

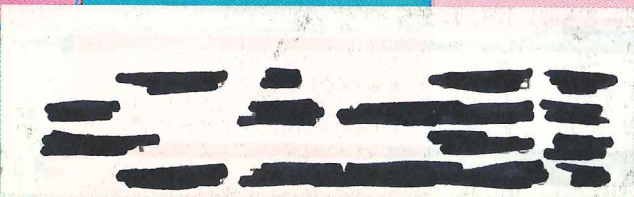
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# PROFILES

The Magazine for Kaypro Users  
May 1986

## SPEED

Turbo Lightning, RAM disks,  
and UNIX-like enhancements



Customizing Master Menu



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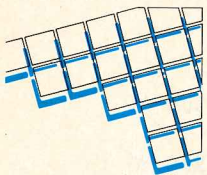
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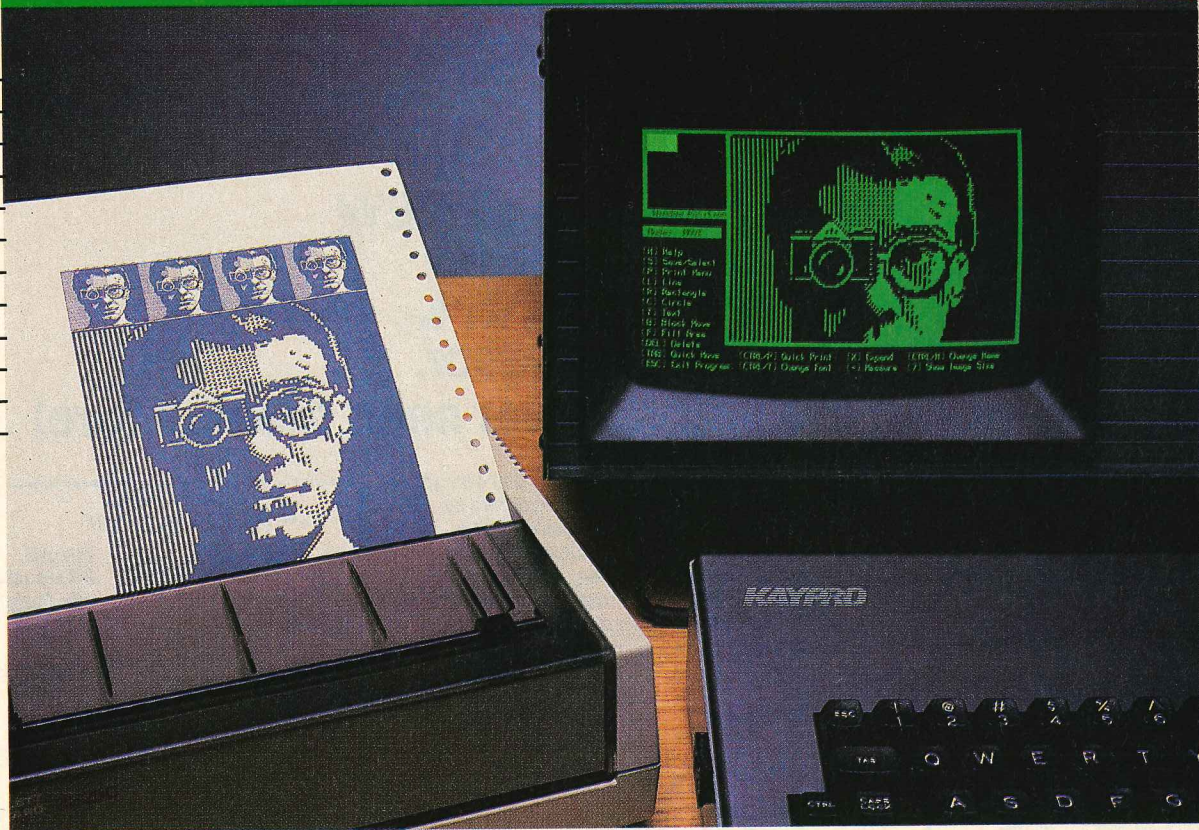
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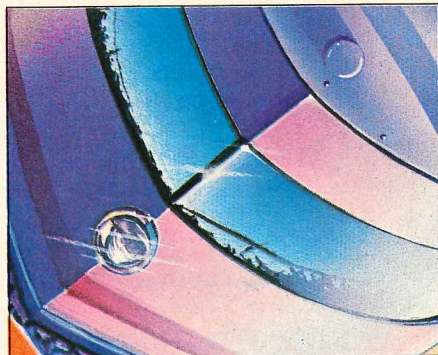
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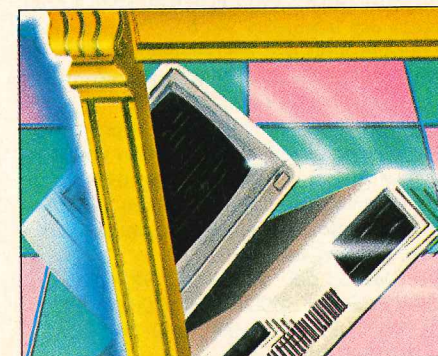
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### On the cover:

Illustrator Alan Daniels offers this look into the future of computing. The highlight of this next wave? Speed. You can have it, now with Turbo Lightning, RAM disks, customized menus, and UNIX-like software tools.



# Keep in Mind

**A**s you read *PROFILES*, there are a few things we recommend you keep in mind.

First, *PROFILES'* readership includes users with all levels of experience, from beginner to advanced, as well as users of both the CP/M and MS-DOS operating systems. A legend at the beginning of each feature article indicates which operating system and what level it addresses.

For example, **Beginner/8/16** indicates that the article is for novice users of either the CP/M (8-bit) or MS-DOS (16-bit) machines.

We will strive to provide a full range of material in each issue to meet the needs of all our readers.

Second, there is unavoidably at least a three-month delay between the time we receive an article and the time it is published. We make every effort to provide current information, but both commercial and public domain software is revised frequently, so the versions discussed in *PROFILES'* articles may not be the latest ones.

For this reason, we suggest that before you purchase *any* program you call the manufacturer for details about the latest version, including the version's number, date of the last revision, and specifics about what makes the latest version different from previous ones.

The same general rules also apply to hardware purchases. The important point here is to be sure about which model *and* series ('83 or '84) the hardware works with.

And third, while reading articles note that all commands are in boldface type. You should enter everything that's bold, including colons, semicolons, etc. This is to help you easily pick out what is a part of the command and what is not. If it's not boldfaced, then it's not part of the command.

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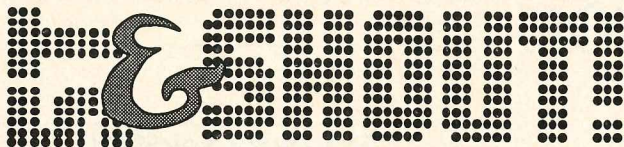
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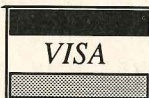
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# Letters

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## **Bibliographic software**

We appreciate Paul Ofman's generous review of Notebook and Bibliography in the March 1986 issue.

We would like to note, however, that the MS-DOS version includes both word wrap and the automatic elimination of duplicate entries when merging subsets of the database. In addition, each record of the MS-DOS version can have up to 50 fields and 28,000 characters per record. Text is allocated dynamically to fields and records as you enter it, without the need to reserve space ahead of time.

Paul Brest  
Pro/Tem Software  
Stanford, California

## **Pixels and phosphor**

While reading "Pixels and Phosphor" in your March issue, I noticed that the section entitled "Graphics in general" describes several limitations of Rembrandt and implies that these are limitations of all Kaypro graphics software.

For example, there is an explanation of the Kaypro's limitations that concludes "Your drawings use or leave blank any of 16,000 pixels." This is true of Rembrandt, but SCS-Draw provides a total resolution of over 120,000 pixels. In fact, both of the SCS-Draw illustrations on that same page are made up of more than 16,000 pixels.

The "Graphics in general" section also gives a very technical explanation of drawing with character-based graphics. Again, this discussion only applies to Rembrandt—all of the other programs covered in the article allow you to draw dot by dot.

I think it is unfortunate that these limitations of a specific software product are presented as limitations of Kaypro computers in general.

Doug Mahugh  
Second City Software  
Chicago, Illinois

The "Graphics in general" section was just that—a general discussion of the principles of creating graphics on CP/M Kaypros. The information presented in this section was not based on the characteristics of any software product, and no such connection was expressed or implied.

In this section it was stated that the Kaypro screen is 100 x 160 pixels, and that drawings use or leave blank those 16,000 pixels (to produce an image). This is a "given," no matter which software is used. It does not, however, imply that only one screen can be used per drawing, and in the section on SCS-Draw, we said that the sketchpad (two-thirds of the screen) is one-ninth the total area you can use (for a drawing).

We agree that the difference between drawing at the character-cell level and drawing dot by dot at the pixel level was not made explicit. However, the section on SCS-Draw did say that in this program the blinking cursor represents one pixel, which represents one dot on a dot-matrix printer.

Nowhere were the limitations of one product represented as the limitations of Kaypro graphics in general.

## **Upgrades—great fun**

Your March '86 issue was great! I bought my Kaypro II (pre-'84) in March 1984 and love it—but upgrading is always on my mind. So articles like the one on the Advent speed-up kit (December/January 1985) and the one by Loren Marshall ("Enhancing Eight-Bit Hardware," March and April 1986) were right up my alley.

In fact, before the day was out, I performed Marshall's suggested "low-tech" upgrade—moving the reset button to the front of the machine. Great fun! Keep it up.

David Renwick  
Pamplin, Virginia

## **Thanks for SAVESTAR**

Thank you for the excellent article "Getting Started with Assembly Language," by David Weinberger (February 1986). It's a very practical and educational way to get one's feet wet in AL.

Once I got all my typos out and had SAVESTAR assembled, up and running, I made two pretty minor changes:

1. Following the instructions in the article, I changed the program so that SAVESTAR would write to the A drive. I then wrote SAVESTAR to its own disk.

2. Then, using DU (as described in the September and October 1985 issues), I inserted SAVESTAR in the boot area of the system tracks so that it auto-loads.

Now if I get hung up with WordStar, I simply remove it from the A drive, insert the SAVESTAR disk, hit the reset, and voilà! My file is saved as A:SALVAGED! And there's plenty of room on that disk.

For those having difficulty with AL, may I suggest *Soul of CP/M*, by Waite and Lafore. Since going through it, I can almost understand those other CP/M books. (Wish it had been written for the Z80, though.)

You're doing a very good job in producing a magazine with wide appeal to Kaypro users. Keep up the good work, and keep those Ted Silveira articles coming.

Douglas M. Moncrieff  
Norco, California

## **Generating form letters**

As a recent Kaypro purchaser and neophyte in its operation, I am pleased to report that I found the instructional article by Joseph Comanda to be very comprehensive and easily followed.

