the fields in IMDB. If you have set up a custom data base, it will have its own DB.TXT file.

Since you need DB.TXT to work in the depths of Perfect Filer, print it with your word processor. The part of DB.TXT you want is shown in Listing 1. Note that each logical field has a special "tag" or name.

```
II. Logical Field Tags
Field 1: name.firstname
Field 2: name.middlename
Field 3: name.lastname
Field 4: name.title
Field 5: name.salutation
Field 6: name.title2
Field 7: address.organization
Field 8: address.address1
Field 9: address.address2
Field 10: address.city
Field 11: address.state
Field 12: address.zip
Field 13: address.country
Field 14: homephone.areacd
Field 15: homephone.phnum
Field 16: active
Field 17: busphone.areacd
Field 18: busphone.phnum
Field 19: comment1
Field 20: comment2
Field 21: dtenter.month
Field 22: dtenter.day
Field 23: dtenter.year
TOTAL TAG LENGTH = 322 [of 1024 Available]
```

LISTING 1: DB.TXT (partial listing).

Making a List Format. With your DB.TXT printout at hand, start Perfect Filer. At the prompt, enter:

A>filer b <CR>

When Perfect Filer's top menu appears, press the spacebar to move the X to:

X Define List Format

Press **X** to make that selection. At the next menu select:

X Add a List Format

Perfect Filer asks you to name the list format. Enter a useful name, such as "Export ASCII Data File," and press Return.

Perfect Filer's list format has four parts: the list heading format block, the page format, the member format, and the sort keys. Ignore the first two; they have no bearing on your comma-delimited ASCII file. Sort keys are optional. Your chief concern is the third, the member format block. As the essential part of the list format, it specifies which data to export and in what order. From the menu, choose:

X Define List Member Format Block

Your only task from here on is to add list format fields. Note the difference between a format field and a logical field. The IMDB has 23 "logical fields," each with its unique tag as shown in Listing 1. These items of data make up each record of the database. The list format you are preparing consists of "format fields," which consist of a logical field tag or a string of punctuation marks and carriage returns.

Selecting Fields. Perfect Filer allows 40 format fields in a list format, including separate ones for strings of characters such as commas and quotation marks. This limitation means you cannot export the data from all 23 logical fields in one list. Recall that all fields must be enclosed in quotation marks and separated by commas. Thus you can export only 19 logical fields. It's simple arithmetic:

first " =	1 format field
19 logical fields =	19 format fields
18 (","")'s =	18 format fields
final " =	1 format field
total =	39 format fields

This limitation is not a big problem. A typical database of names and addresses--say a prospect list-- has fields seldom used. In the IMDB (Listing 1), Field 16 ("active") and Fields 21–23 ("dtenter") can be skipped. On the DB.TXT printout, cross out tag names you want to omit. Then decide on the order for the rest. If the order in DB.TXT suits you, fine, but you can have any order you like--you may choose to have last names or zip codes first. Once you've decided which fields to export and the order for them, take a pencil and renumber the logical field tags on your copy of DB.TXT so you can keep track of what you are doing. If you've eliminated "active" and the three "dtenter" fields, renumber Field 17 as 16, and so on.

If the order of the fields in DB.TXT suits you, fine, but you can have any order you like.

At last, you can start the list format. Perfect Filer will ask what you want in each format field. For your purposes, there will be only two choices: a logical field (that is, one of the tag names from DB.TXT), or a string (the quotation marks, commas, and final carriage return). Follow these steps exactly:

Step 1. Go down the menus as follows:

X Add a List Format Field
X Specify Field Contents
X String

Your first format field contains a single character, the quotation mark that precedes the first logical field. Enter " and press Escape --*do not terminate this entry with a Return*, because Perfect Filer will consider it part of the string you are entering. Now move back up the menu ladder with a second Escape.

Step 2. Make these successive menu selections:

X Add a List Format Field
X Specify Field Contents
X Logical Field

Enter the tag for the logical field in DB.TXT that you want to export. Perfect Filer is very picky about tags, insisting on lower case and allowing no spaces. If the tag has a period in it--e.g., name.firstname-- don't leave it out. Type the tag exactly as it appears in the DB.TXT listing. End the entry with a carriage return, not with Escape (just the opposite of entering a string--confusing, isn't it?). Press Escape again to climb up the menu, and:

X Add a Format Field

Step 3. This next format field includes the closing quotation mark after a logical field, a comma as a field separator, and another quotation mark ahead of the next logical field. So select:

X Specify Field Contents
X String

Enter a quotation mark, a comma, and another quotation mark (","") and press Escape twice.

Step 4. For all but the last logical field, repeat Step 2 above, entering the appropriate tag name each time. Then repeat Step 3. When you have entered the last tag, go to Step 5.

Step 5. Step through the menus:

X Add a List Format Field
X Specify Field Contents
X String

Since you've taken care of all the logical field tags, you have only to add the final quotation mark and the required carriage return. So enter "**⟨CR⟩** and press Escape three times.

Step 6. Skip this step unless you want your output sorted (by last name or zip code, for example). For a sorted data file, make these selections:

X Define Sort Keys
X Specify Sort Key

Perfect Filer gives you a choice:

X Logical field

X Template

If you choose Template as the first sort key and enter "name," Perfect Filer will order your list alphabetically by last name and then first name. If you want zip code for the first sort key, select Logical Field and enter **address.zip** and a carriage return. Press Escape twice to add another sort key. Otherwise, press Escape again.

Step 7. From the menu, select:

X Save List Format Definition

Step 8. To check your work, select:

X Display List Format

Send the list to the printer. It should look like Listing 2.

```
                    Export ASCII Data File:
I. LIST HEADING
II. PAGE FORMAT
III. MEMBER FORMAT
   Field Number 1:  <String> """
   Field Number 2:  <Logical Field> name.firstname
   Field Number 3:  <String> "","
   Field Number 4:  <Logical Field> name.middlename
   Field Number 5:  <String> "","
   Field Number 6:  <Logical Field> name.lastname
   Field Number 7:  <String> "","
   Field Number 8:  <Logical Field> name.title
   Field Number 9:  <String> "","
   Field Number 10:  <Logical Field> name.salutation
   Field Number 11:  <String> "","
   Field Number 12:  <Logical Field> name.title2
   Field Number 13:  <String> "","
   Field Number 14:  <Logical Field> address.organization
   Field Number 15:  <String> "","
   Field Number 16:  <Logical Field> address.address1
   Field Number 17:  <String> "","
   Field Number 18:  <Logical Field> address.address2
   Field Number 19:  <String> "","
   Field Number 20:  <Logical Field> address.city
   Field Number 21:  <String> "","
   Field Number 22:  <Logical Field> address.state
   Field Number 23:  <String> "","
   Field Number 24:  <Logical Field> address.zip
   Field Number 25:  <String> "","
   Field Number 26:  <Logical Field> homephone.areacd
   Field Number 27:  <String> "","
   Field Number 28:  <Logical Field> homephone.phnum
   Field Number 29:  <String> "","
   Field Number 30:  <Logical Field> busphone.areacd
   Field Number 31:  <String> "","
   Field Number 32:  <Logical Field> busphone.phnum
   Field Number 33:  <String> "","
   Field Number 34:  <Logical Field> comment1
   Field Number 35:  <String> "","
   Field Number 36:  <Logical Field> comment2
   Field Number 37:  <String> ""<cr>"
IV. SORT KEYS
   Key 1: [Template type]; Sort by name
   Key 2: [Logical Field type]; Sort by address.address1
   Key 3: [Logical Field type]; Sort by address.zip
```

LISTING 2: The list format.

Don't let the double sets of quotation marks in the string fields disturb you. Perfect Filer put them there. Check the list. Every odd-numbered format field (except the first and the last ones) should be quote, comma, quote ('',''). All the even-numbered fields should be Logical Field tags you picked from DB.TXT. Remedy any errors by choosing:

X Define Page Format

X Change a List Format Field

Perfect Filer asks which field number to change. "Number" here means format field number as shown in Listing 2, not the logical field numbers in DB.TXT. Repeat the steps outlined above to make corrections.

Generating the Data File. Having finished the dirtiest part of the job, you can emerge from the depths of Perfect Filer. In the daylight and fresh air of the top menu, pick:

X Generate List/Report
X Export ASCII Data File
X All Members

Another menu appears and asks for your choice of output. You want printed output (for ease of checking the work), so you select:

X Printer-- OFF

and press **X**. Note that OFF becomes ON. You also want output to disk file, so move to:

X File-- OFF

and press **X**. Perfect Filer prompts for a file name. Enter an appropriate one, say MERGE.DTA, followed by a carriage return, and press Escape. Perfect Filer starts writing the output you have specified to a file (and to the printer, and the screen, too, if you did not turn off CRT at the output menu). When the printer is done, press Escape to quit Perfect Filer.

Examine the printout. It should consist of individual records like this example:

"Marguerite","E.","Bremer","Mrs.","Marg","","","","636 Helicon, #285","","Minor Function","CA", "91506","619","5558341","","","","

Testing Your Work. Copy MERGE.DTA from your Perfect Filer data disk to your WordStar data disk. With WordStar, prepare a master document for merge printing. This document specifies page length, text, and layout for the printed output; it also names the data file to read and lists the fields in proper order. The names you give the fields (WordStar calls them "variables") in the master document can be anything, even numbers. It's wise to name them, though, for ease of reference. Important: put all the field names in the exact order Perfect Filer exported them.

Listing 3 shows a sample master document for printing labels.

```
..Turn off page numbering
.OP
..Set page length to six lines (for mailing labels)
.PL 6
..Set page offset to 2
.PO 2
..No top or bottom margins
.MT 0
.MB 0
..Tell WordStar the name of the datafile you extracted from
..Perfect Filer
.DF merge.dta
..Read each variable.  The variable names don't have to be
..the same as the field tags Perfect Filer uses but they must
..all be listed in exactly the same order and separated by
..commas.  If the variables won't fit on one line, it's OK to
..spread them over more.  But there must be a .RV at the
..beginning of each line.  No comma needed at end of .RV
..lines.
.RV first,middle,last,title,salutation,title2,org,addr1,addr2,city
.RV state,zip,homeareacode,homephone,busareacode,busphone
.RV comment1,comment2
..Tell WordStar which variables you want printed and where.
..Enclose the variable name with ampersands, for example:
..&first&.
&first& &last&
&addr1&
..The /o in the following variable tells the line to print
..only if there's a second line of the address.
&addr2/o&
&city&, &state& &zip&
..The .PA command advances the labels to the top of form.
..It must be in the master document.
.PA
```

LISTING 3: WordStar master document for merge printing.

This example does nothing Perfect Filer can't do as well, but it's easy to prepare for testing your work. Lines in Listing 3 beginning with two dots are comment lines and have no effect on merge printing. When you've prepared the master document, go to WordStar's main menu and choose M for MergePrint.

A better example (Listing 4) uses WordStar 4.0's nested conditional (if, endif) dot commands to print only names and addresses in a given area code except for two cities.

```
.op
.pl 6
.po 2
.mt 0
.mb 0
.df merge.dta
.rv first,middle,last,title,salutation,title2,org,addr1,addr2
.rv city,state,zip,homeareacode,homephone,busareacode,busphone
.rv comment1,comment2
..WordStar<39>s conditional dot commands allow you to print
..only selected records in your datafile. In this case only
..those which meet the test of all three .IF statements will
..print.
.if &homeareacode& #=517
.if &city& <> Midland
.if &city& <> Saginaw
&title& &first& &last&
&addr1&
&addr2/o&
&city&, &state& &zip&
..End the .if commands. Each .if must have its own .ei
..(endif) command.
.ei
.ei
.ei
.pa
```

LISTING 4: WordStar master document with conditionals.

Listing 4 merely hints at what the Perfect Filer/WordStar combination can do. With your Perfect Filer data at hand, WordStar can do intricate, nested conditional merge printing. Space does not allow more detail on WordStar 4.0's powerful merge printing features, except to say that you can use them to manipulate and format your data in dozens of creative ways. See WordStar's manual for examples.

METHOD TWO--WHOLESALE ONLY

As noted above, the Perfect Filer list format can't extract more than 19 fields at once, even though you can have up to 70 fields per record. What can you do with a mammoth Perfect Filer database with many fields full of vital data? Or what if you've moved to dBASE II or beyond CP/M to a powerful MS-DOS database program? You shrink from re-entering all that data item by item. It would take hours or even days.

There's relief for this situation, too--an easy way to transfer *all* your data. Perfect Filer stores data in a simple file structure, so I wrote a program to convert databases to comma-delimited ASCII format. Output from PF2ASCII.COM (my conversion utility) is compatible with WordStar, dBASE II/III, Nutshell, MicroSoft WORD, and probably others. Word Perfect has a built-in utility to convert to ASCII files. Of course, you must use a program like Uniform to transfer files from Kaypro CP/M disk format to MS- DOS disk format.

PF2ASCII.COM is simple to use. With PF2ASCII.COM in drive A and your Perfect Filer data disk in drive B, enter **A⟩PF2ASCII ⟨CR⟩**. You will be asked for input and output file names. Call the input file B:DATABASE since Perfect Filer always stores its data in a file of that name. You can also enter input and output file names on the command line:

A⟩PF2ASCII B:DATABASE B:MERGE.DAT ⟨CR⟩

PF2ASCII.COM goes to work, rapidly converting Perfect Filer data to comma-delimited format.

You can download PF2ASCII.COM from Kaypro On-Line (1/619/259-4437). Also download PF2ASCII.MOD (the documentation and Turbo Modula-2 source code). Data Library 5 of the CompuServe Kaypro Forum has these files in PF2ASC.ARK.

A CHOICE--YOU DECIDE

So you have two ways to extract data from Perfect Filer. Which method should you use? If you need everything in your Perfect Filer database and don't care about the order of fields, use PF2ASCII.COM. Otherwise, use Perfect Filer itself to take what you need (if it isn't too much) in the order you prefer. Either way, you reclaim a wealth of data for new, creative uses.

Joseph I. Mortensen is a freelance writer from Midland, Michigan, where he has served as the pastor of the First Baptist Church since 1969.

HOW TO BUY A PRINTER

Get what you want--without surprises

BY JIM SPICKARD

I heard a story the other day about computers in the Soviet Union. It seems that contrary to Western propaganda, the Soviets make lots of personal computers. Pretty good ones, too. They can add, subtract, calculate logarithms, and massage text just as well as ours. Lots of schools have them. A few individuals do, too.

The trouble is, the Soviets don't make keyboards. Or monitors. Or modems. Or disk drives. Or printers. The computers work fine, but they just sit on people's desks because nobody can tell them what to do! And if people *could* tell them what to do, no one could find out the results! Computers aren't much good without input and output devices.

I don't know if this story is true, but it doesn't matter much. It was nearly true in the U.S. a few years ago. Two of the best-known computer manufacturers in America--we'll call them Companies "A" and "I"--still sell excellent computers for under $1,000. But the computer is all you get! Monitors, modems, drives, and printers--even the operating system for Company "I"--are "extras". It's like selling cars without wheels.