By using his article as a step-by-step guide, I was able to generate a simple form letter that will now serve as a training guide for other Kaypro users in our organization. I commend him for his contribution



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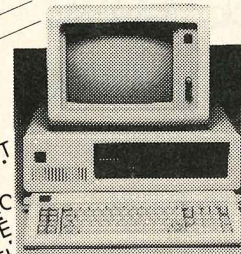
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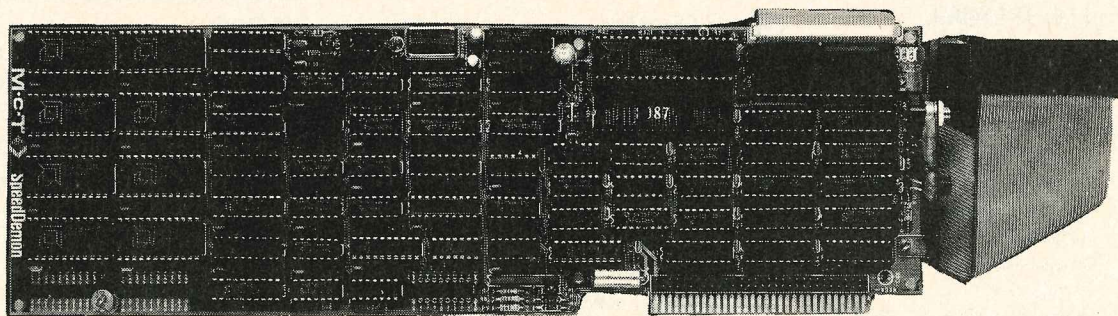
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## Letters

and would only suggest that if he had continued the article to include instruction on preparing envelopes, he would have saved me additional time in sorting through all the regular instructional manuals in order to complete my example.

Delbert L. Phillips  
Fairmont, West Virginia

I thoroughly enjoyed the article by Joseph Comanda. It pointed out several things that should have been obvious to me but that I had missed about using MailMerge and DataStar.

I encourage you to encourage Comanda to write further on using SuperSort. I had been hoping for a summary of its use such as Comanda presented in his article. I have not yet made the time to attempt sorting my data using Comanda's instructions, but that day will come shortly.

I enjoy the magazine and look forward to seeing the letters and answers ("Q&A") column expanded. I would also like to see an article discussing printer buffers since newer, cheaper, and smaller ones are coming out now.

James Chester  
Mooresville, North Carolina

### *Praise where due*

I would like to commend and thank Southwest Computing of Santa Teresa, New Mexico, and its program developer, John Gilbert, for their tax preparation program, TAXBREAK (last year titled TaxCalc 84).

This letter is totally unsolicited, and is sent only with the thought that it may help other Kaypro owners. I have no relationship with SW Computing other than as a customer.

This program has made it ridiculously easy for me, a medium-income taxpayer with a middling hard itemized return, to prepare and submit to the IRS my return

with full confidence in accuracy and completeness. Where before I labored and sweated for a month or two in manual preparation, I now do it in two days.

Each of two years I encountered a glitch in initial installation of the program; each time a toll-free call brought John personally to my assistance in resolving the problem. I have seldom encountered such ready, complete, and helpful service from either hardware or software manufacturers.

Charles Goslee  
Flint, Michigan

### *A meeting of minds*

PROFILES' readers may be interested in knowing about the meeting of electronic minds that took place February 3 between Arthur C. Clarke's Kaypro 2 in Sri Lanka and the Cray X-MP/24 at the University of Illinois National Center for Supercomputer Applications (Urbana-Champaign campus).

The connection between the world's fastest commercially available computer and Clarke's Kaypro half a world away was achieved via satellite linkup. The event was one of many to celebrate NCSA's official opening.

Last year, NCSA was one of two supercomputer centers established at the University of Illinois to bring together leading scientists, engineers and other experts to advance the use of supercomputers for solving major problems in many different disciplines.

The other facility at the Urbana-Champaign campus is the Center for Supercomputing Research and Development. David J. Kuck, its director, is the widely recognized pioneer in supercomputing software and architecture. This center's plans include the design and construction of supercomputers that will double their speed each year. After 10 years, Kuck expects to have a machine with 1,000 times the computational power of today's

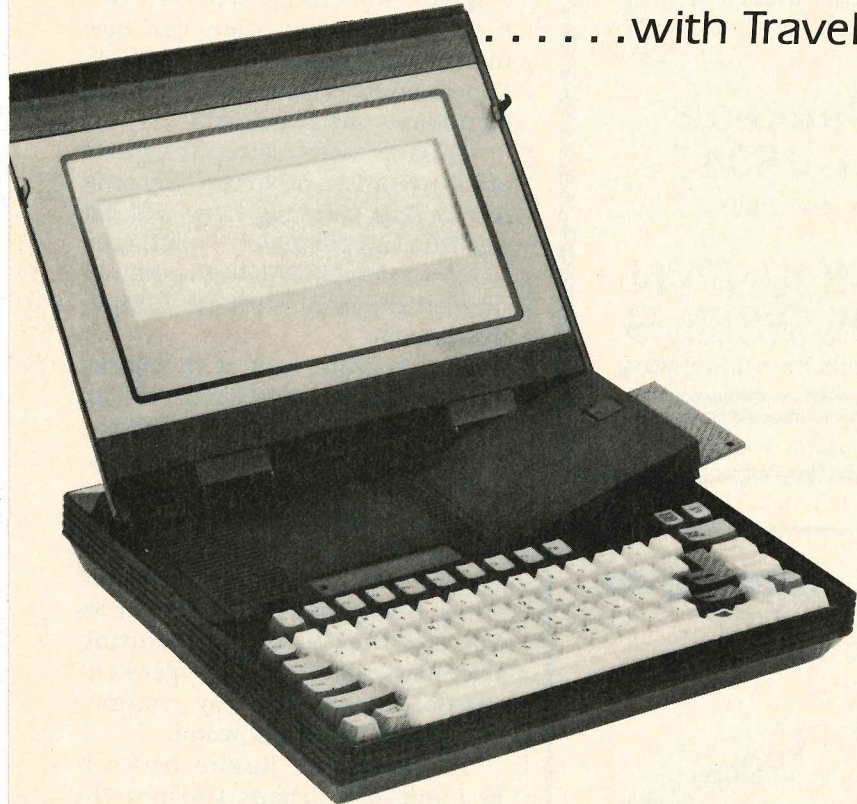


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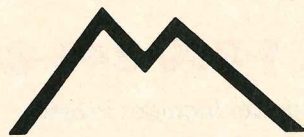


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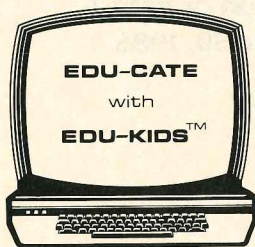
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Each year, hundreds of scientists in universities and corporations, here and abroad, will be using the University of Illinois supercomputing facilities, either by visiting the center or through communications links. Clarke's Kaypro-Cray linkup demonstrated how scientists anywhere can now tap the enormous power of NCSA's supercomputer through their lab computers and home PCs.

In Clarke's letter accepting the U. of I.'s invitation, he wrote, "My only fear is that your big Cray will eat my little Kaypro alive!" I am happy to report that NCSA's titan communicated amiably with its Lilliputian cousin.

The satellite link with Clarke was especially appropriate for an author whose visions included the satellites that linked the two computers. In 1945, at the dawn of the computer age—before the discovery of the transistor and when many doubted humans could ever travel faster than sound—Clarke was the first to propose putting artificial satellites in geosynchronous orbits to relay communications around the world.

The computer linkup between Sri Lanka and Urbana also brought to mind a Clarke prophecy not yet fulfilled. In "2001: A Space Odyssey," he wrote that the artificially intelligent computer HAL 9000 was born in Urbana on January 12, 1997. Thanks to the two new supercomputer centers at the U. of I., one more of Clarke's predictions may be on its way to coming true.

Andrew Skolnick  
 Office of Public Affairs  
 University of Illinois  
 Champaign, Illinois

Letters should be sent to:

PROFILES  
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 533 Stevens Ave.  
 Solana Beach, CA 92075



by Tom Enright

We welcome and read all your letters. Those of general interest are printed in the Letters column; pleas for technical help are dealt with here if they lend themselves to simple, concise answers, or in Technical Forum if the answer is more involved.

Due to the volume, we simply can't respond individually to all requests for assistance. If you have a question requiring an immediate reply, contact your dealer. You can contact Kaypro Technical Support, but be aware that they give dealers' calls priority. Call them at (619) 481-3920, or write to P.O. Box N, Del Mar, CA 92014. Please include a daytime phone number.

### Erased files

Recently my wife put the wrong disk into my Kaypro 4'84 and erased it using CP/M's ERA command. I was able to bring back some of the files using the public domain program UNERA. However, I don't remember all the filenames, and UNERA brings back files one at a time—by name.

My computer dealer wasn't aware of any software that would bring back all erased files on a disk. Do you know of any?

John Sanger  
Schaumburg, Illinois

There is a program called DISK DOCTOR that recovers erased files, though at \$250 it's perhaps a bit pricey for occasional use. It was updated a few months ago, and the current version at this writing is 2.1. It's available from SuperSoft Inc., 510 W. Park, Champaign, IL, 61821. Their phone number is (217) 359-2112.

You can also recover your files with DU or one of the other public domain disk editors. Ted Silveira wrote an excellent tutorial on DU for the September and October '85 issues of PROFILES.

Some people feel intimidated

by the power of DU—after all, it is a hacker's tool. If that's your case, you could use the "M" (for "map") function of DU to print out a list of all files, including erased ones, on the disk. You would then have a list of all files that were on the disk, and UNERA could recover them one at a time.

### DOS to CP/M file transfer

I own a Kaypro 4, a Kaypro 10, and a Compaq. I need a device that will allow me to read files back and forth among these machines. What is your recommendation? Any information you can provide will be much appreciated.

Nathaniel Branden  
Beverly Hills, California

There are a number of file transfer utilities on the market that will move files between various CP/M disk formats and DOS. They include COMPAT from Mycroft Labs, MEDIA MASTER from Intersecting Concepts, and UNIFORM from MicroSolutions.

My personal preference, for speed and ease of use, is UNIFORM running on a DOS machine. With UNIFORM running on your Compaq, you can read, write, and format diskettes in any number of other formats, including Kaypro CP/M, more quickly than on an 8-bit Kaypro.

### Incompatible software

I have been using CP/M 2.2E from Plu\*Perfect Systems with my Kaypro II and am very pleased with it. I have also been using SmartKey and SmartPrint II and have been very pleased with them. They both have worked well under 2.2E.

My problem is that I have just purchased the newest upgrade of SmartKey (version 4.2) and it is incompatible with 2.2E. The manual says that it has something to do with "interrupts," and that 2.2E is causing the problem, not SmartKey. I would like to reap the benefits

of using the two programs together. Can you help?

Adolph Amster  
Ridgecrest, California

Unfortunately, I know of no way to get the two programs to work together—it's simply a case of incompatibility, and the software publishers will have to work it out between themselves, if they're so inclined. You'll have to give up either 2.2E or the newest version of SmartKey. Since the SmartKey manual acknowledges that it won't work with 2.2E, you should be able to get a refund if you decide to stay with 2.2E.

### Pre-school software

Our firm owns five Kaypros (three different models). My daughter is four years old, and I want to introduce her to computers. Do you know of any educational software for use with a Kaypro for pre-kindergarten, kindergarten, or elementary school use?

My daughter already likes to type letters onto the screen. She learned the alphabet quickly this way, and I would like to encourage her. Any information you give me will be greatly appreciated.

Michael McGroerty  
Georgetown, Delaware

I assume your firm's five Kaypros are CP/M machines. Educational software for CP/M can't compare with the programs available for other computers. Generic CP/M just doesn't have the graphics and color capabilities needed for good children's educational software.

There is some CP/M educational software available for school-age children (see the September 1985 issue of PROFILES), but I'm not aware of any for preschoolers.

Excellent educational software is available for Apple, Atari, Com-



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## Q & A

modore, IBM, and IBM work-alike machines. If you are contemplating getting a computer primarily to further your daughter's education, I would recommend buying an Apple, Atari, or Commodore system. They are much cheaper than an equivalent IBM-type system. On the other hand, if you will also be using the computer to work at home, an IBM-compatible machine such as the Kaypro PC would be more useful.

### Kaypro 2000 screen

In the February edition you advised a reader that "leaving the computer on with the video intensity turned down is easier on the machine than turning it on and off."

Does your advice also hold true for the Kaypro 2000? How will leaving the machine turned on affect the LCD screen? I certainly agree that machine life is extended by leaving the machine powered up. I am concerned about potential negative impact on the LCD screen.

John Shontz  
Sidney, Montana

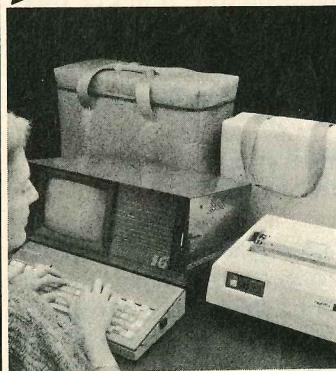
Assuming that you use the AC adapter, leaving your Kaypro 2000 on will not damage your LCD screen. By its very nature, a liquid crystal display cannot burn an image into itself the way a phosphor screen can.

What you do have to be careful of with an LCD screen is ambient temperature. The K2000 display is rated to operate between 41 and 104 degrees Fahrenheit. Below 41 degrees the liquid is approaching its freezing temperature. When a liquid freezes, it expands slightly, possibly enough to crack the glass of the display. If the temperature gets above 104 degrees, the crystals can turn black permanently.

The bottom line is that you cannot harm the machine by leaving it on. However, you should be careful about where you leave it.

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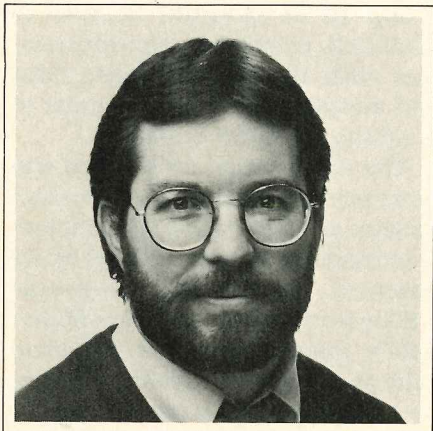
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# Life at 300 Baud



by Brock N. Meeks

**G**uilty as charged: I am a confirmed electronic pack rat. I just can't bring myself to delete downloads I've made during online sessions. I keep thinking there will be a use for all the tidbits I collect—but the time, or opportunity, just never seems to come. So, in part to ease my conscience and in part to share with you some of the interesting happenings in telecommunications, I'm cleaning out those download disks for this column.

## Hot pursuit

If I told you that for a flat fee of \$25 a month you could make an unlimited number of non-prime time calls with your modem, would you take it? Thought so. Just such a service, called PC Pursuit, is now available from GTE Telenet.

Your \$25 fee covers everything. There are no limits on the number of calls you can make between 6 a.m. and 7 p.m. Monday through Friday, or on weekends and holidays. You must disconnect after one hour, but you can get right back on. "Sounds too good to be true," you say? Well, you're partly right. Let's look closer.

Only a few major cities are now being serviced by PC Pursuit: Atlanta, Boston, Chicago, Dallas, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, San Francisco, and Washington,

## Confessions of a pack rat

D.C.. But as of the second week in April, you could make an outgoing call from anywhere in the U.S. to one of these major cities, which contain almost 50 percent of the nation's bulletin board systems. In addition, most of the nation's regional networks are available in these cities, which makes these networks even more attractive and should increase their popularity. (For more on regional networks, see "Life at 300 Baud," PROFILES, January 1986.)

To use PC Pursuit, you first have to register with GTE, then do the following: 1) use your modem to call the local GTE access number; 2) request the city and destination phone number you want to call; 3) hang up and wait for GTE's computer to call you back (GTE claims a callback delay of about 30 seconds); 4) wait for the connection and out-dial, then proceed just as if you had made the connection through AT&T.

For more information, call (800) 368-4215 (voice), or (800) 835-3001 (modem).

## Divided we stand

You have an account with MCI Mail and your friend has an account on ITT's Dialcom. If you want to communicate electronically the only way you can do it is to call your friend's computer directly. The reason? MCI Mail doesn't deliver to Dialcom, nor Dialcom to MCI. The entire E-mail industry operates this way. But all is not lost.

Executives from ITT Dialcom,

GTE Telenet, MCI Mail, and other electronic mail firms are laying the groundwork for interconnecting all E-mail systems. The only obstacle to intersystem E-mail delivery is the bottom line: each system is more concerned about guarding its own turf than deciding on a set of standards.

Telecommunications analysts predict, however, that interconnection could come within two years.

## Over two million "sold"

More than two million Americans now "drive" modems to work each day, according to a study on telecommuting done by Cornell University. By 1990, it says, the number could reach 20 million.

The study, reported in *USA Today*, claims that 10 to 20 percent of the entire work force will be "commuting" to work via computer within five to ten years.

The article quotes some interesting statistics from the study's author, professor Charles McClintock:

- Work weeks of 60 hours are not uncommon among telecommuters.
- Work performance evaluations are typically high because managers focus on work performance rather than "potent social clues," such as dress and personality.
- Men outnumber women telecommuters two to one.

## Hacker trackers

The Los Angeles police department has formed its own computer fraud unit. The LAPD (unhappy at being called computer illiterate) is train-



ing officers in the wiles of computer criminals in order to respond to at least four factors: a rise in computer crime; public awareness that these crimes pose a threat to individual and corporate security; an increased willingness on the part of private companies to cooperate in criminal investigations; and a rush by the California state legislature to enact laws making it a crime to invade someone else's computer.

Currently the federal government operates two such training centers for computer crime—the FBI Academy in Quantico, Virginia, and the Federal Law Enforcement Training Center in Glynco, Georgia. These training centers report that police departments around the nation are racing to enroll their officers.

### **Pentagon goes BBS**

Name the top 50 governmental organizations you would expect to sponsor BBSs, and the Department of Defense would probably be number 76 on that list. You might believe the DoD would be a little wary of such a venture, especially in the aftermath of *Wargames*. Yet, a BBS sits in corner of the Pentagon as you read this.

## *In a departure from the Pentagon's spending habits, Bryen paid \$25 for BBS software.*

The Export License Status Advisor, affectionately known as ELISA, fields calls from exporters who want information about the status of their applications to sell high-technology equipment, munitions, and other gear to the Soviet Union, its East European satellites, and our Western allies.

ELISA is the brainchild of Stephen Bryen, deputy under-secretary of defense for trade security policy. ELISA is accessed via a local Washington, D.C., phone number. The only catch is that to log on you must have a valid export license

application number issued by the Commerce or State Department.

In a surprising departure from the Pentagon's usual big-bucks spending habits, Bryen simply went to his local users' group and paid a paltry \$25, collected from three of his staff, for the BBS software. The three staff members never requested reimbursement.

### **Moscow on the bitstream**

While enduring conspicuous silence from the Soviet Consulate, which refused to answer my questions about telecommunications from inside the U.S.S.R., I have been scooped.

The Soviets had good reason to be tight-lipped. Right about the time I began asking questions, back in Moscow they were voting on whether to give the official go-ahead to experimental telecommunications with the United States.

On June 13, 1985, the Soviet Academy of Sciences finalized plans for electronic communications with the U.S.. Although the Soviets were all set to log on from Moscow, the U.S. Commerce Department called a halt to any kind of direct link with the Soviets.

Seems the folks in the Commerce Department didn't want any of our technological information flowing to the U.S.S.R. on the 1200 baud bitstream. The Commerce Department relented, however, and on October 25, 1985, both sides were set to exchange electronic communications.

On the Electronic Information Exchange System (EIES), a conferencing system sponsored by the New Jersey Institute of Technology, there is now a daily dialog among scientists—six from the U.S. and four from the U.S.S.R..

ARC Communications Institute of Berkeley, California, won the distinction of being the first civilian group to be granted license to establish electronic communication with the Soviets. Both sides will access Telenet as a means of reaching the EIES system.

The information exchanged will be on science, business, trade, alcoholism, and education (the subject of technology is conspicuous by its absence). Initially only ten people will be involved, though Joe Shatz, ARC's special projects director, said plans are to involve a larger number of people in the future.

### **Postscript**

"It looks like a Roman candle going off," were the first words I understood. An ABC broadcaster, struggling to maintain his professional demeanor, reported: "The shuttle *Challenger* has exploded."

The entire nation mourned the loss of the *Challenger* crew. The "network nation" was no different. In a touching application of the telecommunications medium, thousands of people gathered online to create a living memorial to the *Challenger* crew.

Members of CompuServe's "Space Forum" held a real-time conference. As participants input their responses and expressed their sentiments, a moving online testimonial—perhaps the first of its kind—was recorded in phosphor.

And on hundreds of bulletin boards across the nation, people joined their local online communities in tribute.

These spontaneous online eulogies would make anyone proud to be a part of this medium. The critics can hardly call it impersonal now.

We are still new to the wonder of computer telecommunications, but look where we've been: From online memorials to our nation's newest heroes to the establishment of electronic links between ordinary citizens of the U.S. and the U.S.S.R.. That's quite a resume, and we're just beginning. ■



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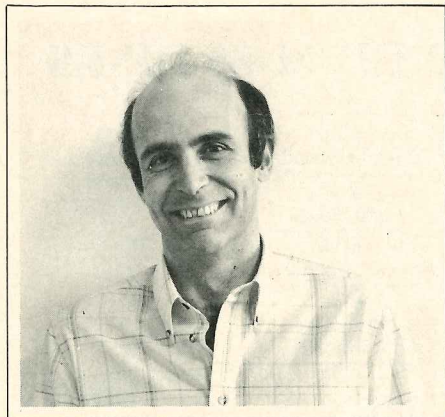
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# Flea Market



by Ted Silveira

**P**ublic domain programmers never rest. They're always tweaking some existing program to make it better or cooking up a new one to fill some obscure need. As a result, the information I pass along in this column is sometimes outdated by the time it hits the streets. So this month I'm going to bring you up to date on some new treats from the public domain.