The only difference between these companies and the Soviet Union is that the companies sell peripherals. In the Soviet Union you have to make them yourself.

Your Kaypro, of course, came better equipped. Whether MS-DOS or CP/M, you got at least a keyboard, monitor, disk drives, and printer ports, plus a lot of software. But unless your dealer gave you a package deal, you didn't get a printer, and everyone needs a printer. (Well, almost everyone. If you only use your Kaypro as a chess partner, you don't--unless you want to print out the "Grandmaster" certificate that some chess programs provide.) Someday you may also want a modem, a different monitor, a larger disk drive, more memory, or a back-up power supply--or any one of a number of other add-ons to make your Kaypro more efficient.

To help you choose the peripherals you need, starting with this issue *PROFILES* is providing a series of buyer's guides telling you what's available, describing key features to look for, and helping you determine what's best for your situation. Each guide will include an in-depth look at a couple of products in different price ranges. We can't tell you what to buy--you have to decide that. But we'll provide enough background to make your decision easier. There'll even be a checklist to take shopping --so you're sure to come home with the right stuff!

This month's article is on printers. You probably purchased a printer at the same time you got your computer, but you may have discovered that what you bought doesn't fully meet your needs, or it may be that your needs will change over time, and at some point you may want a different type of printer altogether. Or you may have to buy one or more printers for an office and need help determining what will best serve a number of people. This article will describe various types of printers, tell you how to figure out what you need and what to look for in a particular type of printer, and generally help you make a more informed decision.

FIRST THINGS FIRST

Before we look at the different types of printers on the market today, we should define some terms you're almost certain to encounter: serial, parallel, and emulation.

All printers fall into one of two broad categories: serial or parallel, and you must decide which type you want (though many printers work both ways).

A serial printer is connected to your system via the RS-232C port on the back of your computer. A serial printer accepts data in a linear fashion, 1/8 of a character (one bit) at a time. Serial printers were widely used in the 1970s and early '80s, but now they are rarer than Edsels and just about as popular because they are relatively difficult to get up and running. The only new printers that use serial communication are laser printers, and even those are fast converting to parallel. However, serial printers do have one advantage worth considering: RS-232 signals are stronger than those used by parallel printers and can travel farther and still be understood at the other end. This means you can put the printer farther away from the computer--even in another room, a plus with noisy daisywheel printers. One other consideration: if you get a serial printer, you may need to get an extra serial port to use a modem.

Parallel printers communicate with the computer by accepting eight bits (an entire character) at once. Because the signal voltages are lower, signals travel a shorter distance before they become too weak to read, so parallel printers have to be kept closer to the computer, but most users won't find this to be a problem. Parallel printers are generally more reliable than serial printers and are in much wider use. Unless otherwise stated, the rest of this article refers to parallel printers.

Emulation means about what you'd guess--some printers emulate or mimic others. There are three printers on the market--the Epson FX-80, the Diablo 630, and the Hewlett Packard LaserJet Plus--whose popularity is so great that they have become standards, and software is written almost exclusively to

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work with them. Other manufacturers, in order to ensure that their printers will work with popular software, make printers that exactly emulate one of these three. An important consideration in buying a printer is knowing what printer it emulates so you can be sure it will work with your software.

So that their printers will work with popular software, manufacturers emulate the Big Three.

TYPES OF PRINTERS

Different people need different *kinds* of printers. From the cheapest dot-matrix (under $150) to the most expensive color laser printer ($30,000 and up), there are five different printer types--and over 250 models--to choose from.

Dot-matrix and laser printers are currently the most popular; daisywheels, ink-jets, and thermal printers less so. Each has advantages and disadvantages--and a different price/performance ratio.

When I bought my first computer, daisywheel printers were "the thing." Essentially typewriters, they give the solid "Selectric" feel that lawyers and bankers love. Characters are formed when a hammer hits an arm on a daisy-shaped printwheel, pressing it against an ink-filled ribbon. Characters are fully formed: sharp, black, and easily readable--almost embossed on the page. Daisywheel printers can't be beat for text quality. But they are slow, printing between 16 and 50 characters per second (CPS) on the average, and they can't do graphics (pictures and text- enhancing lines and boxes). In addition, to change typefaces you must stop the printer and switch printwheels, which can be time-consuming and tedious. Daisywheels are also noisy enough to have created an after-market in acoustical covers. The most popular-- and therefore the most emulated--daisywheel printer is the Diablo 630.

Dot-matrix printers used to be synonymous with unreadability. Not any more! "Near-letter-quality" (NLQ) printers may not meet the Selectric standard, but they sure beat the pre-Selectric IBM I used in typing school. Characters are formed by pins hitting a ribbon: each letter comes from a different pattern of pins. The "matrix" is nine or 12 dots high by at least nine dots wide. The more dots in the matrix, the clearer the output.

Nine-pin dot-matrix printers are the cheapest and perhaps the sturdiest. The best selling dot-matrix ever, the Epson FX-80, is a nine-pin printer. Eighteen- and 24-pin printers--with two banks of pins-- provide higher resolution. In draft mode, these printers speed along at up to 250 characters per second. Most of them are slower in letter-quality mode, making multiple passes to fill the spaces between the dots (the reason their text is so good). Several typefaces are built-in--pica, elite, compressed, and so on. The printer switches between them when it receives specific codes from software. This feature is significant because it means you can switch between different typefaces in the middle of a document.

The "matrix" within which a letter is printed can just as easily be filled with dots or curved lines. This lets dot-matrix printers create quite legible graphics, such as pie charts or bar graphs. Dot-matrix printers working in conjunction with programs such as Microsoft Word 4.0 and WordStar 2000 Plus Release 3 will let you mix text and graphics on a printed page.

Dot-matrix printers are rugged and versatile. They account for about two-thirds of all printers sold.

Thermal and ink-jet printers are much like their dot-matrix cousins: all form characters from dots, though in different ways. The best thermal printers use heated pins to melt ink onto plain paper. They are quiet and can produce daisywheel-quality text. But they cost a lot and use expensive ribbons. Lower-cost thermal printers apply heat directly to special paper, with poor results.

Ink-jet printers spray tiny drops of ink in a matrix. They're also quiet, and new models don't clog as much as those made a few years ago did. Most can use plain paper, but clay-coated paper gives better output. Both thermal and ink-jet printers can produce colors. If you want colors, in fact, they are the way to go. (A few dot-matrix printers also provide reasonable color copy.) Like dot-matrix printers, ink-jet printers can switch typefaces on the fly and print fairly clear graphs and charts.

Laser printers are like sports cars. Everybody wants one --and is surprised at the upkeep cost.

Laser printers are like sports cars. Everybody wants one--and is surprised at the cost of upkeep. Cloned from home copiers, these printers use small lasers to write text in static electricity on a drum. Electrically charged toner (ground plastic) is brushed on paper passing over the drum. It sticks where the laser has struck and not elsewhere. The paper is then heated to fuse the toner to it. The most-emulated printer on the market is the Hewlett Packard LaserJet Plus.

Laser printers are quick, quiet, and provide high- quality text

and graphics. They use multiple typefaces called fonts and can switch fonts anywhere on the printed page. The result looks like excellent Xerox copies (surprise!). Like copiers, though, they have a lot of down time (for things like toner replacement, not mechanical breakdowns). Also on the downside, most can only handle 8.5 by 11-inch paper, and envelopes and labels tend to fuse to the rollers. (See Robert Sawyer's article on laser printers in the March 1987 *PROFILES*.)

Plotters, typewriter/printers, and line printers also put text on paper and are appropriate in a few situations, but I won't have space to cover them here. (Plotters will be covered in a later issue.)

KEY DECISIONS

So how do you decide what printer to buy?

The first step is to decide what you want the printer to do! Then you need to look at how fast it needs to be done, how much you'll be doing, where you'll be doing it, how convenient you want it to be, how much you can afford, and so on. We'll look at several such questions in turn.

1. What does your output have to look like? Where top print quality matters (and speed, noise, and lack of graphics don't) choose a daisywheel. Their output still sets the business standard, though near-letter-quality (NLQ) dot-matrix print is acceptable in most circles. One thermal printer, the IBM Quietwriter, also has excellent output, is quieter than daisywheels, and is more flexible--it prints graphics. It is more expensive than the average daisywheel, however.

Laser printers come in second in terms of print quality. They give you several typefaces to work with and very exact control of where text appears on the printed page. Their graphics are unsurpassed. But they look like photocopies--a drawback if you use MailMerge to "personalize" letters. That photocopied look defeats your purpose.

Eighteen- and 24-pin NLQ dot-matrix printers and ink-jets make quite acceptable text. Nine-pin NLQ dot- matrix printers, though greatly improved in recent years, are fourth in the print-quality sweepstakes. Low-cost thermal printers come in last.

2. What kind of printing do you do? Most laser printers won't do envelopes and labels, nor will they handle oversize paper. Laser, thermal, and ink-jet printers won't do carbon copies and multipart forms (which require impact). Daisywheels won't do graphics. Lasers aren't good at filling out preprinted forms because they print a line or page all at once rather than one character at a time. Dot-matrix printers are excellent for filling out preprinted forms as long as you're using software that works with your specific printer and form--if not, dot-matix printers can't be used for forms, either. Some thermal and ink-jet printers need special paper. Lasers, daisywheels, and most dot-matrix printers won't do colors.

To decide what type of printer you need, write down all the things you regularly print and see which printer will do most of them. You don't have to do them all, of course: you can use a typewriter for the occasional form or envelope. If you regularly need to do envelopes, forms, carbons, text, *and* graphics, though, you'd better buy two printers, not one.

3. How fast must you print? For sheer speed, laser printers have no peers. Seven to 10 pages per minute (PPM) is common for text--that's over 400 characters per second with excellent quality. Graphics take longer.

Dot-matrix printers only run half as fast as the manufacturers claim.

A few dot-matrix printers are rated that fast, but only in draft mode. While manufacturers' ratings are reasonably accurate for laser printers, dot-matrix printers usually only run half as fast as the manufacturers claim. Manufacturers measure "burst speed" --how fast a printer prints a line of one letter, such as an "a." Printing real text is much slower. For example, the C. Itoh C-815, rated at 570 CPS in draft mode, actually types a business letter at only 195 CPS. (That's still one of the fastest dot-matrix printers around.) In contrast, the Hewlett-Packard LaserJet II, rated at eight PPM, prints ten copies of the same letter at 7.5 PPM. A page of graphics would slow the HP more.

Dot-matrix NLQ mode typically tests out between 20 and 90 CPS. Daisywheels chug along at 15 to 50 CPS in "real life." In both cases, the more you pay, the faster you can go.

4. How much work do you do? Most printers are pretty rugged, but some are more rugged than others. If you have a home office or don't print much, you can have your pick. You're not apt to be pushing your printer too far. Larger offices, however, must beware of mechanical frailties--particularly if the printer is shared.

Daisywheels fail about as often as typewriters-- not very often, in most cases. They can't work fast enough to wear out. I spent nearly a week printing my dissertation on my first daisywheel (10 CPS, no sheet feeder). At that rate I would have died before the printer did.

Nine-pin dot-matrix printers are also nearly trouble-free. Because there are few moving parts to fail, users typically can print for several years before replacing the printhead. Twenty-four-pin dot-matrix printers are only slightly more failure-prone: the pins are thinner. But they do quite well.

Incidentally, 24-pin printers were invented in Japan to print *kanji*, the Japanese script. They aren't significantly better than

18–pin printers for printing standard text in draft mode.

Laser printers are more trouble. Lower–cost laser printers (in the $2,000 to $6,000 range) have a maximum "duty cycle" of 5,000 pages a month. That may seem like a lot, but a busy office puts out that much in a week. Shared printers get a lot of use. New toner every 1,500 pages and a new cartridge and drum every 10,000 pages really add to down time––and cost.

5. How much work space do you have? My home office is ten feet by eight feet and has lots of windows. It also has two filing cabinets, two bookshelves, two desks, three computers, a typewriter, and a bed (it doubles as the guest room). My printer makes a 16 x 12–inch "footprint" on one of the desks. Even if I could afford a second printer, I don't know where I'd put it––short of knocking down a wall.

I may be more cramped than most, but with the typical laser printer sized at 20 x 20 inches (x 12 inches high), not counting the paper tray, America's desk space is filling up rapidly. In many situations, printer size *is* a consideration, so don't forget to take it into account when making your choice.

6. How much noise can you stand? In my office, I can't stand much, so I've got a sound cover. And I still shut off the printer when the phone rings. Whether at home or in an office, noise can be a significant problem. Laser and thermal printers are the quietest, daisywheels the least quiet. Dot–matrix printers are quieter in draft than in NLQ mode.

7. How much control do you need? The ideal printer has two sets of controls. One is in software so you can, for example, switch from elite to pica type in the middle of the document. The other is on the front panel, so you can override whatever your software tells the printer to do. The ideal front panel has an LED that tells you what mode you're in (e.g.: "10 CPI NLQ") and a printed summary of how to shift between modes.

Also useful: a buffer flush for when you want to abort printing without shutting off––and possibly jamming––the machine; accessible DIP switches (DIP switches are a series of toggle switches usually located on the back of the printer; they control the default settings of various printer features); and envelope feeder that you can use without removing the fan–fold paper from the paper track.

8. How much can you afford? This is the big question. Prices vary according to the type of printer, speed, and print quality. Nine–pin dot–matrix printers, the least expensive, cost between $150 and $750. Most daisywheels sell for between $400 and $1,000, though a few are lower or higher. Eighteen– and 24–pin dot–matrix, ink–jet, and thermal printers cost between $500 and $1,750 list. I've seen one thermal printer for $99––a traveling model not capable of letter–quality work. Laser printers run from $2,000 on up to $30,000.

If the printer you want is popular, you can expect to get a good discount by shopping around. For example, the "street price" of an HP LaserJet II is about $1,750––considerably less than its $2,595 list price.

In each category, the faster and more flexible the machine, the more it costs. Small size, sturdiness, and trouble–free paper handling are all worth paying for: you make up the cost quite quickly in the increased work you do.

A nine–pin dot–matrix printer is the best all–around choice for someone with a limited budget.

A nine–pin NLQ dot–matrix printer is the best all–around choice for someone with a limited budget. For under $500 (street price), you can handle text and graphics with reasonable speed and quality, especially if you change your ribbon frequently. Most single users need look no further. Those needing top–quality printing should spend a bit more for a fast daisywheel.

If you buy a 64K or 128K print buffer––a little device that stores your output and feeds it to the printer byte by byte––relatively slow printers won't tie up your computer too much. I've seen good buffers for as low as $70.

A two– to four–person office would be wise to invest in an 18– or 24–pin NLQ dot–matrix model. The higher price (up to $1,750) is balanced by the possibility of shared use. It's relatively easy to link several computers to one printer––even letting the linkage queue up print jobs. Higher speed and text resolution suit an office environment well.

Larger offices will have to decide whether to buy one laser printer or two or three cheaper machines. Look closely at the number of people who will use the printer and the amount of time it will be in use. Ten people each printing 10 percent of their time will overload most lasers. If your office prints over 5,000 pages a month, you might consider a swift dot–matrix for in–house drafts and the laser for finished work.