## Why more modem programs?

Communications is the life blood of the public domain, so public domain modem programs get updated more frequently than almost anything else. The most recent updates have been caused by two things: the rapid spread of 2400 bps (bits per second) modems and the addition of a new option to the XMODEM protocol.

**Super Modems.** The 2400 bps modems now sell for \$500 and up, about what 1200 bps modems sold for two years ago. They not only run faster but also have advanced features such as automatic step-down (if the modem can't connect at 2400 bps, it tries 1200, then 300). And due to heavy promotion by modem manufacturers U.S. Robotics and Racal-Vadic, many major bulletin boards are now using these fleet new modems.

**A New Option for XMODEM.** XMODEM is what makes it possible

## New treats for CP/M and a niche for MS-DOS

for you to send and receive programs and still be sure that the files haven't been corrupted during transmission. The original XMODEM protocol transfers a file in blocks of 128 bytes. After each block is transferred, the sending and receiving computers check to make sure that the block received is identical to the block sent. If so, they transfer the next block; if not, the bad block is retransmitted.

This protocol has now been expanded to allow the use of 1K blocks (1,024 bytes). If you use these larger blocks, you save time because the two computers don't stop to check for errors as often. However, if you get many transmission errors (as you will with a bad phone connection, for example), you lose time using 1K blocks because it takes longer to retransmit them. As a rule of thumb, if you're running at high speed (especially 2400 bps) or transferring large files, the 1K blocks are an advantage. If you're running at low speed (300 bps) or transferring small files, the 1K blocks give practically no advantage. And if you're working under adverse conditions (lots of errors), the 1K blocks are a definite disadvantage.

Of course, 2400 bps modems and 1K blocks won't do you any good unless your modem program can handle them—hence the appearance of IMP244 and MEX114.

### IMP244

IMP244 (Improved Modem Program, version 2.44), by Irv Hoff, is a development of the old public

domain standard MDM740 (also by Hoff; see review in *PROFILES*, April 1985). IMP looks and acts much like MDM740 but takes full advantage of the auto step-down feature of many 2400 bps modems. For example, IMP can wait for the modem to make its connection, figure out what speed it connected at, and then set the computer to match. The user never needs to worry about setting transmission speed at all. (This feature works with "intelligent" 2400 bps modems only, not with 1200 or 300 bps modems.)

IMP can also use either 128-byte or 1K blocks for XMODEM transfers. Better yet, when working with bulletin boards running recent versions of the XMODEM program (or KMD, a substitute), IMP automatically uses 1K blocks and then monitors the error rate during the transfer. If the error rate climbs too high, IMP switches to 128-byte blocks.

Though IMP is a near relation of MDM740, you can't use your MDM740 Kaypro overlay with IMP. You must use the special IMP overlay (I2KP-1.ASM).

### MEX114

Ron Fowler has also updated his popular MEX (Modem EXecutive) modem program (also reviewed in *PROFILES*, April 1985) to MEX-114. MEX114 corrects a few not-very-serious bugs (ones I've never encountered) found in earlier versions and adds support for 1K blocks during file transfers and for 2400 bps modems.



Like IMP, MEX114 will automatically use 1K blocks, if possible, when receiving a file and will automatically switch to 128-byte blocks if the error rate gets too high. MEX won't automatically send in 1K blocks, though—you must tell it to do so.

MEX114 also supports features of the new 2400 bps modems through a special overlay, MXM-2403.ASM. This overlay does allow MEX114 to use the auto step-down feature of these modems, but in a less sophisticated way than IMP.

Fowler is now putting much of his energy into a commercial version of MEX (called MEX Plus, or sometimes MEX2), a much fancier program using entirely different overlays. MEX114 and earlier versions are still free.

### **The Swiss Army Knife of software**

In my February column, I suggested a number of utility programs to keep on your disks as a sort of CP/M toolkit. Some of you—especially those with single-sided disk drives—may have wondered exactly how you could keep these programs handy and still have room for your word processor, data base, or spreadsheet.

---

## **ZX3 only takes up 3K, but it packs a suitcase full of features in that tiny space.**

---

Help is at hand. ZX3, by Mike Yarus, only takes up 3K, but it packs a suitcase full of features into that tiny space. At the outset, ZX3 seems to be a simple directory program, like D or SD. If you enter **ZX3 A:** or **ZX3 B:** at the CP/M prompt, you get an alphabetized list of the files on your disk, along with the size of each file and the free space remaining. No surprises here.

But if you have a text file on drive B that you want to look at—**SWPSTAKE.LTR**, for example—you can

enter the command **ZX3 SWPSTAKE.LTR T** (for Type) and ZX3 will display the file one screenful at a time. You can even page backward through the file.

If you decide you're done with the file, you can erase it with the command **ZX3 SWPSTAKE.LTR E**. ZX3 will erase the file and show you the directory to confirm its action. Should you decide you've made a mistake, you can recover the file with ZX3's Unerase command: **ZX3 SWPSTAKE.LTR U**.

And that's not all. You can also rename your file with ZX3's **R** command or copy it to a new disk with a command like **ZX3 A:SWPSTAKE.LTR B: C**, which will copy SWPSTAKE.LTR from drive A to B.

Finally, you can also edit this file by hitting **^E** (CTRL-E) while viewing the file with ZX3's Type command. This "editor" is really more like a disk patcher for text files. You can work on the text file only 128 bytes (one sector) at a time, and you don't have any reformatting commands—you can either type over a character or leave it alone, nothing else. No one is going to confuse this mini-editor with a word processor, but it still could be handy for making minor changes.

Most ZX3 commands (like Erase

each new action means running ZX3 again. This fact makes ZX3 a natural to use in batch files with SUBMIT.COM. But it also means that programs like NSWP207 (New SWEEP) are still easier to use when you're going to be swapping disks or doing a lot of work on your files.

### **The MS-DOS corner**

Because an increasing number of readers are using MS-DOS Kaypros, either as their sole computers or in tandem with their CP/M Kaypros, *PROFILES* has agreed to give me some extra space for this column, which I'll use to cover what's available in the public domain for MS-DOS.

To inaugurate this section, it seems like a good idea to clear up what "public domain software" means in the MS-DOS world. People use this term loosely, usually meaning just "software that can be acquired from a bulletin board or users' group." But the situation is more complex than that, and this loose term ends up being applied to several very different kinds of software.

True public domain software is released free to the public (you and me) to use as we like, no strings attached. Though a program may carry an author's name, it carries no copyright, and people may do what they like with it, including modify and re-release it, use it in a business, or even sell it. Very little MS-DOS software falls in this category. (The CP/M public domain was founded on such software, but it's increasingly rare even there.)

A second kind of software carries an author's copyright and is released "free for non-commercial use" to the public. A lot of current MS-DOS (and CP/M) software is in this category, but its legal status isn't entirely clear to me (or many other people). You're obviously not supposed to sell this software, and if you're using it in a commercial enterprise, you're supposed to contact the author (to get approval or to arrange some kind of payment). But what counts as commercial



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## FLEA MARKET

use? Certainly a company distributing 100 copies of a spreadsheet to its financial department counts. But what about a solitary programmer (or writer) using a copy utility to back up his or her

software, though most MS-DOS boards seem less well-stocked than their CP/M counterparts.

If you have a modem, you should sign up for CompuServe (the kit is about \$25 at most computer stores)

### To inaugurate the MS-DOS Corner, let's clear up what "public domain" really means.

daily work? No one is really sure.

A third kind of software goes by the evasive name of "shareware" or, worse yet, "freeware." These programs are very common in MS-DOS (though rare in CP/M). They're usually distributed through public domain channels but carry a copy-right and a request for payment (anywhere from \$10 to \$75 or more). Some of these are put out by unabashed commercial enterprises and others by individuals simply hoping to recoup a few bucks from their hard work.


Many of these programs rely on your sense of honor to make you eventually pay up (call it "guiltware"). Others offer even greater incentives, including free updates, official support, and more complete documentation ("hostageware," as someone on CompuServe noted).

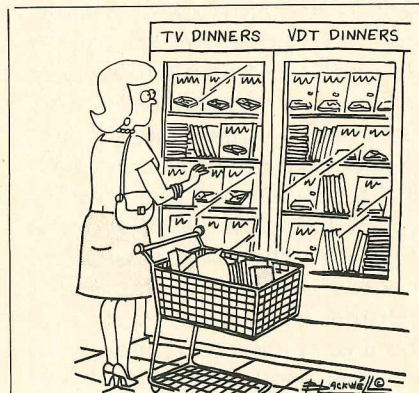
Finally, a fourth kind of MS-DOS software you'll find floating in these waters consists of demo versions of full-bore commercial products like ThinkTank, Paradox, and so forth. These packages are "teasers"; they're all crippled in one way or another so you can play with them but can't do anything useful (such as save your work or enter more than 20 records in your database).

Sources of MS-DOS shareware and public domain software are much like those for CP/M. Users' groups are the best way to acquire a lot of this software without spending a fortune, but they often don't have the latest programs. Bulletin boards (and the IBM forum on CompuServe especially) have the latest

so you can take advantage of the two IBM forums (novice and advanced) and the MS-DOS section of the Kaypro forum. You'll find a wealth of software and advice.

Those of you who have no users' group nearby and no modem to call bulletin boards are pretty much at the mercy of the users' groups and other organizations that will distribute this software by mail order. One group that looks good is the Public (Software) Library in Texas (contact Nelson Ford, P.O. Box 61565, Houston, TX 77208). I haven't done business with them, but they have a good newsletter and a large, well-organized library of software. If anyone has personal experience with this or other such groups, let me know so I can pass the information along.

I've been looking for a do-it-all MS-DOS file-handling program to handle the jobs that NSWP207 does on a CP/M computer. So far, I've found several likely candidates—VFILER28, ZIP, FFM, PC-SWP21, and CWEENP214. I'll cover these for you next time. 





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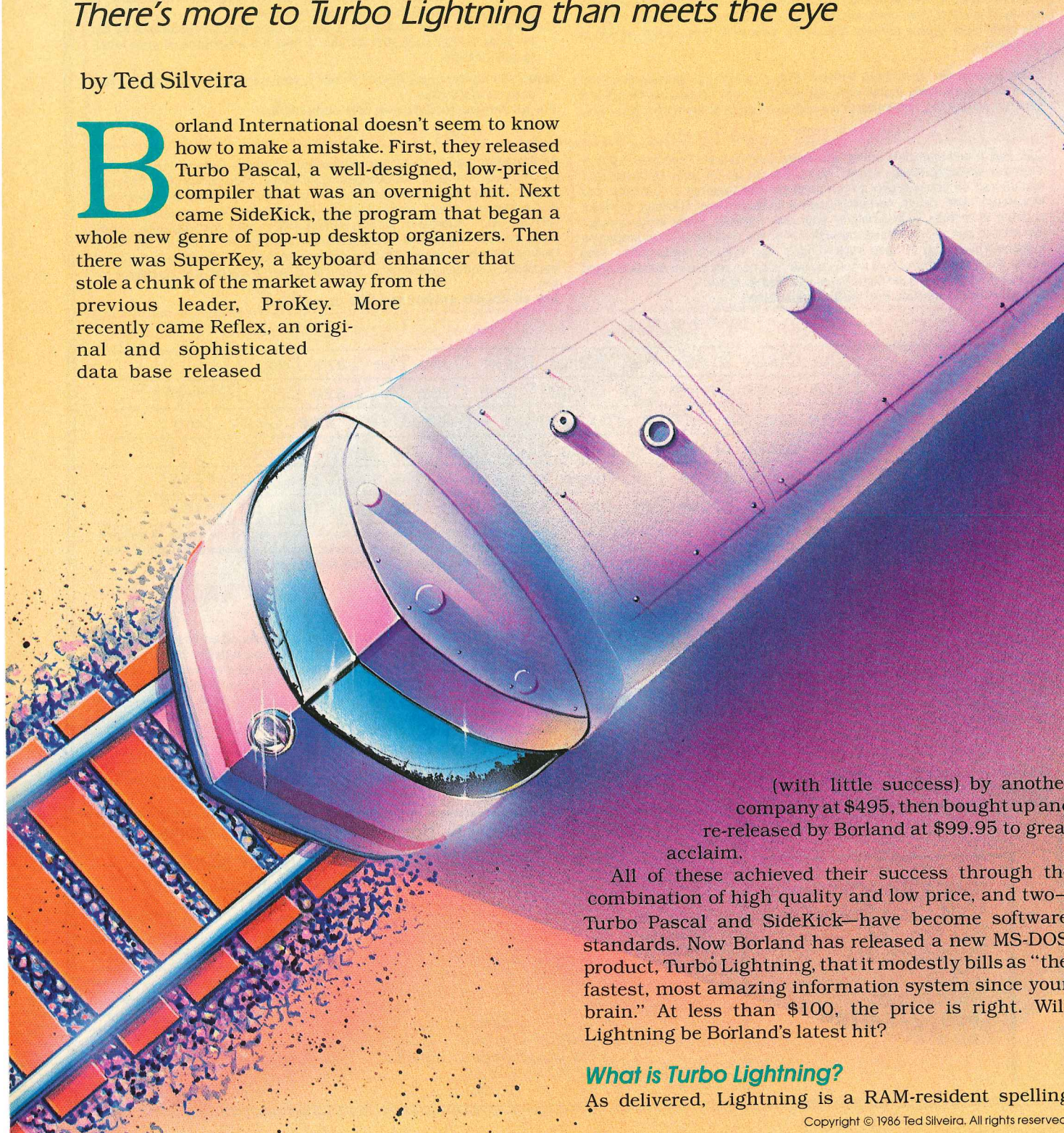


# THE ENGINE THAT CAN

*There's more to Turbo Lightning than meets the eye*

by Ted Silveira

**B**orland International doesn't seem to know how to make a mistake. First, they released Turbo Pascal, a well-designed, low-priced compiler that was an overnight hit. Next came SideKick, the program that began a whole new genre of pop-up desktop organizers. Then there was SuperKey, a keyboard enhancer that stole a chunk of the market away from the previous leader, ProKey. More recently came Reflex, an original and sophisticated data base released



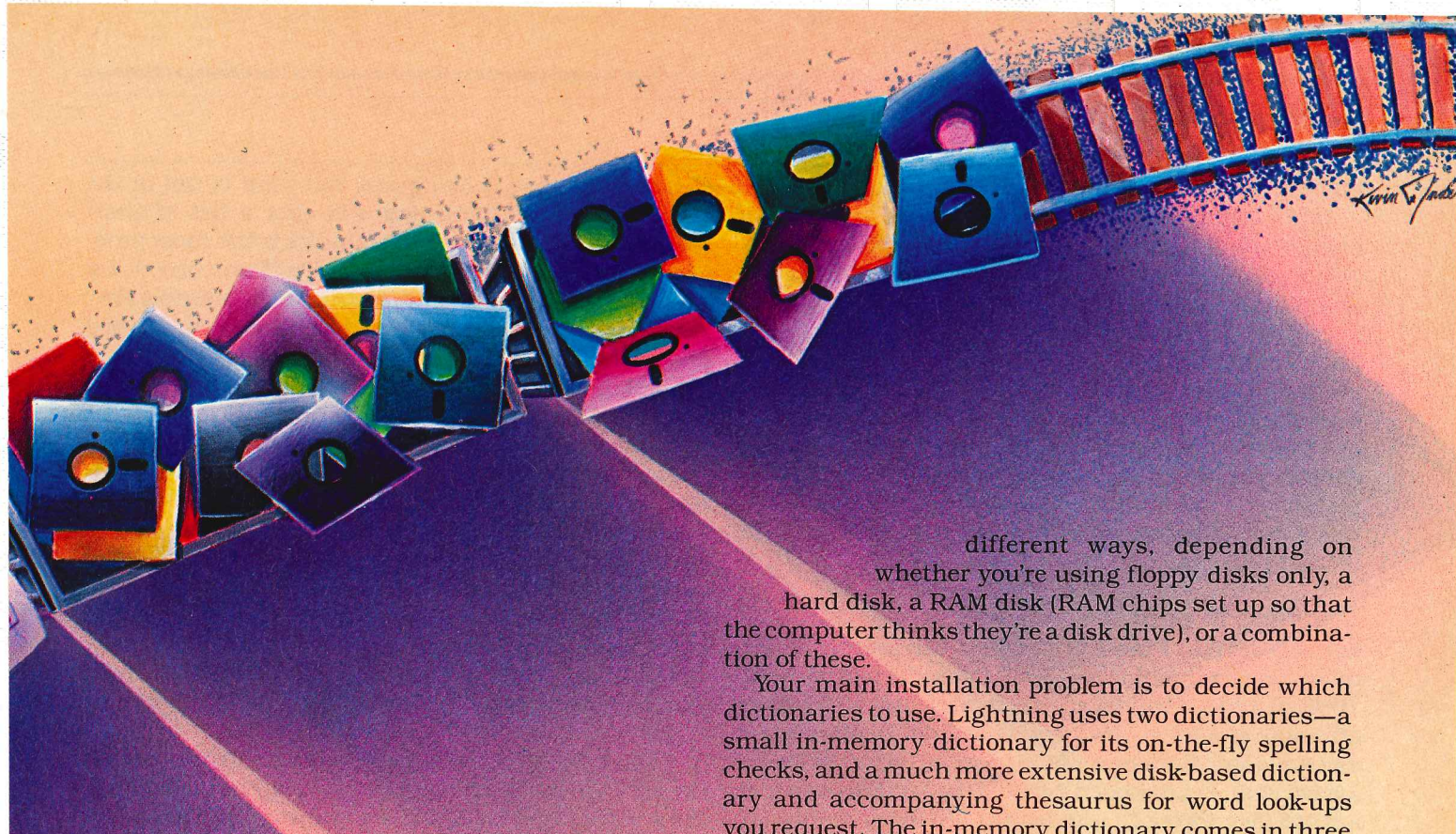
(with little success) by another company at \$495, then bought up and re-released by Borland at \$99.95 to great acclaim.

All of these achieved their success through the combination of high quality and low price, and two—Turbo Pascal and SideKick—have become software standards. Now Borland has released a new MS-DOS product, Turbo Lightning, that it modestly bills as “the fastest, most amazing information system since your brain.” At less than \$100, the price is right. Will Lightning be Borland's latest hit?

## **What is Turbo Lightning?**

As delivered, Lightning is a RAM-resident spelling





checker and thesaurus (or more properly, a synonym finder). Once it's loaded into memory, you can use it at any time with any other program—word processor, spreadsheet, data base. You don't have to exit your main program just to check your spelling or find a synonym.

What's so amazing about that? Lightning checks your spelling *as you type*; as soon as you complete a word on the screen, Lightning will beep if it doesn't recognize it. It pulls off this trick by reading every character you type and matching the developing word against an ever-smaller number of possible correct spellings. The result is a spelling check that seems instantaneous.

In the same way, you can consult the thesaurus at any time. Place your cursor on a word and hit two keys—Lightning will think a moment and then offer a list of synonyms.

Spelling checkers and thesauruses are useful in their way, but what's *really* interesting about Lightning is the software that drives it, the "engine" that makes it possible for Lightning to monitor your keystrokes and do the ultra-fast searches needed for efficient on-the-fly spelling checks. This "look-up" engine is the real cause for all the fuss about Lightning, because it's a generalized product that can and will be used for on-the-fly data retrieval far beyond simple spelling checks.

But that's for the future, so let's first take a look at the Lightning spelling checker and thesaurus as they are now.

### Dictionaries and installation

Lightning arrives on three disks with an accompanying 74-page manual. It can be installed in several

different ways, depending on whether you're using floppy disks only, a hard disk, a RAM disk (RAM chips set up so that the computer thinks they're a disk drive), or a combination of these.

Your main installation problem is to decide which dictionaries to use. Lightning uses two dictionaries—a small in-memory dictionary for its on-the-fly spelling checks, and a much more extensive disk-based dictionary and accompanying thesaurus for word look-ups you request. The in-memory dictionary comes in three sizes, 16K, 29K, and 38K. The larger the in-memory dictionary, the more words Lightning will recognize in its on-the-fly checking, and the less it will beep at you about words that are really spelled correctly. But, of course, the larger the dictionary, the less memory you have left for other things. With the 16K dictionary, Lightning uses 85K of RAM, which means that you can run Lightning, PolyWindows' KDESK (on MS-DOS Kaypros), and WordStar all together in 256K RAM without trouble.

The disk-based dictionary and thesaurus come in two matched sets. The smaller set (dictionary 106K, thesaurus 158K) allows you to get all the necessary Lightning files on a single 360K floppy. The larger set (dictionary 176K, thesaurus 159K) contains the most words but is too large to fit on a 360K floppy with the other Lightning files—you need a hard disk or a large enough RAM disk. You can't mix sets: you must use the large dictionary with the large thesaurus and the small with the small.

One hitch in installation that some people have encountered involves the required ANSI.SYS driver. Lightning won't run unless ANSI.SYS is installed—it just prints a message telling you to install ANSI.SYS. Unfortunately, the manual isn't clear about what you need to do (simply create a CONFIG.SYS file containing the line `DEVICE=ANSI.SYS` on the boot disk you use with Lightning). Borland has apparently been absolutely besieged with calls and has promised to include full instructions.

Once you've selected the dictionaries, copied the appropriate files onto your disk, and installed ANSI.SYS, you're ready to run Lightning. You can change other options with Lightning's installation program, including screen colors and the intensity of the beep,



but you needn't bother if you don't want to.

Once Lightning is running, you must tell it what program it will be working with—WordStar, Lotus 1-2-3, etc.—because Lightning needs information about the program (which it calls the “environment”) in order to do its job. You select the environment from a Lightning menu that lists the most popular MS-DOS programs. You may find in some cases that you'll have to adjust this environment to get the best performance, or even create a new one for a program Lightning doesn't already know about, but WordStar, which will probably be the main environment for most people, is listed on the menu and seems to work fine with the default settings.

### Lightning in action

For this review, I used a standard Kaypro PC with a monochrome monitor, two 360K floppy disk drives, and 768K of RAM (640K for main memory and 128K available only as a RAM disk), and WordStar. To allow me to use the larger dictionaries and to make up for the lack of a hard disk, I partitioned 342K of the 768K memory as a RAM disk (drive C) and loaded the main dictionary and thesaurus on it. I made no alterations to Lightning's default settings for the WordStar environment.