If you print 40,000 pages a month or so––an awesome amount––you're better off spending $16,000 or more on a high–end laser. Maintenance and per–copy costs are less than with lower–priced models in the long run.

LAST WORDS

Before you buy anything, make sure all the options you want are included. Sheet feeders, for automatically handling pre–printed letterhead and forms, cost extra for most printers except lasers. Tractor feeds, for handling fan–fold paper, add about $100 to a printer's price––but you don't need one if your printer has a pin feed built–in. Laser printers should come with a free extra toner

cartridge. Every printer needs a connecting cable; make sure you get one that fits the computer you own.

The little charges really add up.

You'll have to shop around to see where you get the best price and service. Mail order is usually cheapest, but you don't get to try the printer out before buying to see if it lives up to the seller's claims. And you don't get any help if you have problems. On the other hand, I've known stores that don't provide service either. (I don't patronize them.)

Ideally, your dealer should show you all the printer's features and test them with the particular software you'll be using. The dealer should help you install the printer for your software and be ready to troubleshoot any problems that come up. Expect to pay for this help--but believe me, it's worth it.

A good trouble-free printer makes computing a real joy. ■

Jim Spickard is a sociologist and an indepedent computer consultant. He lives in Aromas, California.

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Questions to ask yourself when choosing a printer

1. Output:

   a. What must my best text output look like?

   ____ Selectric typewriter ____ non-Selectric typewriter
   ____ xeroxed typeset ____ draft quality only

   b. Do I need graphics or line drawings? (Y/N) _____

   c. Do I need to print colors? (Y/N) _____

   d. What do I need to print on?

   ____ plain paper ____ envelopes
   ____ fan-fold paper ____ letterhead
   ____ oversize paper ____ mailing labels
   ____ multipart forms ____ preprinted forms
   ____ any paper is OK

   e. How fast do I have to print?

      1. Draft quality

      ____ 400 + CPS ____ 200-300 CPS
      ____ 100-200 CPS ____ 50-100 CPS
      ____ 25-50 CPS ____ less than 25 CPS

      2. Letter quality

      ____ 400 + CPS ____ 200-300 CPS
      ____ 100-200 CPS ____ 50-100 CPS
      ____ 25-50 CPS ____ less than 25 CPS

   f. How many pages do I print a month?

      1. Draft quality

      ____ 5,000 + ____ 2,500-5,000
      ____ 1,000-2,500 ____ 500-1,000
      ____ 250-500 ____ less than 250

      2. Letter quality

      ____ 5,000 + ____ 2,500-5,000
      ____ 1,000-2,500 ____ 500-1,000
      ____ 250-500 ____ less than 250

2. Work Environment:

   a. How much workspace can I spare for the printer? _____

   b. How close will the printer be to the computer? _____

   c. How quiet does the printer have to be? _____

      1. What else must go on in the room while the printer is workng? _____

      2. How many printers will be going at the same time? _____

   d. How many people are going to be using this printer?

   _____ Full-time _____ Half-time

_____ 1/4 time _____ 1/10 time

3. Price:

a. What is the absolute maximum price I can pay? _____

b. What can I afford for monthly upkeep? _____

Questions to Ask Your Dealer: Printers

1. Compatibility

a. Will this printer work with my computer? (Y/N) _____

b. What type of interface does it have?

_____ Parallel _____ Serial

c. Will this printer work with my software? (Y/N) _____

1. Will it do the entire IBM character set? _____

2. In all the print modes I need (NLQ, italics)? _____

d. May I see it work with my computer & software? _____

e. May I return the printer if it doesn't perform as advertised? _____

f. Will you help me install it for my software? _____

2. Print Quality

a. May I see a print sample? _____

b. May I *create* a print sample myself? (This is important, especially for color printers.) _____

c. May I print a graphic? _____

3. Abilities:

a. What is the *actual* printer speed?

_____ Letter quality _____ Draft quality

b. Will it handle all (or almost all) of the types of paper I need?_____

b. How much memory does the printer have?

1. For a printer buffer? _____

2. For downloading fonts? _____

3. For manipulating graphics? (laser only) _____

c. What typefaces does the printer have?

____ pica ____ elite
____ italics ____ boldface
____ compressed ____ expanded
____ sub/superscript ____ other

d. Does it have space for font cartridges? _____

e. What equipment comes standard?

____ tractor feed ____ pin feed
____ sheet feeder ____ envelope feeder
____ font cartridges ____ other

f. What printer controls are emulated in software?

____ Diablo 630 ____ Epson FX/MX
____ Epson JX ____ Epson LQ
____ HP LaserJet ____ HP ThinkJet
____ IBM Graphics Printer ____ IBM Proprinter
____ NEC Spinwriter ____ PostScript
____ Qume Sprint ____ Toshiba

g. How sturdy is the printer?

1. What is its monthly "duty cycle"? _____

2. How long do ribbons/toner/ink-jets last?_____

3. What is the "mean time between failures"? _____

4. Where can I get it repaired? _____

5. What do repairs cost? (e.g., new printhead) _____

4. Ergonomics/ease of Use:

a. Does the printer handle paper easily? _____

b. Does it have to be "babysat"? _____

c. Does it have a separate envelope slot?_____

d. Will the tractor/pin feed adjust for labels? _____

e. Is it easy to shift between print modes? _____

f. Can you tell what mode it is in at a glance? _____

g. How noisy is it? (Test this!) _____

h. How much space does it take up, with all paper-trays and feeders attached?_____

5. Cost:

a. What is the base cost of the unit? _____

b. What is the cost of the options?

_____ tractor feed _____ sheet feeder
_____ memory upgrade _____ font cartridges
_____ other

c. How much discount will you give on the package? ____

d. How much do "consumables" cost?

1. _____ Ribbons_____ Toner _____ Other

2. How much does this mean per copy?

e. What are the "hidden" costs (cables, etc.)?_____

f. **How much will you charge (total) for the printer and options I want?**_____

A Closer Look At Tw

To get a clearer idea of the things you need to take into account when making your selection, let's take a closer look at two different types of printers at opposite ends of the price spectrum: a nine–pin dot matrix (the Citizen MSP–10, which is what I have) and a range of laser printers.

THE LOW END

I didn't know a whole lot about printers when I bought my Citizen. I knew I needed something faster than a daisywheel and that it had to do superscripts (for footnotes). I liked its NLQ typeface better than I liked its competitors', so I bought it––taking the dealer's word that it could do what I wanted.

That could have been a mistake. The dealer had no idea how to install the printer for WordStar, and the ten–page manual gave no clues. I could have had a white elephant on my hands.

Fortunately, the MSP–10 emulates the Epson FX–86 and the IBM graphics printer. Terry Morgan from Citizen America helped me modify WordStar's Epson driver to take advantage of the Citizen's special features. And he sent me a much more complete manual as soon as it was printed. (To be honest, I think my comments helped him improve the manual.) Four years later I need a new printhead; other than that, I haven't lost a day to printer troubles.

The MSP–10 is rated at 160 CPS in draft mode, and actually runs at about 100. In NLQ mode, it runs at about 30. With a new ribbon, most people can't tell it's dot–matrix, though its output isn't as clean as a Selectric's. I get pica, elite, condensed, and expanded fonts, and I can combine these to produce eight pitches: (pitch is the number of characters in a horizontal inch of text) regular pica and elite, condensed pica and elite, and expanded pica and elite, from five to 20 characters per inch.

THE MSP–10 underlines, italicizes, doublestrikes, boldfaces and emphasizes. I can superscript and subscript with built–in fonts, or by rolling the platen up and down a half line. (Many dot–matrix printers can't roll the platen backwards.) Except for proportional spacing and accepting downloadable fonts, the MSP–10 can do everything the Epson FX printer can. And it prints the IBM extended character set, besides.

The Citizen handles paper adequately. It comes with a pin feed for fan–fold paper that I can adjust for labels. Most envelopes feed adequately. I'd like a special slot for envelopes so I don't have to remove the paper to print them, and I'd like to feed the paper in the bottom rather than over the back. But I can't have everything.

There are a few oddities. I can't italicize the IBM extended character set, nor can I print that set in NLQ mode. I get blanks when I try. The printer has several NLQ foreign character sets for printing Spanish, Norwegian, etc., but it can't draw boxes and lines easily. To switch between NLQ and draft modes, I have to hold down the linefeed button and press the online button. Or I can take apart the printer and reset the DIP switches. This is better than with some machines, but I'd like an LED that tells what mode I'm in.

Between software and hardware, though, I can do nearly anything I want.

This printer has proved popular enough that software makers are beginning to include drivers for it in their programs––though not always ones that use all its abilities. In the last six months I've seen the MSP–10 advertised for under $300 mail order. It's a good buy.

THE HIGH END

For most people these days, shopping at the high end means buying a laser printer. The kind of laser printer you want depends on the kind of software you're running. If you're just printing text, you don't have to worry: most laser printers emulate Diablo daisywheel or Epson dot–matrix printers. But if you want to combine text and graphics, choosing is more difficult.

Under $6,000, you have two options. Most laser printers emulate Hewlett–Packard's LaserJet Plus––the first good "low–cost" laser machine with enough memory to be useful. These printers use Page Control Language (PCL) to tell the printer how to arrange text and graphics on the page. More expensive printers use the PostScript language. The two languages aren't compatible. In general, PCL requires more fonts than PostScript to produce the same output. That's because PCL uses an entire font for each type size and face (10 point regular, 10 point bold, 12 point, etc.) while PostScript generates fonts of any size, slant and boldness from one outline.

Much good software will drive PCL, but several desktop publishing programs require PostScript. Before buying a printer, you have to know what your software needs.

Let's take a closer look at a typical PCL printer, Hewlett Packard's LaserJet II.

The LaserJet II is a second–generation laser printer. Much smaller and lighter than earlier models, it features an 18 x 19–inch footprint, a 5,000–copy– per–month duty cycle, and six built–in typefaces called fonts. The LaserJet II comes with three normal and three landscape fonts. A landscape font is one that is displayed horizontally instead of vertically, and prints along the 11 inch length of the page. It may look exactly the same as a normal vertical font, but it's orientation makes it different. You get slots for two font cartridges, each containing several fonts, plus the ability to handle letter or legal paper, and the standard sized paper used in Europe, which no one in the states goes near. It supposedly even handles envelopes.

The LaserJet II comes with 512K of built–in RAM, for holding extra fonts and doing graphics. You can expand that to 4.5 megabytes, but not cheaply––a 1.5 MB extension lists at $995. The printer also uses font cartridges, which are small self–con-

o Types Of Printers

tained circuit boards that plug into the printer. Font cartridges have fonts already burned into their Read-Only-Memory (ROM), while the fonts that load into the printer's memory are available on disk. A full page of graphics with the minimum RAM takes several minutes to print. Expect to buy more fonts at $200 per cartridge, or disk-based fonts for slightly less. Otherwise you can't do italics, though you can underline, boldface and print the full IBM character set in pica with ease. Elite is not built-in.

By the time you've bought the LaserJet fonts and memory you need, you'll have a bottom line cost of about $3,000--even if you get the basic machine at discount. The output is clear and sharp, however--much better than some of HP's competitors.

The LaserJet II handles paper excellently. The input tray holds 200 sheets, and you can choose to have the output collated. That wasn't possible with first-generation models. The control panel is also well thought out. A 16-character LED tells you what the printer's doing. You can manually select the number of copies, which font cartridge to use, etc. To set up, just flip up the cover, load a cartridge containing drum and toner, close cover, and roll.

The LaserJet II even comes with an I/O expansion slot. If a year or so down the road you decide you really need PostScript, you can buy a JetScript board from QMS--at $2,495 list.

If you think you going to need both PostScript and PCL, take a look at the NEC Silentwriter LC-890. It's capable of both LaserJet and PostScript emulation. It features more standard memory (three megabytes), more built-in fonts (35), and a higher price--$4,795 list as opposed to $2,595 list for the HP. I've seen it advertised for a shade over $3,100 mail-order. That's still $1,400 above a mail-order LaserJet II, but you don't have to buy any extras.

--Jim Spickard

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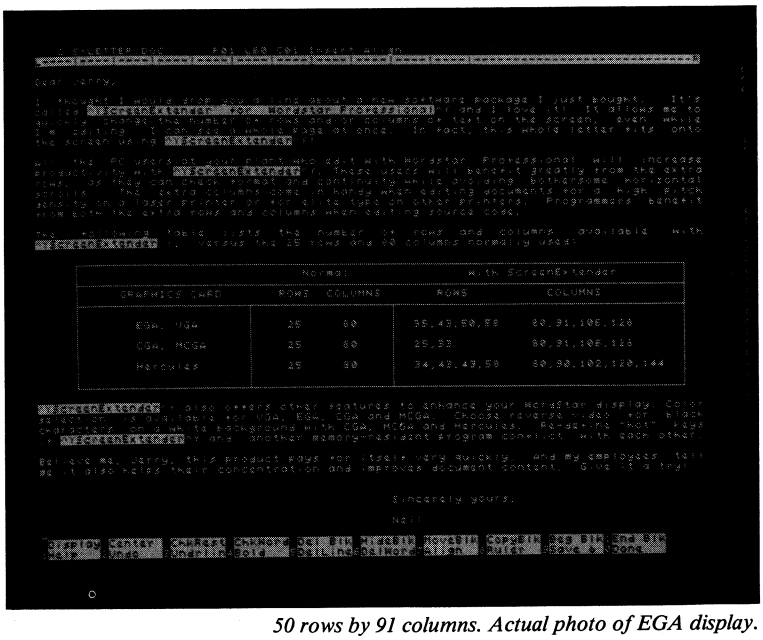

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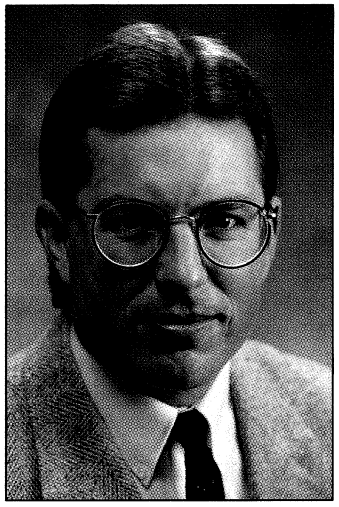
THE MODEM AS A BUSINESS TOOL



RICHARD STARKMAN

BY BROCK N. MEEKS

Fernando Gelbard watches over a corporate empire that stretches from one of California's most exclusive zip codes (Beverly Hills) to the tip of South America. He wears the hats of record producer, real estate magnate, and CEO.

His work takes him across the country several times each day; he crosses five time zones--three national, two international--during a single 24-hour period. Just listening to Gelbard describe a typical day is tiring. And yet he thinks nothing of it.

To what does he owe his incredible success, his ability to "be everywhere at the same time?" An army of clerical workers? An Ivy League MBA? A hard-line disciplinarian mindset? It's none of these.

"Without my modem," he says matter-of-factly, "I couldn't survive."

Speaking on the phone, a device he uses "only as a last resort," Gelbard confided: "If I didn't have my modem, I'd have to hire a bureaucracy." There is no irony in his voice. Economy of effort is everything in this man's world. He is as efficient with his use of words as he is with his use of technology. (I was able to reach Gelbard--twice--within the space of 15 minutes because he was online collecting his electronic mail.)

Most readers of this column already have modems and have been online for some time, so it may seem that I'm preaching to the converted. But even long-time modem users may not fully appreciate the potential of telecommunications for businesses large and small, and others may still be wondering whether to buy a modem at all. Gelbard's example should answer that question, but let's look at the reasons in more detail.

KEEPING UP WITH THE BIG GUYS

It's no surprise that Fortune 500 companies such as General Motors, Exxon, and Bank of America have been using computers and associated peripherals (read: modems) for years. Now, computer technology--widely available because of rapidly declining costs --is having a dramatic, challenging impact on small businesses as well, according to Jack Blyth, managing partner of Peterson & Blyth, a design and marketing communications firm headquartered in Manhattan.

Blyth says that small businesses must take advantage of technologies such as data communications in order to survive.

"The use of a modem goes to the heart of an organization's work," Blyth said. "It's much different from incorporating word processing, spreadsheets, or other important but peripheral computer applications into your business routine.

"A modem can fundamentally change the way an organization produces its work."

"A modem can fundamentally change the way an organization and its staff produces its work. Naturally, so significant a change creates a challenge for small business owners and managers, most of whom have little experience in this area. To overcome this, they must be sold on the usefulness and practicality."

GETTING THE EDGE

Those I talked to are convinced that the use of a modem will give a business a competitive edge. "The reward for curiosity, courage, and innovation is progress," says David Vine, president of David Vine Associations, a public relations firm. "There's no good excuse for not using a modem. The 'We've always done fine without one' line is a sure prescription for keeping your business behind the power curve."

Vine says that his company doesn't *need* to use a modem, "but we're a better company because we do." Vine cites his use of a modem for sending advertising copy to clients. "We continually send out drafts of our ad copy to clients. After they review it, it's sent back by modem with comments. After we revise it, it's sent back to the client and then directly to the typesetter. Without a modem, those exchanges would have to take place by some kind of express mail, [and it would] cost hundreds of dollars for simple changes. Using the modem, the cost is less than 10 percent of [the cost for] express mail."

And Vine didn't even mention the time his staff saves by not having to retype copy each time revisions are made.

Jack Buttram, who runs a five- person public affairs consulting group in South Carolina, is just as sold on the benefits of telecommunications. If you want something done, says Buttram, putting a twist

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on an old adage, give it to a person with a modem.

His clients need to track certain areas of interest, sometimes hourly and at the very least daily.

"We couldn't provide our clients with their up-to-the-minute news coverage if we weren't online," says Buttram. "We make extensive use of several online news clipping services to track areas of interest for our clients."

Buttram says that "what we can do in an hour online would take us at least 20 hours to do manually."

KEEPING IN TOUCH

Any business must maintain contact with several different groups: colleagues, competitors, clients. The modem helps you do all this, and do it better than you could possibly do in person.

Using a modem, you can tap into any of the hundreds of professional networks set up on commercial information services and specialized bulletin board systems. For example, on CompuServe there is the "Work at Home" SIG (special interest group). When I first started to research this column, I composed a simple message asking, "How do you use your modem?" and uploaded it to the "Home SIG." Within 24 hours I had several useful comments and invaluable contacts.

Using the modem, I had reached out to a worldwide audience, and they responded. You can do the same.

Through the various SIGs you can reach a multitude of people who share your interests and are ready and willing to offer advice and tips to help you in your own business. They're out there fighting the same fires as you.

These SIGs are also great for drumming up business. Vine points out: "What better advertising is there than to get online and help out another user by offering some free advice?" Not only does this small bit of *pro bono* work improve your image, but it increases the chance that someone will contact you for a true money-making venture. "It happens all the time," says Vine.

PROVIDING EXTRA SERVICE

There's a rapidly growing trend toward use of in-house bulletin board systems to provide better service to clients.

Most major software manufacturers, for example, now sponsor BBSs for their registered users. This gives their clients ready access to technical personnel, and all without having to hassle with busy phone lines during their own precious working hours.

Setting up a BBS also is an easy way to "expand" a company and provide more service to more clients. "We maintain offices both in Washington, D.C., and in South Carolina," says Buttram. "Most of our clients are in the D.C. area, and without the modem, we would have to double our staff. As it is, we have a single person in D.C. and he daily communicates with our home office in South Carolina via modem. I can 'be there' without being there. That is an invaluable asset for anyone working in the pressure cooker of D.C."

A TECHNOLOGICAL GATEWAY

Having a modem also opens the door to other technologies. Using a modem, it's possible to have an electronic mailbox, a fax machine, and a telex right on your desktop. The conservation of desktop real estate alone is worth the cost of the modem. But more to the point, a modem allows you to literally have a worldwide communications center set up right on your PC. It might work like this:

Using a communications package like Lotus' Express Mail, you can have your modem dial into MCI Mail every hour on the hour, completely unattended. The modem and software combination will both deliver messages and retrieve any messages waiting for you, and it will do so automatically, without so much as a keystroke on your part.

If your PC is equipped with one of the new PC-Fax cards, you can both send and receive faxes--again, automatically, in the background--as you're working on another application such as a database or word processor. Should you have to send an urgent telex to your sales rep on Easter Island, simply fire up the modem and send out a telex via any of several commercial Email systems that offer you telex capability as part of your electronic mail subscription.

As Gelbard says, "I can reach anyone, anywhere, anytime. And more important, they can reach me, no matter what I might be doing." That kind of capability makes a powerful statement to your clients.

NO MAGIC, NO MIRACLES

Will a modem save your business or make you an instant success? No--as Vine points out, you still need basic business skills. What a modem *can* do is help you optimize your talents and skills and free you from spending your creative energy on mundane, albeit essential tasks.

Still skeptical? You might want to talk to Gelbard yourself; but don't waste your time trying to phone him--his phone number is unlisted. Send him Email. I assure you, he'll get back to you.

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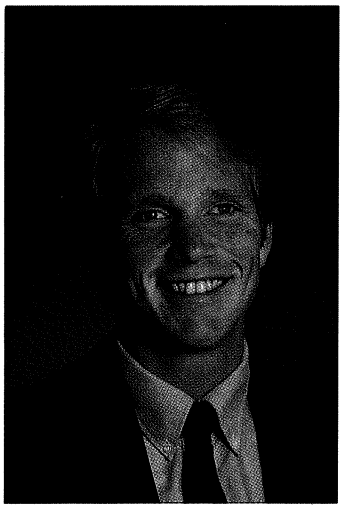
THE COURIER HST MODEM: AN EMERGING STANDARD?



MARK SWEZEY

BY MARSHALL L. MOSELEY

At first glance, the Courier HST, a 9600 BPS modem from U.S. Robotics Inc., appears quite unobtrusive: a slim black case, standard Hayes–type indicator lights on the front panel––nothing out of the ordinary. But go online with this baby and you'll quickly discover that this is a Saturn V rocket built for Ma Bell. It is *fast*.

To understand and appreciate the features of the Courier HST, it will help to know about 9600 BPS modems in general, and why some don't work with others.

HIGH–SPEED CONFUSION

Currently there are four types of modems available: 300, 1200, 2400, and 9600 BPS. The 300 BPS modems adhere to the Bell 103 standard, established by Bell Telephone. Bell 103 is a set of rules governing the way the modem transmits, receives, and translates data over telephone lines. Most 1200 BPS modems use a similar standard called the Bell 212, while 2400 BPS modems follow the V.22*bis* standard created by a European organization, the Consultative Committee for International Telegraph and Telephone (CCITT). What about a standard for 9600 bps modems? More on that in a moment.

The standardization of the first three types of modems was brought about by Hayes Microcomputer Products. In the early 1980s, its Smartmodem became the most popular modem on the market, and other manufacturers' products emulated the Hayes. Because Hayes followed Bell and CCITT standards, their competitors had to, also. The result was that up until 1987, almost any modem could talk to any other modem.

With the introduction of 9600 BPS modems, things changed. Hayes got into the game rather late, introducing its Smartmodem 9600 well after many others had become available. This lack of leadership could have been overcome if there had been a definitive standard with which to design new 9600 BPS modems, but the CCITT dropped the ball as well. It issued *two* standards for 9600 BPS transmission, contributing to the confusion rather than alleviating it.

With no clear direction to follow, modem manufacturers forged ahead. In 1986 and 1987 they built and marketed several types of 9600 BPS modems. Most of them cannot communicate with each other.

U.S. Robotics hopes the Courier HST will become the 9600 BPS modem of choice.

The Courier HST is U.S. Robotics' entry in this competition, and U.S. Robotics hopes to make it the 9600 BPS modem of choice. There is a lot of evidence that it will succeed, as a closer look at the Courier HST will reveal.

THE COURIER HST

The Courier HST is housed in a black plastic case 8.3 inches wide, 12.65 inches long and 1.6 inches high. Most modems are about as aesthetically appealing as rocks, but some time was obviously devoted to the HST's appearance: streamlined and sleek.

Following the instructions in the manual, you can install the modem in minutes. If you already have a Hayes or Hayes–compatible external modem, you barely have to do anything. The telephone line jacks on the back of the HST exactly match those on the Hayes, as does the female DB–25 connector for the modem cable. Remove the cables from the old modem, plug them into the new, and you're ready to go. The only difficulty I encountered was the modem's default setting of Carrier Detect Overide. It was ON, so the HST always thought the phone was off the hook! The manual clearly points this out, however, and a quick DIP switch adjustment solved the problem.

At 300, 1200, and 2400 baud the HST was 100 percent Hayes compatible. It responded to every AT command I gave it. Its performance at these speeds exactly matched or exceeded that of the Hayes Smartmodem 1200 and the Prometheus ProModem 2400.

At 1200 and 2400 BPS, the HST uses the Microcom Networking Protocol (MNP) for transmitting data. MNP is a hardware standard established by Microcom Incorporated. Under MNP, modems themselves examine data as it is sent, detecting and compensating for any errors in transmission (previously the telecommunications software did this). MNP also compresses data before transmission and decompresses it afterwards. MNP

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data compression increases the BPS rate of data transmission beyond even the top speed of the modem. An MNP modem will still operate at its designated speed, but the information it's sending is encoded. More bits and bytes are crowded into each second of transmission time. A 1200 BPS MNP modem has an effective speed of up to 2400 BPS, while 2400 BPS MNP modems can transmit at well over 4000 BPS. To use MNP, the HST must be connected to another MNP modem. If MNP is unavailable, standard software-based error correction is used.

At 9600 BPS the Courier HST uses a unique, modified form of MNP. This means that it can only communicate with other HST Courier modems. As with standard MNP, data sent at 9600 BPS is compressed before transmission. So while the actual transmission rate is still 9600 BPS, the effective rate varies from 9600 and 12,000 BPS.

When connected at 9600 BPS the HST uses an *asymmetrical protocol* in which data is transmitted at 9600 BPS in one direction and at 300 BPS in the other. The reason for this is that, typically, online sessions consist of short commands issued by a terminal--that's your computer--followed by long intervals of data transmission from a host computer, usually a bulletin board. In the event you wish to transmit data, the modem automatically switches so that you send at 9600 BPS while the host operates at 300.

The Courier HST's main appeal is its blazing speed, but it has a host of other good features.

The Courier HST's main appeal is its blazing transmission speed, but it has a host of other features that make it a good value.

For one, it features an extended command set that allows the expert user to adjust every aspect of the modem's operation. More than 50 commands are available, and they do some pretty interesting things. For example, the command **AT &G2** enables a "guard tone" after the answer tone. This tone is necessary for the modem to operate in Britain and some Commonwealth countries.

The modem also has its own non-volatile random access memory (NRAM) for storing modem settings. Set up the HST in exactly the way you desire, store those settings to NRAM, and every time you turn on the modem it will automatically be configured to your settings.

TIME TRIALS AND PROTOCOLS

I tested the Courier HST at 1200, 2400, and 9600 BPS. In terminal mode the modem behaved quite well. Neither 1200 nor 2400 BPS produced any surprises, and terminal mode at 9600 BPS has to be seen to be believed. I've used a lot of modems, and for the first time ever my eyes could not keep up with the pace at which the screen was rewritten.

To test file transmission, I used a file 55,296 bytes in size. At 1200 BPS, downloading it took 7.9 minutes; at 2400 BPS, it took 4 minutes; and at 9600 BPS it took 56 seconds. That works out to over a kilobyte per second at 9600 BPS, and that, ladies and gentlemen, is fast.

It should be noted that at the lower speeds I used the standard YMODEM protocol. At 9600 BPS I used YMODEM-G, which is designed for use with MNP error correction. Not all software uses YMODEM-G. In the public domain, the shareware telecommunications Qmodem has it. You will also find it in the commercial product Procomm+.

CONTINUED ON PAGE 66

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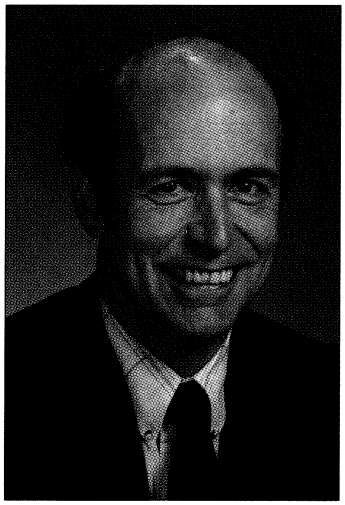

GAIL GOODENOW

FINE FONTS FROM BITSTREAM

BY TED SILVEIRA

In desktop publishing, art is nice, but type is essential. A newsletter without pictures might be dull, but without words, it's not a newsletter at all. And type is more than just a utilitarian way to put words on a page. People who aren't involved in publishing or design seldom realize how much the look and "feel" of a page are influenced by the typefaces used-- their size and spacing, the relationships between the body text and the subheads, and so forth.

Unfortunately, most page- makeup programs and laser printers don't come supplied with a wide variety of typefaces. Instead, many come with only two--Times and Helvetica--which accounts for the proliferation of pages combining Times body text with Helvetica titles and subheads. The solution is to buy more typefaces, in the form of "soft" fonts that are downloaded to the printer at print time (rather than stored permanently in the printer itself or in a plug-in cartridge). You can buy downloadable typefaces from a number of different vendors and at varying prices, but the sad truth is that cheap type usually looks cheap. Type design is a demanding art--if you want high- quality type, be prepared to pay for it.

WHAT KIND OF TYPE DO YOU NEED?

What *kind* of type you need depends on what kind of laser printer you have. If you have a Postscript or Postscript-compatible printer, like the Apple Laserwriter Plus, the QMS PS 800, or the Qume ScripTen, you need Postscript typefaces. If you have an HP Laserjet Plus-compatible printer like the OASys LaserPro, the Kyocera F-2010, the Quadram QuadLaser, or the HP Laserjet II, you need bit-mapped typefaces.