Once Lightning is loaded, you can give it commands either through its menu, which pops up on the screen when you hit shift-F8, or through its “hot keys,” function key combinations that bypass the menu. If you get stuck at any point, you can call on Lightning's context-sensitive help feature, accessed through the menu.

*Even though Lightning monitors your every keystroke, you shouldn't notice any slowdown.*

For the most part, Lightning remains invisible. Even though Lightning monitors your every keystroke (reading over your shoulder, so to speak), you shouldn't notice any slowdown in your main program's performance unless you're quite a fast typist, 70 words per minute or more. I average about 40 words per minute and felt no slowing at all.

### Spelling checker

Lightning remains silent until you type a word it doesn't recognize. When you do, Lightning beeps once to indicate it can't find the word in its in-memory dictionary. You can either ignore it and continue typing or stop and ask Lightning to check the word for you. You'll often find that if you ask for a look-up of the word, Lightning *will* find it in the disk-based dictionary because it has so many more words than the in-memory one.

If you ask for a look-up and the word is not in the larger dictionary, Lightning will offer a list of alternatives, starting with what it thinks is the most probable. Lightning's first guess is quite often correct, for two reasons. First, Lightning uses a “sound-alike” system for selecting words, ranking words that sound like your misspelling over words that are spelled like it. Second, Lightning recognizes common transposition errors people make, such as “hte” for “the”—most other programs are completely thrown by such errors.

Lightning's sound-alike system also means that if you don't know how to spell a word, you can spell it like it sounds and have Lightning look up the correct spelling. That's a convenience not offered by the typical spelling checker. But like other spelling checkers, Lightning does have trouble when you get the first letter completely wrong. When I accidentally typed “OLightning” for “Lightning,” the program's best guess turned out to be “obligating.” Nice try but no cigar.

If you find the correct spelling of a doubtful word on the list Lightning offers you, Lightning will substitute the word in your text. If the original word is correct, you can add it to an auxiliary dictionary.

If you don't want to use Lightning's on-the-fly spelling check, you can turn it off and use a full-screen check instead. The full-screen check simply reads every word on your screen and highlights (in bright video) those it doesn't recognize. You then must go back to each highlighted word and ask Lightning to check it, either through the menu or with a hot key. The full-screen check covers the *whole* screen, so it will check and mark any on-screen prompts that your word processor or other program may be using. Full-screen checking won't work if your program uses graphics mode (as Microsoft Word does) instead of text mode (as WordStar does).

### Thesaurus

The thesaurus works like the spelling checker, except that it waits for you to request a thesaurus check rather than doing on-the-fly checking. To request a list of synonyms, you place your cursor on the target word and cue Lightning, either with a hot key or through the menu. Lightning pauses for about five seconds and then presents a list of synonyms. As with the speller, you can substitute any word on the list for your target word with a simple keystroke.

If Lightning can't find your word in its thesaurus, it offers to look for close words, one of which may be a root of your target word. For example, Lightning couldn't find the verb “offers” in its thesaurus, but when I asked for close words, it listed “offer” among them. So I asked for synonyms of “offer,” and Lightning came up with a usable list. I chose “present,” had Lightning substitute it for “offers,” and then added “s” to make the correct form, “presents.”

*(continued on page 26)*



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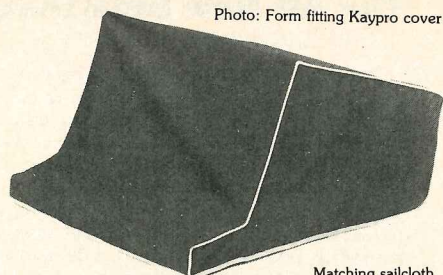


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continued on next page —







This kind of problem with finding words (especially inflected forms) is common to all the thesaurus programs I've seen. All use a relatively small number of key words that are indexed to a larger number of synonyms. Lightning is fairly typical—its thesaurus holds 5,000 key words that branch out to 50,000 synonyms. If your target word (or its root) isn't among

spreadsheet or data base programs that demand accurate entry of text or records might find it quite helpful, though it can't check numbers, of course. Also, people who are not good typists and are writing memos or other short pieces should find it useful.

Third, though it's possible to turn off on-the-fly checking, its alternative—the full-screen check—also has drawbacks. I don't think most people want to check their documents one screen at a time, unless they're using a program that makes it difficult to correct a previous screen. Certainly, writers, word processors, and other heavy users don't want to break their rhythm by stopping after each screen. And if you put off doing the spelling check until you've completed the document, it's more convenient to check the whole document in one pass. Which brings up the next problem.

Fourth, despite its large dictionaries and fast look-up, Lightning has no way to check an entire document at one time. I find this a bother (and then some) since it means I have to have yet another spelling program for full-document checks. Even hard disk users might grumble at the thought of having *two* big dictionaries on their disks. There is a public domain program, LSPELL, that works with Lightning to do a full-document check, but the only version I've seen is buggy and not as sophisticated as the better stand-alone spelling checkers.

Fifth, the thesaurus shares the weaknesses of other such products I've tried. It doesn't have enough words or cross-references between words to be really useful. The words I ask for never seem to be on its list—and I'm not talking about words like *versipellous*, either. (*Ed. note: Yes, we were curious, too. Versipellous: having the faculty of changing the skin. A versipel is a creature capable of changing its form, like a werewolf.*) What's more, with this or any other electronic thesaurus, you can't do the kind of associational browsing that can be so productive with the print version of *Roget's* thesaurus.

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### *Despite my good feelings about Lightning, I have some reservations about its current incarnation.*

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the 5,000 key words, you're out of luck, even though the word may be included among the synonyms of some other word.

#### **A user's evaluation**

Considering all the work that Lightning's doing behind the scenes, it's a remarkable program in many ways. It's easy to use and, if you turn off on-the-fly checking, quite transparent. Its on-the-fly spelling check is quite fast—the beep for a misspelled word seems to come the instant after you finish it. And its look-up of correct spellings or synonyms is also fairly fast, taking five to seven seconds using a RAM disk (a noticeable pause, but not irritating).

Despite my overall good feelings about Lightning, I have some reservations about its current incarnation as a spelling checker and thesaurus. First, I can't recommend Lightning for users who have just two 360K floppy disk drives and 256K of memory—like most snazzy MS-DOS programs, it really requires either a hard disk or a RAM disk. Even if you use the special smaller dictionary and thesaurus meant for floppy disks, you can't fit both of them on the same 360K floppy with the three necessary WordStar files (WS.COM, WSOVLY1.OVR, and WSMSG.S.OVR), so you have to go through some real contortions to use Lightning at all. Of course, if your Kaypro is carrying the full load of RAM, you can partition part of it as a RAM disk (see the earlier description of my own setup), copy the Lightning files to the RAM disk, and run it without trouble.

Second, as a writer, I find the on-the-fly spelling check a nuisance. Its beeping drives me crazy, making my spelling worse than usual because I get jumpy waiting for each beep. What's worse, it coerces me into paying attention to the mechanics of spelling when I'm trying to get ideas out of my head and onto the screen—a great way to produce writer's block. Spelling checks, grammar checks, and other checks of technical correctness should be the *last* things you do.

However, for some applications such on-the-fly spelling checks could be ideal. Specifically, users of

---

### *The real future of Lightning lies with other uses of its powerful look-up engine.*

---

I want to emphasize that these weaknesses aren't unique to Lightning but are shared by all other current electronic thesauruses. I don't think they'll be eliminated until we get the complete *Roget's* thesaurus on a disk, even if it has to be a laser disk. (Borland announced they'll be releasing "Roget's thesaurus" for Lightning. I don't know what to expect, but it's certainly tantalizing.)

None of this is to say that Lightning isn't a good product. It's generally well-behaved and fun to use. The



spelling checker doesn't quite measure up to the best stand-alone spelling checkers as a primary way to check text files, but it has a definite edge in applications such as spreadsheets and data base entry. The thesaurus doesn't really distinguish itself from other such products, but it works well within the limits I have mentioned.

### Bright future

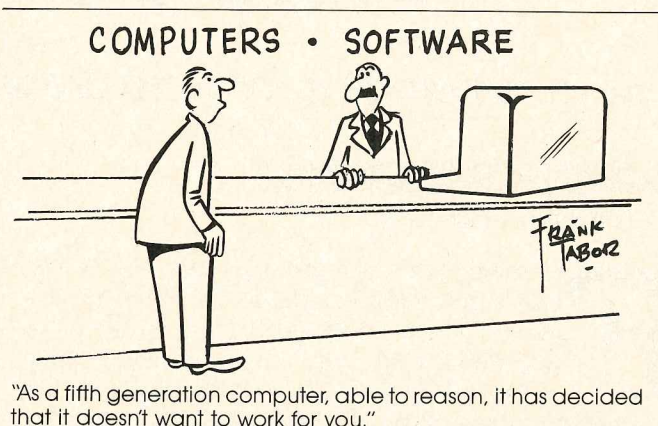
The real future of Lightning clearly lies not with the spelling checker and thesaurus currently included, but with other uses of its powerful look-up engine. I don't doubt there'll be medical dictionaries, legal dictionaries and case references, encyclopedias, the *complete Roget's* thesaurus, and others I can't imagine at the moment, especially when really massive storage becomes available (laser disks, CD-ROMs, or some other medium).

So don't judge Lightning just by the current spelling checker and thesaurus. Judge it by the glimmer of what you'll be able to do with it in the future. Consider the spelling checker and thesaurus to be giveaways, thrown in to amuse you until the real stuff comes along.

I do think that Lightning is going to be a major

product, one that will turn out to be as versatile and useful as a keyboard enhancer like ProKey or Super-Key. The engine's here—it's just waiting for a train to pull.

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**Sugg. Retail:** \$99.50



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# Mastering Your Master Menu

*How to customize it for word processing and more*

by William Murdick

**F**or some time, Kaypro 16s, 10s, the Robie, and some versions of the 2X came with a Master Menu (MASMENU) system—the 16 (hard disk) still does. When the owner of one of these Kaypros turns on the machine (or puts a disk in drive A in the case of the 2X), instead of displaying the A0> prompt, the computer lists things it can do: word processing, spreadsheets, utilities, and so on.

If you move a highlighted bar to one of the categories and hit RETURN, you're given a sub-menu of all the programs that fall into that category. Then you select a program to run.

But what if you get new programs you want to add to the lists in sub-menus, or what if you want to create a customized Master Menu for workers in your office? This article is a tutorial on how to modify your Master Menu so that it will match the contents of your program disks. As an example, we will modify the word processing portion of the MASMENU on a Kaypro 10 to list different word processing-related programs. The same principles apply to altering MASMENU on an MS-DOS computer, except some of the filenames are different. When there is a difference in a procedure under DOS, I'll insert a comment to let you know. If you study the structure of the Model Menu, you should be able to apply the principles explained here in other ways.