The difference between Postscript and bit-mapped typefaces is not trivial. A Postscript typeface contains mathematical descriptions of the outlines of the characters in the typeface. When it comes time to print, the laser printer itself uses these descriptions to create the proper characters in the proper sizes. Because Postscript stores the characters only as descriptions, the characters can be scaled up or down to any size needed without any loss of resolution. In addition, the printer can create italic or bold characters just by modifying the outline of the normal character. So, if you buy the Optima typeface, for example, you get a single typeface file from which the printer can create 12- point Optima roman, 12-point Optima italic, 12-point Optima bold, 12-point Optima bold italic, 8-point Optima, 36-point Optima, 24-point Optima bold, and so forth.

In a bit- mapped typeface, each character is stored not as an outline but as the actual pattern of dots needed to create that particular character at a single size and weight. You need one file for 12-point Optima roman, a second for 12-point Optima italic, a third for 12-point Optima bold, a fourth for 12-point Optima bold italic, a fifth for 14-point Optima roman, and so forth. If you don't have a file for the particular typeface, size, and weight you want, you can't print it.

Some people say they prefer bit-mapped typefaces to Postscript ones because each individual type font can be optimized for its particular size rather than scaled from a general outline. Though theoretically that may be true, I think the best Postscript typefaces, like those from Adobe, are as good as or better than any bit-mapped faces on the market. In addition, I find bit-mapped typefaces awkward to work with-- first, because they require so many individual files, which clutter up my disks, and second because they take up so much more space than Postscript files.

A SOLUTION WITHOUT COMPROMISE

I've said before that a Postscript printer is the best choice for the desktop publisher who has a choice. But what if you don't have a choice because you already have a perfectly functional Laserjet Plus- compatible printer? Or what if you now have a Laserjet Plus-compatible printer but are planning to upgrade to a Postscript printer in a year? Do you spend a bundle on bit-mapped typefaces now, only to throw them away when you get your Postscript printer? Or do you limp along with Times and Helvetica until you've saved enough for the Postscript printer?

Fontware can create Postscript and bit-mapped typefaces from the same master typeface.

Fortunately, there's now a solution that doesn't require you to compromise. Bitstream, maker of very high-quality digital typefaces, has released Fontware, a product that can create Postscript typefaces, bit-mapped typefaces, and screen fonts, all from the same master typeface. Currently, Fontware is available in two versions, one to make fonts for Ventura Publisher and one to make fonts for

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Microsoft Windows (including PageMaker). To use Fontware, you need both the Installation Kit (for either Ventura Publisher or Microsoft Windows) and at least one typeface disk.

The Installation Kit, which contains the software that makes the fonts, is $95 and includes one typeface, Bitstream Charter, a special laser printer typeface designed by Bitstream's Matthew Carter. The typeface disks are $195 apiece, and each disk usually contains one typeface in regular, italic, bold, and bold italic. At the moment, Bitstream offers 30 typeface disks, four of which contain headline faces. The Bitstream typefaces aren't cheap, but they are priced in the same range as Adobe's typefaces (which are Postscript only).

MAKING FONTS

The process of making fonts with Fontware is simple. First you set up the Fontware installation program, telling it what printer and video display you're using. Then you tell Fontware what typefaces you've bought and shuffle floppy disks while the program copies the typeface files to your Fontware directory.

Next, you choose the fonts you want to make from the typefaces available on the Fontware menu. For each typeface, you can make printer fonts, screen fonts, or both. And usually, you can also choose from several styles for each typeface (regular, italic, bold, and bold italic, for example). Within each typeface and style, you can select as many point sizes as you want. (If you have a Postscript printer, you don't have to worry about choosing sizes for the printer fonts, but you still need to select them for the screen fonts.) It's a good idea to create a full range of screen fonts, including bold and italic, as long as you have room on your disk--you'll get a much better on-screen view of your document that way.

You can tell Fontware to make as many fonts at once as you want, and you can select not only different sizes but also different styles and typefaces at the same time. Once you've selected the fonts, you can have Fontware tell you how long the job is going to take and how much disk space it requires and then proceed to make the fonts.

HANDS ON

For this review, I had a Laserjet Plus-compatible laser printer and three Bitstream typefaces to work with--Bitstream Charter, Goudy Oldstyle, and Zapf Humanist (Bitstream's version of Optima). The Fontware manual suggests creating fonts in a range of sizes for each typeface you plan to use. Using their list of suggested sizes, I selected both printer and screen fonts in 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 24, 28, and 36 points in regular, italic, and bold for each of the three typefaces. The program clicked and whirred then told me that the process would take 23 hours and require something over 18 megabytes of free disk space. Whoa!

I eliminated Bit-stream Charter and then pruned my printer and screen fonts for Goudy and Zapf Humanist down to 6, 7, 8, 9, 10, 11, 12, and 14 points in regular and italic, with 10, 11, 12, 14, 16, 18, 20, 24, 28, and 36 points in bold, totalling 104 fonts in all. This time Fontware told me it would take about 7.5 hours and require 8 megabytes of free space. I gave the OK and Fontware rumbled into action.

On a 10 mHz Kaypro 286i with a fast 40-megabyte hard disk but no math coprocessor, Fontware finished the job in 9 hours. That's a long time, but then the program has a lot of work to do. Bitstream says that the process goes much faster if you have a math coprocessor, and I believe it--the computer spent most of its time silently thinking rather than reading and writing to the disk. It's inconvenient (to put it mildly) to have your computer tied up for that long, but at least you only have to create the fonts once.

THE RESULTS

Because I had the Ventura Publisher installation kit, Fontware created not only the fonts but also the necessary width tables for Ventura. All I had to do was load Ventura and merge the new width tables, and then the fonts appeared on the Ventura menu. The fonts themselves came out quite well. I found it a pleasure to have the screen fonts so that I could see a close approximation of each typeface on the screen, instead of Ventura's generic serif and sans serif screen fonts.

The bit-mapped versions of the printer fonts were also good. Bitstream's Goudy Oldstyle is an elegant-looking typeface that prints fairly well on a laser printer despite the fact that its characters contain some thin strokes (which can be troublesome at 300 dpi resolution). Their Zapf Humanist (Optima) is also nice, though I didn't think it was as successful as the Goudy. When printed at text size (10 and 12 point), the Zapf Humanist didn't show the subtle flaring that makes Optima such an attractive sans serif typeface. Even so, it makes a great improvement over Helvetica if you want to use a sans serif face, especially if you plan to use it for text.

Bitstream Charter is an interesting typeface. It appears to have been designed with laser printers in mind, because it avoids the very thin strokes that can cause trouble in 300 dpi laser printing. At the same time, it has enough character to avoid being completely drab. Charter has a slighter larger x-height than Times and its characters also run somewhat wider, so it's a very readable typeface (but also one that takes up a little extra space on a line).

When it comes to bit-mapped laser typefaces, Bitstream's are the best I've seen. Bitstream's advantage over Adobe is that you can create either bit-mapped or Postscript fonts from the same master typeface. If you are now using a Laserjet Plus or compatible laser printer with bit-mapped typeface but are planning to move to a Postscript laser printer in the future, Bitstream's Fontware will allow you to buy quality typefaces for your current bit-mapped printer yet protect your investment by taking those same typefaces with you when you switch to Postscript. When you're looking at spending close to $200 per typeface for high quality type, that makes a lot of sense.

QUICK REFERENCE SUMMARY

Product: Fontware
Manufacturer: Bitstream, Inc.
Athenaeum House
215 First Street
Cambridge, MA 02142
Phone: (800) 522-3668

XYWRITE III PLUS AND TIMESLIPS III

BY JACK NIMERSHEIM

XYWRITE: THE NEW POWERHOUSE

Xywrite is one of those unique programs that has always claimed a respectable following of near-zealous devotees. First released in 1983, Xywrite, from XyQuest, Inc., found its market niche among MS-DOS users who demanded unparalleled speed and flexibility from their word processing software. With its latest release, Xywrite III Plus, XyQuest re- establishes its superiority in these areas, while adding several long-awaited enhancements that should broaden the program's appeal and expand its user base.

Xywrite III Plus runs on IBM PC/XT, AT, or compatible machines with either dual floppy disk drives or one floppy drive and a hard disk. It supports CGA and EGA color displays, although a graphics board is not mandatory. The program requires 256K of RAM (384K to use the spelling checker) and DOS 2.0 or later. Documents can be generated on your choice of 91 supported dot-matrix, daisywheel, or laser printers. Xywrite III Plus is not copy-protected.

FEATURES AND PERFORMANCE

Xywrite has always been intended for long documents. No one in his right mind would use Xywrite to crank out short memos; the program is simply too powerful--and too complex--to relegate to such mundane tasks. Since Xywrite uses pure ASCII format to store its files, the program has always enjoyed preferred status among users who need to export large documents to typesetting systems. Xywrite III Plus carries on this tradition.

Enhancements to Xywrite III Plus include an integrated spelling checker and thesaurus module, a word-count feature, and the ability to attach hidden notes and embed printer codes within your documents. Users of previous Xywrite releases, who have coveted these capabilities for some time, should be more than satisfied with their implementation in Xywrite III Plus.

Unfortunately, both old and new users will still have to contend with Xywrite's infamous command-line structure. This approach, while primarily responsible for the program's speed and flexibility, is the most intimidating user interface I've encountered on any PC program, bar none. To its credit, XyQuest did add a less complicated alternative for virtually all editing commands. The program's speed suffers noticeably, however, when you use this second set of simplified commands. Regardless of which command structure you do choose, expect to navigate a steep learning curve before you feel truly comfortable with Xywrite III Plus. As if in recognition of this fact, the help menus and screens for Xywrite III Plus represent a vast improvement over the Help functions found in previous versions of the program.

Xywrite allows you to open up to nine windows--in either a full-screen or tiled configuration --during a single editing session. Each window can contain portions of a single document or other text files. Text is easily transferred between windows using a simple "cut and paste" method.

XyWrite always included basic desktop publishing functions and continues to do so in III Plus.

While Xywrite does not offer a true WYSIWYG display, you can use the program's TYPE command to preview on-screen how a document will be formatted at print time-- including page breaks, headers, footers, page numbering, and so forth.

Recently, a lot of press has been given to the "document processing" philosophy emerging in newer releases of WordStar and WordStar 2000, as if Micropro International had a patent on the idea of combining standard word processing and desktop publishing functions in a single program. But XyQuest beat MicroPro to the punch on this one by about three years. Xywrite has always included basic desktop publishing functions --style sheets, snaking columns, extensive page formatting, and so forth-- and continues to do so in XyWrite III Plus.

You can now specify that page numbering include the total page count (for example, Page 6 of 20) during printout. The program also includes options for automatically generating tables of contents and indexes in a variety of formats. You can even specify different formats for odd- and even-numbered pages in your document. Add to these features the program's inclusion of print drivers for most popular laser printers, and you can see how Xywrite III Plus easily meets most desktop publishing needs.

Xywrite's most impressive feature, though, is still its flexibility. You can customize almost every aspect of Xywrite III Plus, including the program's command sequences, function key assignments, print drivers, style sheets, and more. Xywrite even includes an option that lets you create your own help screens and menus. Mail in the enclosed request card with your registration, and XyQuest will send you a free copy of its DCA (Document Content Architecture) conversion program, which allows Xywrite III Plus to export and import files to and from any program that supports this IBM- developed translation standard. Combine all these features with Xywrite's built-in programming language and macro support, and you have a program that's

adaptable and apropos to virtually any operating environment.

Xywrite III Plus adds so many valuable features that it's now one of the Big Four of PC word processors.

DOCUMENTATION AND SUPPORT

Clear off a sizable space on your bookshelf for the Xywrite III Plus documentation. Shipped with the program's comprehensive 660-page Reference Guide are separate booklets comprising an Installation Guide, a Quick Start Tutorial, an Applications Tutorial, and a Basic Word Processing Tutorial. If anything, the Xywrite documentation package borders on informational overkill. Still, everything you'd ever need to know about Xywrite is there, once you figure out where and how to find it. The three thickest books--two of the tutorials and the reference guide-- include well-organized indexes, which helps greatly.

The Xywrite III Plus package includes an on-line tutorial, which does an admirable job of introducing this powerful program and its convoluted command structure. You also get two function-key templates, one each for standard and advanced keyboards. An exotic example of multi-functionality, the advanced-keyboard template doubles as a ruler and quick-reference help guide.

After ten years in this business, I'm prepared to lobby Congress to pass a federal law requiring that all software manufacturers publish their technical support numbers in bright, bold letters on the front page of all manuals. Ten minutes of searching did not turn up a single clue as to the proper procedure for contacting XyQuest with questions about their premier program. Finally, in desperation, I tried the corporate telephone number listed on the company's copyright notices. This worked, but is anything worth that much frustration?

Once I reached them, however, I found the staff at XyQuest knowledgeable and courteous. Only once was help not immediately available, and even then my call was returned within 20 minutes by the appropriate technician.

SUMMARY

Xywrite III Plus adds so many valuable features to previous versions of this venerable program that it now sits right up there with WordStar, Word Perfect, and Microsoft Word as one of the Big Four of PC word processors. Xywrite's speed and flexibility, along with its usefulness as an alternative to more expensive dedicated desktop publishing software, more than compensate for the program's convoluted command structure and steep learning curve. Xywrite offers a level of power that belies its $445 retail price.

SCORECARD

Features: Excellent
Performance: Excellent
Documentation: Good
Ease of Use: Good
Support: Excellent

TIMESLIPS BILLING SOFTWARE

Five years ago, when I first became an independent consultant, one of the most difficult challenges I faced was finding a dependable way to keep track of my business activities. When you bill by the hour, as I do, clients expect you to document the work for which they are being charged--as well they should. But how do you satisfy those expectations without spending more time justifying your income than you do generating it? Timeslips III, a time and expense tracking program from North Edge Software Corporation, provides an elegant solution to this professional conundrum.

Timeslips III runs on IBM PC/XT, AT, PS/2 or compatible machines, with either dual floppy disk drives or one floppy drive and a hard disk (a hard disk is recommended). It supports both monochrome and color displays. The program requires 384K of RAM and DOS 2.0 or later. Reports and graphs can be generated on a variety of dot-matrix and laser printers, providing you possess the required programming skills--more on this later. Timeslips III is not copy-protected.

Timeslips III's three-tiered structure permits incredible invoicing flexibility.

FEATURES AND PERFORMANCE

Timeslips III is easier to use than it is to describe--bear this in mind if the following makes it sound complex.

In the Timeslips III vernacular, a single timeslip represents a record of the charges or expenses associated with performing a service for a client. The program uses an assigned hourly rate in one of three areas to record this information: User (the person doing the work), Account (the client or customer for whom that work is being done), and Activity (the work itself). This three-tiered structure permits incredible invoicing flexibility, especially in cases where multiple rates are applied to a single client or project.

For example, you may have a client for whom your standard hourly rate is $50. This would be the amount entered in the Account category for that client. Suppose, however, that you do some work for this client at a higher rate--say $60 an hour for online research. In this case, you could assign the second hourly rate to its own Activity category, then specify that this higher rate be used for any timeslips recording such research. Then let's say you bring in an outside consultant who charges $80 an hour for some aspect of this project. Timeslips III even covers this possibility. Just specify a User rate of $80 for any work this consultant performs,

and then track the timeslips associated with that work based on this User rate.

Timeslips III's time-entry module, TSTIMER, can run as a stand-alone DOS application or it can be loaded as a TSR (terminate-and-stay-resident) pop-up utility. If you have enough RAM available for the latter configuration (approximately 60K), choose it. This makes the program particularly useful, since it lets you record timeslips associated with unanticipated activities, such as telephone calls, at the touch of a selectable "hot key."

And how elegant that recording is! When you open a timeslip, the program uses a pop-up "stopwatch" to keep track of the time associated with that timeslip and automatically calculates billing amounts accordingly. You can temporarily suspend the clock on one activity, open and close another timeslip (recording its time and charges also), and then return and restart the stopwatch on the first timeslip, picking up the accumulated time exactly where you left off.

You can even track multiple timeslips concurrently. The only danger here is forgetting to close all your timeslips. If this happens, Timeslips III, oblivious to your oversight, keeps merrily ticking off the hours and charging that time--whether overnight or over several days--against any timeslips remaining open, until the error is discovered and rectified. In its defense, the program does include a menu option to list all open timeslips, which helps mitigate, if not eliminate, the possibility of this happening.

As an additional convenience, Timeslips III can tag individual timeslips as work-in-progress, billable, non-billable, or no- charge, and include or ignore the amounts associated with these activities when generating a client's bill, as appropriate. Timeslips III even lets you record one-time expenses--such as supplies, materials or travel--and charge these to a client's account.

Timeslips III can keep track of 30,000 timeslips, 250 Users, 3,400 Accounts, and 250 Activities in a single subdirectory and includes a Combine feature to consolidate time and expenses for multiple users. This makes it appropriate for all but the most demanding environments.

Come billing time, the program collates the information gathered in your individual timeslips. Timeslips III's report module, TSREPORT, then uses the results to organize and generate a wide variety of reports--invoices, aging reports, accounts receivable reports, etc. The program is extremely flexible in its reporting capabilities.

Timeslips has one major shortcoming--the effort required to make it work with a specific printer.

TSREPORT does, however, have one major shortcoming, which I alluded to earlier--the effort required to make it work with a specific printer. Rather than including pre-programmed print drivers, as most programs do, Timeslips III requires that you specify any control codes required to configure your printer. This can strain the skills of non- technical users and really should be addressed by North Edge in future releases.

DOCUMENTATION AND SUPPORT

The manual for Timeslips III represents a major improvement over previous versions. Gone, finally, is the convoluted numbering scheme indicative of low-budget documentation, where sequential chapters and paragraphs are numbered 2.3.1, 2.3.2, 2.3.3, etc., *ad nauseum*. This new manual reads well and includes all the information you'll need to get the most out of Timeslips III. North Edge even includes a chapter on "Application Ideas" to help you figure out how best to use Timeslips III in your business.

In a unique marketing strategy, Timeslips III can be installed to initially permit the creation of only 25 timeslips. Shipped with the program is a sealed envelope containing a code that permits you to enable the full system. If you are not satisfied with Timeslips III after testing its limited capabilities, you can return it--providing the seal on the code envelope is unbroken--for a full refund.

North Edge does provide technical support. The phone number, which is listed prominently on the title page of the Timeslips III manual, is not toll-free. Pay for the call, however, and you get what you pay for. The support staff at North Edge knows its product and can provide quick and courteous answers to all but the most difficult questions.

SUMMARY

Until I started using Timeslips III, I didn't realize how minor items--like short telephone calls and brief meetings--could add up to major revenues when properly tracked and recorded. If your income depends on time, then you should depend on Timeslips III.

SCORECARD

Features: Excellent
Performance: Very Good
Documentation: Good
Ease of Use: Good
Support: Very Good

Jack Nimersheim is an independent computer consultant and freelance writer living in Covington, Kentucky.

QUICK REFERENCE SUMMARY

Product: XYWRITE III PLUS
Manufacturer: XyQuest, Inc.
P.O. Box 372
Bedford, MA 01730
Phone: (617) 275-4439
Sugg. List Price: $445

Product: TIMESLIPS III
Manufacturer: North Edge Software Corporation
239 Western Avenue
Essex, MA 01929
Phone: (617) 768-6100
Sugg. List Price: $199

CLASSIFILES

SOFTWARE

PC-File 80™
Database Program
Jim Button's updated database manager
for CP/M 80
$49.95 plus $5 shipping
for all CP/M Kaypros
KaftorWare Corporation
Box 1674, Chicago, IL 60690

E-Z BUSINESS BILLING
Multi-line entry of product/service descriptions for any $ amount. Non-inventory based system prints & maintains open invoices, accounts, journals, YTD totals & more. Use plain paper or forms & window envlps. incl. w/syst. pkg. MS/PC-DOS 2.0 or higher 256K, dual floppy or HD.
FACILITY SOFTWARE, INC. **ONLY $49.95**
90 S. Roberts Rd. **VISA/MC**
Palatine, IL 60067 **(312) 358-6780**

Easy-To-Use, for Kaypro IBM compatibles.
STUFF – Keep track of yours! Powerful system for individuals & collector's use – insurance, garage sales, reports. $39.95, Demo $5.00
MEMBERSHIP – Clubs, churches & organizations can keep track of members, committees, dues, interests & activities. $49.95. Demo – $5.00
ATLANTIC SOFTWARE HOUSE, P.O. Box 3187
Indialantic, FL 32903 (407) 724-4113

dBASE BUSINESS TOOLS
- General Ledger
- Accounts Recvbl.
- Order Entry
- Sales Analysis
- Purch Ord/Invntory
- Accounts Payable
- Job Costing
- Job Estimating

$99 EA. + s&h w/dBASE 2, 3 or 3+ SOURCE CODE
dATAMAR SYSTEMS Visa/MC/AMEX
4876-K Santa Monica Ave. Check/COD
San Diego, CA 92107 **(619) 223-3344**

REPAIRS

KAYPRO REPAIRS
We repair all KAYPRO systems. We specialize in repair of CP/M systems (1,2,4,10's). Floppy systems repaired for a flat rate of $75.00 plus parts. K-10 systems repaired for a flat rate of $85.00 plus parts.
S & R COMPUTER ASSOCIATES, INC.
530 Cotanche Street, Greenville, NC 27834
(919) 757-3279

KAYPRO FACTORY
Kaypro's premiere dealer is close to the factory & specializes in the repair of CP/M systems (1,2,4 and 10). We repair all systems for a flat rate of $70 plus parts. We also have excellent prices on parts and IBM compatibles.
PHASE 5 COMPUTERS
940 University Ave., San Diego, CA 92103
(619) 298-0705

ACCESSORIES

GET THE MOST OUT OF WORDSTAR
with *Supercharging WordStar,* a brand-new 345-page book of tips, tricks and shortcuts by Arthur Naiman, author of the classic best-seller, *Introduction to WordStar.* The *New York Times* says "Micropro ought to bundle this book with each new copy of the software it sells." *Supercharging WordStar* covers all versions of WordStar through Release 5 and beyond, thanks to **two free updates** mailed directly to you, and it has the best coverage of WSCHANGE you'll find anywhere. $18 includes shipping, tax & a **30-day money-back guarantee!** Quantity discounts are availale.
GOLDSTEIN & BLAIR
Dept. P, Box 7635, Berkeley, CA 94707

PROFILES SWAP MEET

Here's your chance to own an entire collection of PROFILES Magazine beginning with July/August '83. Sorry, no single copies sold. $400 or best offer. Chris Solakian: 313-496-7111, after 5pm.

KAYPRO 4'83, excellent condition. WordStar, Multiplan *and* Perfect software packages, Turbo Pascal, Xtrakey, etc., printer cable, modem cable included. Okidata 92 printer also available. Best offer. 315-492-2006, after 6pm.

KAYPRO 2000 laptop, 720K, internal modem, RAM electronic disk drive, WordStar, Calcstar, Mailmerge, Mite, all documentation. Best offer. Contact Dave Pringle (206) 358-0966 (office), (206) 827-6661 (home)

CP/M Software, original Masters & Documentation Suspended, Deadline, XtraKey, Perfect Series, Word Plus, Profit Plan, MBasic, SBasic, Little Accountant, Superb Public Domain, printer graphics. $100 or offer. (Backgrounder ii, Thoughtline). Dennis Gimlin, 1700 Vandenburg, Rantoul, IL 61866 217-893-9656, after 5pm

And here's your chance to meet with other Kaypro users and swap equipment, accessories and services. PROFILES will accept 30 word classified advertisements from our subscribers. For $25 your ad will be seen by all of your fellow Kaypro users. Price includes up to three insertions, no prorating. This section will be limited to PROFILES subscribers. We will not accept advertisements from businesses or manufacturers in this section. To place your classified ad, send typed copy and check to:

PROFILES SWAP MEET
533 Stevens Avenue
Solana Beach, CA 92075

User Groups

Learning to operate a computer is not easy – everyone needs help at one time or another. This is precisely the reason why user groups were born.

Basically, a user group is a collection of computer owners and users who learn from each other. These are non-profit membership organizations devoted to making life with a computer easier.

Almost every computer brand and operating system has user groups that support it; many groups are a mixed bag. For example, owners of many different brands of computers find they all use the same operating system, and therefore, have some common ground.

Most user groups have members with a wide range of expertise and experience – from absolute beginners to those who have "working" knowledge to people who are "power users." Often people's expertise breaks down into types of soft ware applications – word processing, data base managers, spreadsheets, telecommunications, etc. Perhaps more often, a member's knowledge is specific to a particular piece of application software.

The bottom line is that user groups are a veritable goldmine – and the mother lode is information, no one is an expert overnight, and no one does it alone.

KUGs

For those readers who own Kaypro computers, Kaypro User Groups (KUGs) exist in every state, in Canada, and in countries all over the world. To find the KUG closest to you, write to Fred Zuill, KUG Manager, at Kaypro Corporation, 533 Stevens Avenue, Solana Beach, CA 92075; (619) 481-4368 (voice). Be sure to include your zip code.

Fred Zuill also maintains a BBS – the KUG ROS – for the exchange of information and help. It contains a message section, as well as lots of public domain software for both the CP/M and DOS operating systems. Public domain programs mentioned in *PROFILES* can also be found there. The system is online 24/hrs, 7 days a week, and can run at 300/1200/2400 baud.

KUG ROS – (619) 259-4437

THE CP/M SURVIVALIST: THE SEARCH FOR SOFTWARE

BY TED SILVEIRA

Unlike hardware, software doesn't wear out. Barring damage to your master disks, you can run your CP/M software as long as you have a CP/M computer to run it on. And your copy of WordStar (or SuperCalc or dBase II) can do all the same things today that it could the day you first opened the package, and it will still be able to do them ten years from now.

But even though software doesn't wear out, it does age. First, it's difficult not to be aware of the features now available in MS-DOS software--high-resolution color and graphics, pull-down menus and built-in help systems, task-switching that allows you to keep several programs in memory and jump between them, spreadsheets and databases that can handle massive amounts of facts and figures, word processors that can show multiple columns on the screen, software drivers for CD-ROMs, fax machines, laser printers, and so on. Once you're aware of the possibilities, it's hard not to feel that your current software is limited. Never mind that you may never *need* high-resolution color graphics or a CD-ROM--the effect can still be extremely depressing.

Second, if you need to exchange data with people in the MS-DOS world, as many of us do, you may find that new MS-DOS software poses a compatibility problem as well as a psychological problem. When everyone in the MS-DOS world was using WordStar and dBase II, you could exchange files with them freely. But now you have to worry about Lotus 1-2-3, Paradox, Word Perfect, Microsoft Word, RBase, and a heap of other programs, written by people who know nothing of CP/M. Suddenly, your "standard" files aren't so standard any more.

Third, if you find that you need a new CP/M program or that you need support for one of your current programs, you'll discover that most CP/M software developers have either switched to MS-DOS or gone out of business.

I can't do anything about the first problem--it's called techno-lust, and I suffer from it myself. The second problem I'll deal with in next month's installment on maintaining compatibility in an MS- DOS world. The third problem--what's available and where to get it--is this month's topic.

SEARCHING FOR CP/M SOFTWARE

The ugly truth: First, don't expect to see new CP/M software. When you do find something new, treasure it, whether it's from a CP/M stalwart like MicroPro or from a kitchen-table programmer running a three-line ad. Second, don't assume that the CP/M software you see available today will still be available next year. If you need a program you don't already have, think about buying it now.

The ugly truth: don't expect to see new CP/M software, and when you do, treasure it.

Why such dire warnings? Because the CP/M software market has fallen below the critical mass it needs to be self-sustaining. Or to put it another way, the sales of CP/M software no longer provide enough cash to keep software developers and marketers in business. Developers say that CP/M users simply aren't buying any software of any kind. Users say they can't find any software of any kind to buy. Either way, the result is the same--commercial CP/M software is an endangered species.

Just compare the number of CP/M ads in this month's *PROFILES* to the number of CP/M ads two years ago. The small companies like Chaucer Software, Techware, Woodsmith Software, Second City Software, and Xpert Software have either disappeared or are hanging on by the skin of their teeth. Other companies, like CDE Software (Checks & Balances) and Software Research (SmartKey) promote the MS- DOS versions of their programs, not the CP/M versions. And companies that are major players in MS-DOS don't spend money promoting, selling, or supporting the aging CP/M versions of their products (with MicroPro being a luminous exception).

This situation affects you, the user, in two ways. First, it means that there will be little new software for CP/M computers. You'll continue to see public domain software and a few releases from small companies, but WordStar 4.0 may turn out to be the last major application released for CP/M, unless MicroPro decides to release a CP/M edition of WordStar 5.0. The software that is released will probably consist of utility programs or special-purpose programs (a home financial planner) rather than major applications (word processor, spreadsheet, database, accounting, etc.).

Second, the software that is available will be harder to find. Retail computer stores simply don't carry CP/M software any more, and new sales people won't know what you're talking about if you ask for it ("Say what?"). If you find an old hand who's been in the business for more than two years, you may get a flicker of recognition ("CP/M? Boy, that takes me back...") but still no software. Nor will you fare any better with the major mail order houses like 800 Software, Bay Express, or PC Connection.

And if you try to go directly to the source, you'll find it's just as tough to locate the companies that still make CP/M software. Many small companies can't afford to advertise. Those that can don't know *where* to advertise (how many magazines other than *PROFILES* still

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have CP/M readers?). And as mentioned above, most big companies have no interest in promoting their CP/M products. For example, did you know that Ashton-Tate still sells the CP/M edition of dBase II (latest version is 2.43*) and offers both telephone support and upgrades for owners of older versions? I didn't.

If you want CP/M software, your first step is to get some mail-order catalogs.