Master Menu includes the programs MASMENU.COM, MASMENU.TXT, MASMENU.DAT, and MASPREP.COM. The first thing you should do is copy MASMENU.TXT and MASMENU.DAT onto a backup floppy disk before experimenting. Even if you're working with a floppy drive system, *make the backup*. If anything goes wrong you can restore the original menu system and start again. If you don't already own the set of Master Menu programs, ask your dealer for them. MASMENU will work on a Kaypro 2 with single-sided disk drives, so having massive disk storage isn't a requirement.

## **The basic process**

In the primary work area of your disk—A0 for CP/M or the ROOT directory for DOS—you will find the various files used to create the Master Menu. The MASMENU.TXT file is the one you'll rewrite, using WordStar and the format I will show you. You will then run the MASPREP.COM program, which converts the content of your MASMENU.TXT file into a MASMENU.DAT file. MASPREP also locates any "fatal" typing errors on your part, displaying appropriate error messages.

The data in the MASMENU.DAT file is used by the MASMENU.COM file (MASMENU.EXE for DOS users), which is the main program that runs every time you first put a disk in drive A or reset your machine. When you're finished creating your new Master Menu, you can remove MASPREP.COM and MASMENU.TXT, leaving only MASMENU.COM and MASMENU.DAT (and one other small but important program explained later, PAUSE.COM).

Master Menu is divided into three vertical panels and one thin horizontal panel at the bottom. The left vertical panel lists categories of programs available to run on your computer. These include spreadsheets, word processing and telecommunications programs, utility operations (disk directories, copying disks, making backups, etc.), and software tutorials. The middle panel is for sub-menus, and the right-hand panel contains a description of the function or operation selected in the left or middle panel. The bottom horizontal panel is where you are prompted to enter document names, disk drive designations, and wildcard options with utilities like D.COM and STAT.COM.

## **Menu layout**

I've provided a "Model Menu" to illustrate the possibilities. The Model Menu replaces the portion of your original Master Menu that deals with word processing. The new section will produce a category label, "word processing," in the left panel and, when you select this



item, a listing of the following programs in the center panel:

XtraKey  
 WordStar  
 The Word+  
 Word Count  
 Number  
 Crypt  
 SaveKey  
 Xscreen  
 Type-it

I have numbered the lines in the Model Menu for easy reference. (*Ed. note: The Model Menu listing can be found below. Enter it exactly as shown, except for the line numbers.*) In the following section, I will draw your attention to certain lines (by their number) in order to make some explanatory comments. Though the Model Menu begins with "word processing" in the left panel, your real MASMENU.TXT must retain the introductory text and any programs that precede or follow the word processing section.

```

47      document printed or edited will appear as
48      jibberish."
49      **
50      crypt
51      **
52      "SaveKey," 0
53      "Makes permanent any key definitions
54      established for XtraKey."
55      **
56      Savekey wsfile
57      **
58      "Xscreen," 0
59      "Screen dump to printer or disk."
60      **
61      xscreen
62      **
63      "Type It," 0
64      "Typewriter program for filling in forms
65      and addressing envelopes."
66      **
67      typeit
68      **
69      }
70      --
71      -- Spreadsheets
72      --
73      "Spreadsheet"
74      "This option takes you to a sub-menu with
75      MicroPro's spreadsheet program CalcStar."
76      {
  
```

#### LISTING 1: MODEL MENU

```

1      --
2      -- Word processing menu
3      --
4      "Word Processing"
5      "This option leads to a sub-menu that contains
6      programs to meet your word processing needs."
7      {
8          "XtraKey," 0
9          "Keyboard macro program. WordStar key
10         definitions are automatically loaded."
11         **
12         Xtrakey wsfile
13         **
14         WordStar," 0
15         "Word processing."
16         **
17         b:
18         a:ws $"Document name:"
19         **
20         "The Word+," 0
21         "Checks your document for spelling and typo
22         errors. IMPORTANT: when entering the
23         document name, type B: in front of it if
24         the document is on Drive B."
25         **
26         tw $"Document name:"
27         pause
28         **
29         "Word Count," 0
30         "Counts words in a document. Type B: in
31         front if the document name if the document
32         is on Drive B."
33         **
34         wc $"Document name:"
35         pause
36         **
37         "Number," 0
38         "Numbers lines in a document. Type B: in
39         front of the document if the document is
40         on Drive B."
41         **
42         number
43         **
44         "Crypt," 0
45         "Encrypts your document so that a password
46         is needed to decrypt it. An encrypted
  
```

#### Model Menu listing explained

1—Two dashes serve to mark comments in the text file and are a method of leaving notes to yourself for future reference when editing MASMENU.TXT.

4—The "Word Processing" entry is in the left panel. Don't forget the quotes. This is where our Model Menu begins; your MASMENU.TXT will have a good deal of text before and after this point.

5-6—This is explanatory text that will appear in the far right panel.

7—Curly braces are used to delimit the starting and ending points of sub-menus. We indent sub-menu entries by one tab to visually separate them from entries that appear in the left panel. This is strictly for our convenience; the program doesn't care whether you indent or not.

8—This is the top entry in the word processing sub-menu (which appears in middle panel). The comma and zero mean this program is located in user area 0. You would enter the appropriate user area for your own application. DOS users cannot employ this method. In DOS you have to enter the necessary directory-changing commands as part of the command sequence triggered by selecting this entry. See the explanation of line 11 for more information.

9-10—Explanatory text that appears in right-hand panel.

11—Double asterisks partition text that appears on the menu from commands that are executed when that entry is selected. Commands executed by the Master Menu system are the same commands that you would otherwise type on the keyboard. This is where DOS users have to put the necessary commands to change directories if that's required. Error messages produced by MASPREP.COM can usually be traced to missing



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## MASTER MENU

asterisks or missing quotes.

17-18—This starts WordStar with drive B as the logged drive. If you prefer drive A to be the initial logged drive, then eliminate line 17. The dollar sign followed by quoted text sets up the prompt for an entry in the bottom horizontal panel.

27—Shows the first use of PAUSE.COM. When you run certain programs, like D.COM and STAT.COM, which display information, the PAUSE.COM program freezes that information on the screen, allowing you to control the return to the Master Menu (by striking any key on the keyboard). Without the "pause" here in line 27, the information displayed at the end of The Word+ would flash on the screen too quickly to read and then disappear as the Master Menu returned.

68-69—If you left out either the asterisks or the curly braces, subsequent programs would attempt to be part of the sub-menu. Needless to say, this wouldn't quite work the way you envisioned.

73—This line is where the next section of the left-hand panel of your Master Menu starts. Yours may not be exactly the same as this example.

## Editing MASMENU.TXT

To edit MASMENU.TXT you need to have a copy of it either on floppy disk or where you can get at it with WordStar (if WordStar isn't in user area 0). In any case, you should make backup copies of MASMENU.TXT and MASMENU.DAT. First, start WordStar and at the Opening Menu type N to "Open a Non-document File." Then type MASMENU.TXT and press RETURN.

The text you now see on your monitor should begin with the words "First, we have to define the ever-present cursor prompt." And below that, in quotes, will be the text that appears in the bottom horizontal panel of your Master Menu: "Use the up-arrow . . ." Using your own down-arrow key, move the cursor down to the first "Main menu title," which will be "Master Menu." Start by changing it so that your name appears in the title, e.g., "Susan's Master Menu." As you do your editing, you can use all the familiar WordStar commands, but you must hit RETURN at the ends of lines—there's no word wrap in the Non-document mode. The length of the lines you write is unimportant; I end them before they run off the right side of the screen.

Next, move down to where "Word Processing" appears in quotes. That's the first item to appear in the left panel of the original Master Menu. Delete the section between "Word Processing" and the beginning of the next item in the left-hand panel. Next type in everything that is in our Model Menu listing. Don't enter any line numbers—the first quote mark in "Word Processing" goes in column one. An easier method might be to prepare the new material ahead of time under some other filename, delete the old section of MASMENU.TXT, and then insert the new material with WordStar's ^KR command.



## The last step

Having edited MASMENU.TXT, save it and exit to the A0> prompt (^KX). At the A0> prompt, type **MASPREP** and press RETURN. When MASPREP.COM is finished it will return you to the A0> prompt. If the Master Menu system was already running on your computer, press your reset button to load and run your new Master Menu. Otherwise run the YESMENU program (CP/M) and then press RESET. On DOS machines you will need to insert the command MENUSET as the last line of your AUTOEXEC.BAT file if it isn't already there. MENUSET is a DOS batch file that sets up some linkages necessary to run the Master Menu system under DOS.

Once MASMENU is running, check out each entry in the Menu. Read all the text to make sure there are no typing errors. If there are no problems, put backup copies of MASPREP.COM and MASMENU.TXT onto a document disk (in case you want to change your Master Menu again later). Then you can erase them from the program disk.

Finally, copy onto the program disk the various programs listed in your new Master Menu. This article has assumed that all the programs will be in user area 0 for CP/M or in the ROOT directory of a DOS machine. Of

course, you may want to arrange them differently on your own system.

The only real difference in using Master Menu on a floppy-based system like the 2X is that the number of categories, or programs, the menu can reference is limited. Since MASMENU.DAT, MASMENU.COM and the programs they list must all be on the diskette, that makes for a short menu. After all, there's only 390K to work with. Of course, the way around this is to create multiple MASMENU disks—one for word processing, one for spreadsheets, one for programming, etc.

## Final words

The Master Menu approach is great for updating a personal system, but it has even wider applications. In an office, for example, it could be used to let data entry clerks perform specific tasks within a data base management program ("data entry" could be listed in the left panel; specific tasks could be listed in the sub-menu). So what are you waiting for? Master that menu!

*William Murdick is an English professor at the California University of Pennsylvania. He runs a Kaypro word processing lab on campus, and he wrote a book on Perfect Writer published by PeopleTalk.*

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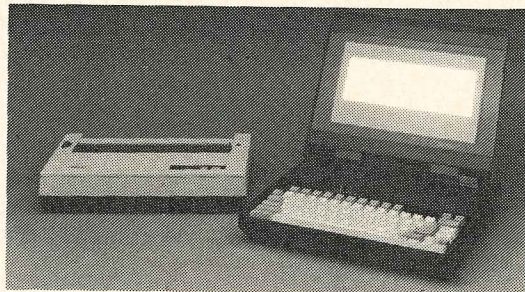
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# Run Silent, Run Fast

*Adding a RAM disk for speed and serenity*

by Durwin Schmitt

**D**o you cringe every time your disk drives whirl and grind while loading long application programs or data files? Does your patience wear thin waiting for that 32K text file to load or go through Perfect Writer's interminable "swapping" phases? Have you wondered what the wizards at your local Kaypro Users' Group mean when they rhapsodize about their RAM disks? If you have experienced any of the above—this article's for you.

The first portion of the article is based on my experience gained from using the SWP CO-POWER-Plus board as a RAM disk. I added this board to my Kaypro 2X a year ago and have been so impressed and pleased that I just have to spread the word. I'll explain how to use a RAM disk and give some timing comparisons for typical user applications.

I'll also compare the SWP product with two other RAM disks readily available for Kaypros. While the specific products evaluated are for CP/M machines, many of the RAM disk benefits described also apply to MS-DOS Kaypros.