So much for the bad news. If you want software, your first step is to get some mail order catalogs. The best catalog of CP/M software is from Central Computer Products. Called *CP/M Times*, the catalog is packed full of hardware and software, with choices ranging from the well-known (dBase II, SuperCalc 2, MultiPlan, SmartKey, Turbo Pascal) to the obscure (T/Maker, Lisp/80, Decision Analyst, DateBook II, BottomLine V). The discounts are slim in many cases, but the real value of this catalog is having all these products gathered together in one place. You simply can't find a lot of this software anywhere else.

DynaComp offers a catalog containing software for CP/M, MS-DOS, Apple II, Atari 400/800, and Commodore PET (!). DynaComp doesn't have the amount of CP/M software that Central does, nor does it offer name-brand software like dBase II. The software it does offer is usually obscure (sometimes downright funky) and often requires MBasic. You'll find Portfolio Management, Project Time Reporting, SL-Micro (statistics, with ANOVA, crosstab, and multiple regression), and Duplicate Bridge Manager. You will also find a number of special-purpose programs in engineering (chemical, electrical, and mechanical) and education. Even though the quality of the software isn't as high as in Central's catalog, you should get DynaComp's catalog if you're looking for software.

Spite Software, which puts out the Thoughtline outline processor, has had some tough times recently, but they're still putting out a catalog of CP/M software. Spite doesn't have the variety of software that Central and DynaComp do, but like Central, most of their software is name-brand--Turbo Pascal, James River Accounting for Micros, SmartKey, and so forth. Once again, it's a catalog you should have.

Sudden! Products Group is a small company that doesn't handle many products but does have some interesting ones. These include the ubiquitous Turbo Pascal (with Turbo Tutor and the Database Toolbox), dGraph (graphs from dBase II files), dUtil (add-ons for dBase II), Quickcode (dBase II code generator), and MedStat (statistics, including chi-square, Fisher's Exact text, T-test, regression analysis, stratified analysis, and descriptive statistics).

Also, because so many of the CP/M computer companies have gone out of business (Osborne, Morrow, etc.), you'll sometimes find liquidators selling off software that was originally bundled with the defunct machines. One of these is PDSC, which sells various bundles of Osborne software, including dBase II for $99. The dBase II they sell is version 2.31b, but you can upgrade it to the latest 2.43* through Ashton-Tate and still be ahead of the game. The prices from PDSC and other liquidators are usually rock bottom, but be wary-- sometimes the software is specially adapted for a particular computer so that it may not run on your Kaypro. The Osborne version of SuperCalc, for example, won't run on non-Osborne computers.

And while you're writing away for catalogs, make sure you get one from Echelon, which markets the Z- System, a souped-up operating system for CP/M computers. Echelon has moved, but they're still in business and offering new products. ZCPR is up to version 3.3 (with many improvements), and Echelon now offers a new automatic installation kit that allows you to reconfigure your entire system on the fly. If you already know about ZCPR3, you'll understand what a leap forward that is. If you don't know what ZCPR3 is all about, dig back through your back issues of *PROFILES* to December 1985, which has a long article on the earlier version of ZCPR3. The Z-System supercharges your system, letting you do things that simply aren't possible without it. Previously, the Z-System's major failing was the difficulty of installation, but the new auto- install package solves that neatly.

MORE HARDWARE NOTES

When I discussed hardware repairs and spare parts last month, I left out some resources for people doing their own repairs. First, if you want to do your own repairs (or con someone into doing them for you), Micro Cornucopia sells excellent schematic diagrams of the Kaypro 83 or 84 model main circuit boards. These schematics are large and clear, and they come with terse but useful technical explanations of details like I/O (input/output) ports.

Even if you're not interested in schematics, it's good to have a repair book for reference.

Second, even if you're not interested in schematics, it's good to have some kind of maintenance and repair book for reference. From the Kaypro General Store, you can get the original *Kaypro Technical Manual*, part number 1484, which covers CP/M Kaypros and the MS-DOS Kaypro 16. Alternatively, from the Chilton Book Company, you can get *Kaypro Repair and Maintenance* by Gene B. Williams (part number 7626), which does a very good job on basic maintenance, repair, and

diagnosis for CP/M Kaypros and the Kaypro 16. Finally, if you also want a good general book on computer maintenance and repair, get *The Plain English Repair and Maintenance Guide for Home Computers* by Henry F. Beechhold (Simon & Schuster).

Third, if you have an 84 model Kaypro without the Kaypro real-time clock, you might not realize that all the circuitry for the clock is still there on your main circuit board--all that's missing is the clock parts. Spite Software now offers a kit containing all the missing parts so that your computer will know what time it is. These parts work for the 84 model Kaypros only, though. If you have an 83 model Kaypro, you'll have to buy an add-on clock like the one offered by Advent.

QUICK REFERENCE SUMMARY

Vendor: Central Computer Products
330 Central Avenue
Fillmore, CA 93015
Phone: (800) 533-8049
(800) 624-5628 (California)

Vendor: DynaComp, Inc.
P.O. Box 18129
Rochester, NY 14618
Phone: (800) 828-6772
(716) 671-6160 (New York)

Vendor: Echelon, Inc.
P.O. Box 705001-800
South Lake Tahoe, CA 95705
Phone: (916) 577-1105

Vendor: Micro Cornucopia
P.O. Box 223
Bend, OR 97709
Phone: (503) 382-5060

Vendor: PDSC
33 Gold Street L3
New York, NY 10038
Phone: (800) 221-7372
(212) 732-2565 (New York)

Vendor: Spite Software
4875 S.W. 19th Drive
Portland, OR 97201
Phone: (503) 245-8102

Vendor: Sudden! Products Group
3421 M Street, NW, Suite 1336
Washington, D.C. 20007
Phone: (202) 338-9256

CONTINUED FROM PAGE 57

DOCUMENTATION AND SUPPORT

The manual for the Courier HST is the weakest part of the whole package. For one thing, I would have arranged the chapters differently. For example, the first chapter consists of details regarding the modem's possible interference with radio and television signals and a two-page glossary of modem and telecommunications terms. This is important information, but the first thing you want to know is how to set the modem up.

Another problem is that sometimes explanations assume a knowledge of material that hasn't yet been presented. For instance, the manual explains how to use the extended command set before it covers the Hayes command set, which you need to learn first.

On the positive side, the second chapter does contain clear instructions on how to set up and test the modem, though it leaves out one important fact: To get optimum transmission speed, you must configure your serial port to operate at 19,200 BPS. I discovered this only after calling U.S. Robotics.

The rest of the book provides all the technical information about this modem you will ever need. It explains how to use the HST in countries that adhere only to CCITT standards, for example, and how to access the modem's own onboard diagnostic programs. In addition, there is a very well-written appendix that explains the concepts of data flow control, throughput, and MNP error correction. The manual ends with a large, intelligently designed index.

Taken as whole, it gets high marks for containing all the necessary information and being written in clear, understandable language.

As for technical support, I called U.S. Robotics posing as a novice user. My call was answered immediately and the two problems that I presented the technician were solved in less than a minute. That was impressive. I've had more trouble just ordering a pizza.

THE RBBS CONNECTION

For the last three years, U.S. Robotics has sold its modems to bulletin board system operators (sysops) for almost 50 percent off the suggested retail price of $999. The Courier HST 9600 is available to sysops for $495, plus $5 for shipping and handling. U.S. Robotics hopes that if bulletin boards run on their equipment, BBS users will buy the same equipment in order to call their favorite boards. (Give the marketing whiz who came up with *that* idea a big bonus!)

U.S. Robotics has sold over 2,000 Courier HSTs to sysops since the product debuted. A San Diego computer weekly lists 10 local systems running at 9600 BPS, and *all* of them use Courier HSTs. What all this comes down to is that if your main interest in telecommunications is calling bulletin boards, the Courier HST is your only choice for 9600 BPS communications.

CONCLUSIONS

What's the bottom line on the Courier HST 9600? To get mine away from me you'd have to pry it from my cold, dead fingers. It's that good. It ranked near the top in recent performance tests of 9600 BPS modems, and near the bottom in price--any way you look at it, that's great value. Add to that the HST's growing dominance in the RBBS community, and it's obvious that this is the 9600 BPS modem to choose.

SCORECARD

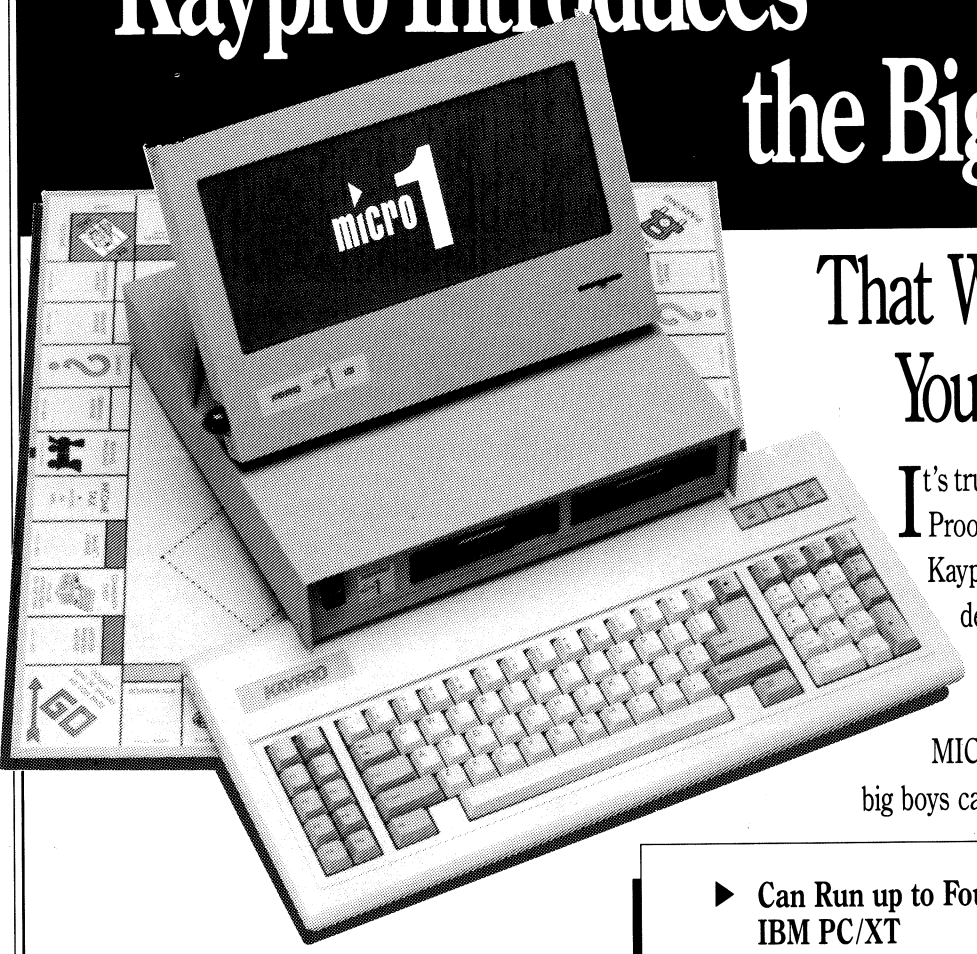
Features: Excellent
Performance: Excellent
Documentation: Good
Ease of Use: Very Good
Error Handling: Excellent
Support: Excellent

QUICK REFERENCE SUMMARY

Product: Courier HST Modem
Manufacturer: U.S. Robotics Inc.
8100 North McCormick Blvd.
Skokie, IL 60076
Phone: (312) 982-5001
Sugg. List Price: $999

KAYPRO PRODUCT SPOTLIGHT

Kaypro Introduces the Big Computer



That Won't Monopolize Your Desk

It's true. Big things do come in small packages. Proof positive? The low-cost MICRO 1 from Kaypro. All the power and performance of a desktop computer packed pleasantly into one square foot of desk space.

Despite its tiny footprint, the MICRO 1 boasts features even some of the big boys can't match. For instance, the MICRO 1:

- **Can Run up to Four Times Faster Than the IBM PC/XT**
- **Uses the New 3.5-Inch Micro-Floppy Diskettes**
- **Makes a Great Workstation**
- **Drives a Mono, RGB, Liquid Crystal Display**
- **Runs at Barely a Whisper**
- **Includes Printer Port and Serial Port**

And you don't need to be a banker — or own Boardwalk — to buy or lease the MICRO 1. Go directly to your Authorized Kaypro Dealer. Do not pass up this mighty marvel from Kaypro. It's the best move you can make for quality, service, and support ... Made in the U.S.A.

KAYPRO® COMPUTERS

The Future's Built In

KAYPRO CARD
123 45 675
K P ROWE

Revolving Charge

KAYPRO® Lease-Link®

Commercial Leasing

made in U.S.A.

See back for specifications.

Applications:

High-performance, space-efficient design, PC compatibility and a very attractive price make the KAYPRO MICRO 1 ideal for the public and private education markets as well as for home and/or office applications. This quietly powerful addition to the Kaypro product line runs between 2 and 3.7 times the speed of the IBM PC/XT and can be switched to the PC/XT 4.77 MHz clock speed in order to be compatible with older software programs incapable of executing correctly at higher clock speeds. Thus, the KAYPRO MICRO 1 is an ideal workstation for many applications including word processing and programming.

Hardware Specifications:

CPU:	8088 compatible, 16-bit V20 microprocessor; 4.77 / 7.15 / 9.54 MHz clock speeds, switchable via the keyboard; zero wait states at all speeds
RAM:	512 KB standard; expandable to 640 KB with the addition of nine 256K X 1 DRAMs
DISK STORAGE:	Two 3.5 inch micro-floppy disk drives; 720 KB storage capacity
KEYBOARD:	Detachable, 84 keys, AT-compatible in layout and function keys with adjustable typing angle
TIME/DATE:	Internal real-time clock/calendar with battery backup
INPUT/OUTPUT:	One Centronics parallel printer port; 25-pin "D" connector One asynchronous (RS-232C) serial port; 25-pin "D" connector
DISPLAY:	MDA, Hercules-compatible monochrome graphics (720 x 350 resolution) output on an optional 12" high resolution green or amber monochrome monitor CGA (640 x 200 resolution, 16 color) output on an optional RGB monitor or LCD super-twist display (Item # 6478); 80 columns x 25 rows measuring 10.5 x 4.5 inches
POWER SUPPLY:	Wall mount, "calculator style" power adaptor
CASE:	Metal construction; small footprint, desktop configuration; Color: Beige
SIZE:	Dimensions: 12 x 12 x 2.5 inches; Weight: 15 pounds
WARRANTY:	One year limited warranty on parts and labor

Standard Software Features:

PROGRAMMING: **GW-BASIC**, a BASICA - compatible programming language providing the capability to program and run custom applications software.

OPERATING SYSTEM: **MS-DOS**

For more information on any KAYPRO product, see your authorized Kaypro Reseller. Or, call 1 - 800 - 4 - KAYPRO.

KAYPRO reserves the right to make changes without further notice to any products herein to improve reliability, function or design. KAYPRO does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights not the rights of others.

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Revised 4/88

Item No. 6596

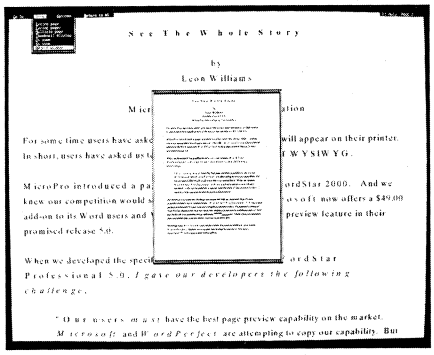
NEW PRODUCTS

EDITED BY K.A. CARRIGAN

The following new product listings are not reviews and should not be considered endorsements. To be considered for publication in this column, press releases should be sent to K.A. Carrigan, "New Products" Editor, c/o PROFILES Magazine, 533 Stevens Ave., Solana Beach, CA 92075. Releases must state prices and the operating systems the products support. Include photos if available.

WORDSTAR PROFESSIONAL 5.0

WordStar Professional 5.0 is a 300-feature update of the original WordStar program.



It includes an Advanced Page Preview that gives users the look of the entire document (up to 144 pages on one screen) before they print by displaying true onscreen fonts, text attributes and layout.

Other features include advanced footnoting capabilities, automatic reformatting, macros, undo, and automatic save. WordStar Professional also now has the ability to create newspaper-style columns and to perform telecommunications, outlining and mail list management. Increased support of laser printers, PostScript, and proportional spacing for simple desktop publishing has also been added.

Other key features include windows for editing two documents at once, and both a speller and thesaurus complete with definitions.

Registered WordStar Professional owners with PC- compatibles can update to Release 5 for $119. The price includes toll-free, seven-day-a-week support. If demand warrants, a CP/M version will be added for Release 5.

$495. All Kaypro MS-DOS and IBM compatibles. MicroPro International Corp., 33 San Pablo Ave., San Rafael, CA 94903; (415) 499-1200.

Hotline # 51-561

AVOID EYE STRAIN, STRENGTHEN EYES

ExercEYEs is a series of programs designed to help the computer user avoid eye strain and fatigue associated with extensive use of VDTs (video display terminals).

The program consists of three sets of exercises: Eye Teaming Skills, Eye Movement Skills, and Focusing Flexibility. The product includes two additonal sections. "Ergonomics" teaches users how to properly design workstations, and "Anatomy of the Eye" educates users on the structure and functions of the eye and visual system.

ExercEYES lets you track your progress using a set of comprehensive statistics that are maintained by the system.

$239. All Kaypro MS-DOS and IBM compatibles. ADDISK, 1672 Bayshore Parkway, Suite 1055, Mountain View, CA 94043; (415) 961-9798 (in CA); (800) 992-4480 (outside CA).

Hotline # 51-555

ENHANCE WORDSTAR

The ScreenExtender is an add-in program for WordStar Professional 4.0. The product allows users to have more than 25 rows and 80 columns of screen text.

Up to 58 rows and as many as 144 columns may be selected. Row and column dimensions may be selected independently, resulting in 16 extended screen sizes for EGA/VGA, eight for CGA, and 20 for Hercules. The normal screen size of 25 rows and 80 columns is just a keystroke away.

ScreenExtender offers other screen control features, such as selecting screen colors, choosing normal or reverse video, and redefining the program's hot keys to avoid conflict with other programs.

$59.95. All Kaypro MS-DOS and IBM compatibles. Stairway Software, 700 Harris St., Suite 204, Charlottesville, VA 22901; (800) 782-4792.

Hotline # 51-556

PROGRAM LANGUAGE TRANSLATION

Metamorphosis is a generic utility program that facilitates the transformation of any syntactically reducible character-oriented file to any other form while preserving the synonymy.

Given the syntactical definition of the source and target languages, the product will translate any source program from one language to another--i.e, FORTRAN to ADA, JOVIAL to ADA, any language to C, dialect conversions, etc.

Metamorphosis also functions as a custom compiler, assembler, macro processor, query, command, and graphics language processor, and report generator.

$387. All Kaypro MS-DOS computers and IBM compatibles (minimum 512K RAM). J.H. Shannon Associates, Inc., P.O. Box 597, Chapel Hill, NC 27515; (919) 929- 6863.

Hotline # 51-557

BOWLING LEAGUE SECRETARY

Bowling League Secretary is a program for managing bowling league results. It maintains team standings, totals, bowler averages, handicaps and standings for leagues of up to 40 teams.

A weekly recap sheet (up to 44 weeks per season) includes the previous week's scores, handicaps, averages, standings, weekly and season high scores, and individual statistics. The Bowling League Secretary will also produce all reports required by the A.B.C. (American Bowling Congress) and the W.I.B.C. (Women's International Bowling Congress).

The product allows addition or deletion of bowlers and correction of previous week's scores. Bowler listings by name and average are avail-

able, as well as a listing of a bowler's games for the entire season.

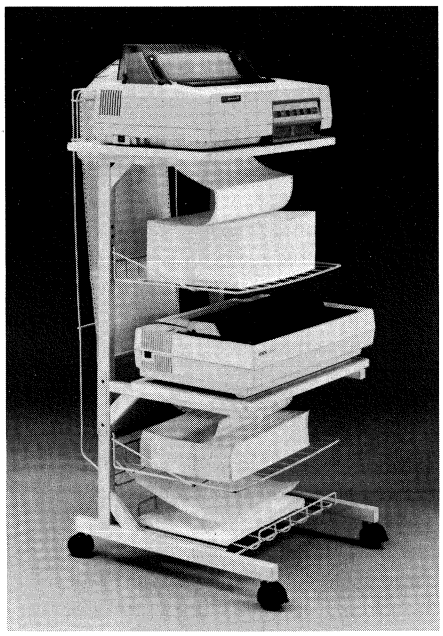
$74.95. All Kaypro MS–DOS and IBM compatibles. CDE Software, 948 Tularosa Dr., Los Angeles CA, 90026; (213) 661–2031.

Hotline # 51–558

DUAL PRINTER STAND

The DD–1 printer stand is designed to accommodate two printers in the same space.

The stand measures 24 x 18 x 41 inches. An output chute guides printed forms to a retractable refold drawer, allowing the stand to be positioned against a wall.



The top paper basket and the bottom printer platform are adjustable. Casters are optional.

$325. Balt, P.O. Box 153065, Irving, TX 75015; (214) 252–3997.

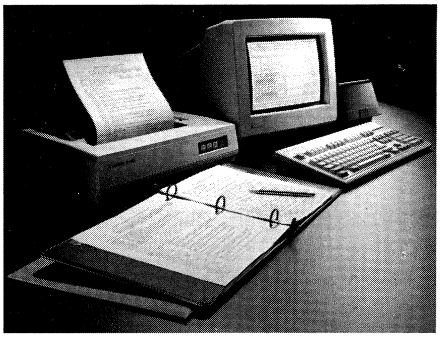
Hotline # 51–559

INFORMATION MANAGER

Who/What/When is a time and information management program.

It provides three "views" of people, projects, and a daily calendar.

Who: The People Management View lists the the projects and



schedules of the people you work with. What: The Job Management View lists your project, the people involved, and applicable deadlines. When: The Time Management View shows your daily calendar. The program cross–references all three views.

The product can handle an unlimited number of entries, and memos, notes, and expense and budget reports can be attached to all three views.

An added feature is the Meeting Maker, a time bar display that allows the user to coordinate the schedules of several individuals.

Who/What/When comes with a boardroom–quality binder that gives you access to your information while you're away from your computer.

$189.95. All Kaypro MS–DOS and IBM compatibles. Chronos Software, 1500 16th St., San Francisco, CA 94103; (800) 777–7178.

Hotline # 51–560

"FLATBED" DOT–MATRIX PRINTERS

The Allegro 24 is a high– resolution, 24–pin dot–matrix printer featuring paper parking and other paper handling options. Allegro emulates the Epson LQ Series commmand and character set, providing compatibility with popular software packages.

The ASP1000 is a compact 9–pin printer. In 10–pitch mode, it prints drafts at 120 cps (characters per second) and letter quality documents at 24 cps. The printer emulates the Epson FX–85 command and character sets, offering compatibility with IBM PC software.

Unlike other printers that send paper around a platen, the ALPS "flatbed" printers have a straight paper path that routes paper directly from the tractor to the printhead. This design virtually eliminates paper jams and increases the variety of materials (envelopes, transparancies, and forms) that can be handled.

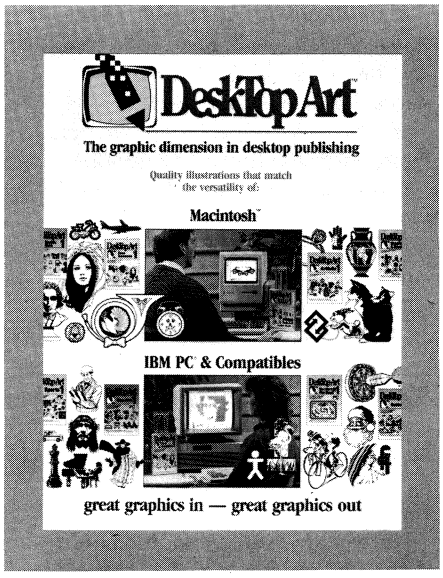
Allegro 24, $499; ASP1000, $299; ALPS America, 3553 N. First St., San Jose, CA 95134; (408) 432–6000.

Hotline # 51–562

DESKTOP ART BROCHURE

DeskTop Art is a software collection of 200 images for desktop publishing projects stored on 5.25 inch and 3.5 inch disks

The DeskTop Art collection has added four new packages for PC–compatibles: Education 1, Sports 1, Artfolio 1, and Health Care 1. Each package includes an instructional how–to guide, pictorial index, and permanent storage case.



Free copies of the DeskTop Art brochure can be obtained either by writing or calling the company.

Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Box 1901, Peoria, IL, 61656–1901 (800) 255–8800.

Hotline # 51–563

PRODUCT UPDATES

ZyINDEX 3.0 is a text search and retrieval program. The new release has added auto-indexing and new kinds of searches--prefix, root word, and suffix. Special character searches for other languages and science, math, engineering, and graphic arts applications are also included. ZyLAB Corporation, Arlington Heights, IL. ☐ **RamFont** is an advanced display mode for PC/XT/AT compatibles. Five word processing vendors now support RamFont mode. They include MicroPro International (WordStar 2000 Plus 3.0), WordPerfect Corparation (the upcoming WordPerfect 5.0), XYQuest Inc. (XyWrite), Life-tree Software, Inc. (Total Word), and Samna Corp. (SAMNA Word 4 2.0). Hercules Computer Technology, Inc., Berkeley, CA. ☐ **REMOTE2** is a remote-access program that replaces its predecessor, REMOTE. New features include three modes--Restart, Manual, and Always Ready-- individual user pass-words, and a call-back feature. Crosstalk Communications, Roswell, GA ☐ **Decision Pad** 1.1 is a decision-assist program. The new version offers password protection for individual rows, columns, and value cells of worksheets that are used for consensus gathering. Other features include value setting by the Paired Comparison Method, enhanced APPEND commands, onscreen previewing of reports, and expanded on-line tutorial support. Apian Software, Menlo Park, CA ☐ **Carbon Copy Plus** version 5.0 is a remote control communications software package for PC compatibles. New features include background file transfer and a Universal Graphics Translator function that fully supports EGA, VGA, CGA, and Hercules. All graphics cards are compatible interchangeably, enabling users on both ends to see and interact with the same graphic screen images. Meridian Technology, Inc., Irvine, CA ☐ Version 3 of **Notebook II**, a database manager for academic and scientific researchers, can now create bibliographies in user-selected formats. Templates are also available for automatic creation of bibliographies in four standard formats: Chicago, APA, Turabian, and MLA. The new release also allows users to eliminate duplicate records from data retrieved from online databases and includes a "find and replace" function. PRO TEM Software, Inc., Stanford, CA. ☐ **Concordance** version 3.10 is a menu-driven information retrieval system. The new release includes improved search/retrieval and reindexing speed. It also keeps the current document displayed on the screen when changing from a retrieved group of documents to viewing the entire database. Dataflight Software, Los Angeles, CA

Lotto Logic®

Now you can improve your odds of winning the lottery by up to 1500%! The secret? LOTTO LOGIC®, the lottery number selection program for people serious about winning. Here are just some of the features that make LOTTO LOGIC® the best odds reduction software on the market:

- sophisticated trend analysis
- exclusive "Dr. Bradley" system
- more systems to choose from
- compound trend effect with system combination
- data base provided for most state lotteries
- menu driven — easy to use

You simply can't buy a better lottery program than LOTTO LOGIC®.

Thoroughbred Logic®

Now the same sophisticated odds reduction techniques that have made LOTTO LOGIC® the best lottery program on the market are being used to give you the best odds on horses!

THOROUGHBRED LOGIC® comes in two versions so you can pick the level that best suits your needs. The basic version requires accurate information from the daily racing forms to produce results. Basic version sells for $89.95. The enhanced version includes a separate program to maintain and calculate speed ratings. This version is recommended for the serious user and requires weekly record keeping to produce accurate results. The enhanced version sells for $129.95.

Your odds of winning have never been better!

Your odds of winning have never been better! To order call toll free 1-800-433-6960 (Canada, 206-881-3500), or write:

MasterCard

MACTON INDUSTRIES INC.
17371 N.E. 67th Court, Suite 211, Redmond, WA 98052

VISA

Add $2.00 postage and handling. Runs on all IBM PC and compatibles with a minimum of 256K RAM.

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How to Use the Buyer's Hotline

Each month you are exposed to several Kaypro-compatible products, both in advertising and editorial. Trying to figure out which product suits your needs and your pocketbook, is never easy. How many times do you wish you had more information on the products listed or advertised in *PROFILES*? Since we have received so many requests for information about products and companies mentioned in the magazine, we have initiated **The Buyer's Hotline**.

The Buyer's Hotline is a brand new service for *PROFILES* readers. Most reader services such as these require that the reader fill out a tedious "bingo" card and send it in, only to wait three months for a response. This time lag is usually the fault of the publication, not the advertiser. We are attempting to eliminate the time lag so you can get the information you need in a more timely manner. With one toll-free phone call, you will be able to get information on the products in each issue of *PROFILES* that interest you.

Here's how it works: Each product manufacturer or distributor will have a Hotline number. This month the numbers are listed next to the page number in the Advertiser's Index. In future months, the number will also be listed within the ad itself or the Quick Reference Summary at the end of each article. Make a note of which products (and the corresponding Hotline number) you would like more information about. Then simply call our toll-free Buyer's Hotline number (1-800-4KAYPRO). Give the operator the information she requests, and that's it!

Weekly reports of our readers' product information requests will be forwarded to the manufacturers and distributors, so that you can get the information quickly... and be able to make an informed buying decision within your own time frame. We sincerely hope that this service will be of great value to all of our readers.

Listed below are the companies and Hotline numbers for those products mentioned in our editorial features this month.

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