This article is not intended for the hardware buff; I won't tell you how to build a RAM disk or how they work, since I haven't the foggiest notion of what really makes them tick. However, I *will* tell you how they can add zip and pizzazz to your trusty Kaypro by speeding up your favorite program and providing a more tranquil environment while doing so.

## **What is a RAM disk?**

A RAM disk provides an electronic simulation of the mechanical disk drives that came with your Kaypro. Information is stored in RAM memory banks rather than on magnetic disks. All disk writing or reading is done electronically, inside the chips, without the need for any moving parts. Use of a RAM disk greatly speeds up disk-bound applications, such as sorting large data bases, recalculating spreadsheets, or moving around in large word processing files. In addition—and to me this is one of the greatest benefits—the RAM disk is

absolutely noiseless, which certainly adds to *my* serenity.

Most RAM disks available for Kaypros start with 256K and are expandable to one or two megabytes, depending on the unit. Prices vary accordingly (see *Quick Reference Summary on page 54*). A RAM disk is set up to act as an additional drive. The RAM drive can have any possible CP/M drive name—i.e., drive A through drive P, including the names of the "real" drives on your computer. If you give the RAM disk the same name a "real" drive has (such as drive A), the "real" drives will be renamed alphabetically. That is, "real" drive A becomes drive B, "real" drive B becomes drive C, and so on. Drive assignments are taken care of automatically by the software provided by RAM disk manufacturers.

## **How to use a RAM disk**

RAM disks are extremely easy to use. The SWP hardware came with a 10K RAM disk software package that I loaded onto all of my application disks. After turning the computer on, if I want to use the RAM disk, I place the application disk with the RAM disk program in drive A. At the A > prompt, I simply type **RAMDISK X**, where X is the drive I wish to designate as the RAM drive. Since I frequently use Perfect Writer, which expects the PW programs to be on drive A, I usually designate drive A to be the RAM disk. It takes less than five seconds to load the RAM disk software, which responds with the familiar A > prompt when finished. Then I switch back to what was the A disk drive (which is now called drive B) and load the application programs I want to run. This is easily accomplished with the following SUBMIT file:

```
PIP A:=B:PW.SWP
PIP A:=B:PW.COM
PIP A:=B:PF.COM
PIP A:=B:PF.DAT
PIP A:=B:MENU.COM
PIP A:=B:PF.COM
```

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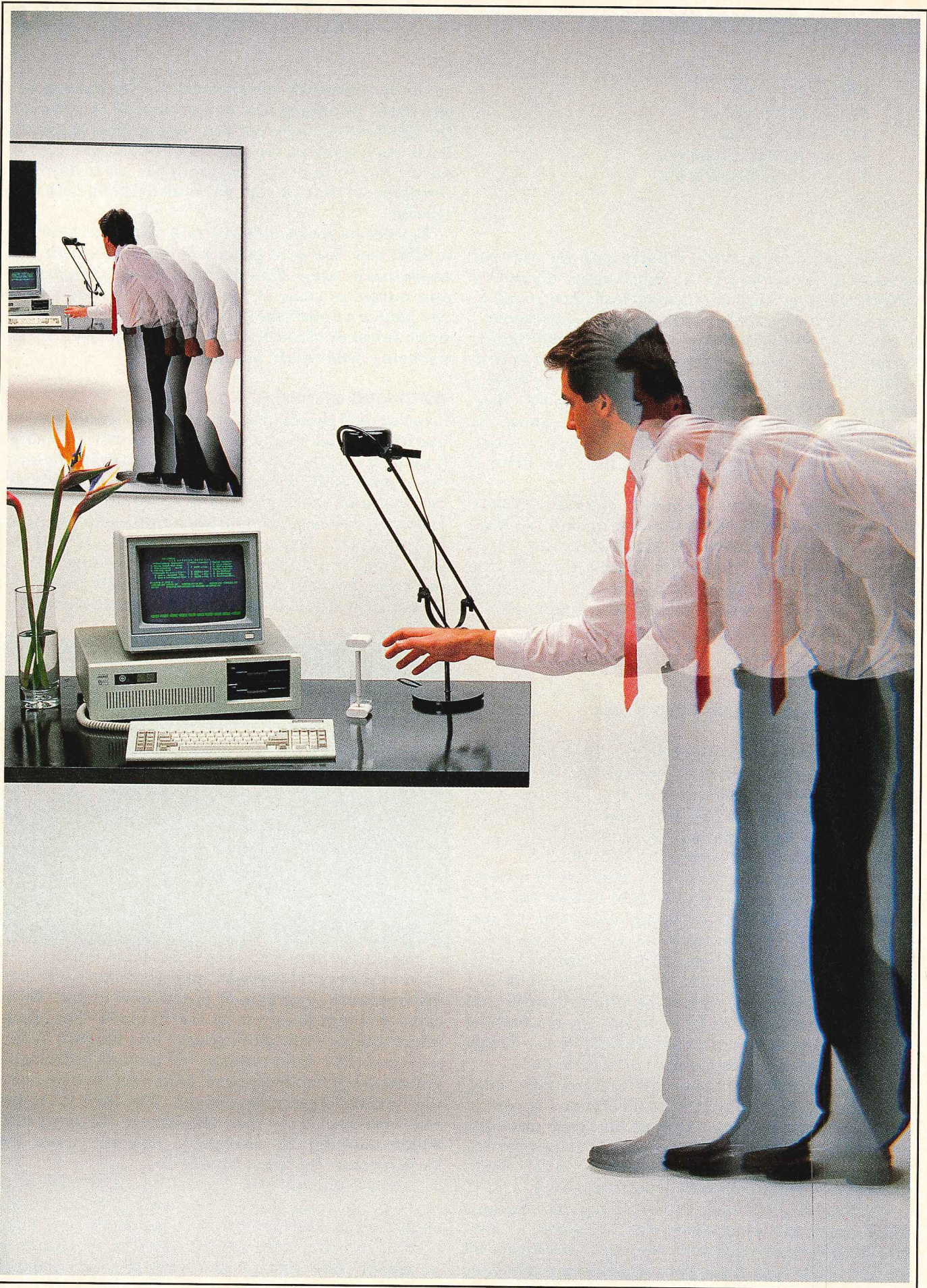


PHOTO BY R.S. POWERS



```

PIP A:=B:PF.DAT
PIP A:=B:PP.COM
PIP A:=B:PS.COM
PIP A:=B:AFFIXTAB.SPL
PIP A:=B:DICTIONARY.SPL
A:
PW C:$1

```

If you're unfamiliar with SUBMIT (as I was until the excellent article about it in the July/August '85 issue of *PROFILES*), I recommend that you learn how to use it, because it's a very useful tool. The above file (which I named RAMPW.SUB) loads the Perfect Writer editor, formatter and printer programs, as well as Perfect Speller. If I am only going to edit a few files, I have a shorter version that loads only the first two PW files.

The second line from the bottom of the above file returns me to the A (RAM disk) drive. The final command allows me to load any text file from drive C (formerly B).

Once you arrive at the B > prompt (with the SUBMIT file stored on disk B), the command to load the RAM disk is **SUBMIT RAMPW FILEID.MSS**, where FILEID.MSS is the name of the text file on drive C that is to be edited. Despite the seeming complexity, the actual process takes less than a minute and requires only three commands:

- 1) **RAMDISK A**
- 2) **B:**
- 3) **SUBMIT RAMPW FILEID.MSS**

Once you've reached this point, the RAM disk is used like any other disk drive. Optimum performance is achieved if both the program and its data file are on the RAM disk. You can SWEEP or PIP files from the other drives to the RAM disk and back. All normal CP/M commands apply while using the RAM disk.

The only thing you *must* remember is that before you turn off the computer, you need to save any data stored on the RAM disk to a floppy disk in one of your mechanical drives. This has been called a drawback to RAM disks, but it's no different than the regular operating mode with a mechanical drive. Changes made to a data file in most application programs usually are stored in the computer's RAM. Before you shut off the computer, you must store your revised file to a floppy disk—the same process required for a RAM disk.

Since I use my Kaypro at work for word processing, spreadsheets, and data base applications, I generally load these programs into the RAM disk each morning, along with any data files I'm working on at the time. My SWP board is currently configured for 512K RAM, which can accommodate all of these programs.

The Kaypro 2X is then left on all day and operates almost as though it had a hard disk, since the mechanical disk drives are used only when data files are saved or a new one is read. If you don't need to transport your

computer, hard disk operation can be even more closely simulated by adding a switch to turn off the power to the CRT and mechanical disk drives. This leaves the RAM disk powered up and eliminates the need to reload the RAM at the beginning of each day. Just remember to back up your data files at the end of a work session.

Besides its speed and quietness, an added benefit of a RAM disk is that it generates much less heat than mechanical drives. This should prolong component life and minimize some of the intermittent failures that can plague an overheated machine. Also, the life of the mechanical drives is being extended because they are not being used nearly as much.

### **What kind of time savings can be expected?**

If you've read this far, you are probably wondering just how much faster your favorite program will run using a RAM disk. To give you an idea of typical time savings, I timed some of the operations involved in using some of the programs that come bundled with Kaypros. Table 1, below, provides a comparison of times for programs operating with conventional disk drives and with the SWP board running as a RAM disk in a Kaypro 2X. (If you have an older Kaypro with the 2.5 MHz clock, the absolute times will be slower, but the ratios should be similar).

**TABLE 1: Time Comparison**

Application	Conventional Disk Drive	SWP RAM Disk
Load 30K PW File	39.6 sec	14.7 sec
Format 30K PW File	1 min 37 sec	1 min 8 sec
Write 30K PW File	35.3 sec	13.2 sec
Run PS for 30K File	1 min 17 sec	1 min 2 sec
Load 12K PC File	2 min 8 sec	1 min 7 sec
Recalc 12K PC File	1 min 16 sec	33 sec
Sort 18K dBASE II File	33.2 sec	9.6 sec
Save 64K Memory to Disk	39.5 sec	2.6 sec

The differences are larger for some applications than for others. The largest improvements occur with disk-intensive programs or operations. Perfect Writer users who are annoyed by the frequent "swapping" interruptions while editing large text files are in for a real treat. This delay is almost eliminated. Although it still occurs, it happens so fast (and with no drive noise) that it is no longer objectionable. The SWP RAM disk also operates faster than the Kaypro 10 hard disk, which required 26 seconds to load the same 30K Perfect Writer file used in Table 1.

The last line in Table 1 shows the RAM disk at its best—performing a disk-intensive operation. In this application, speed increases by a factor of 20. Manufacturers' literature frequently cites these kinds of increases. However, comparisons of more common



applications, which run "only" two or three time faster, can be misleading. While a factor of two or three may not seem as impressive on paper as a factor of 20, it is impressive when you actually experience it.

### What's available?

The SWP CO-POWER-Plus, which is installed internally, is advertised as an 8088 co-processor board that allows CP/M Kaypros to run some MS-DOS application programs. MS-DOS usage, however, requires a caveat, since only programs that don't use the unique features of IBM's ROM or video can be run. I bought the SWP board primarily for use as a RAM disk, rationalizing that the MS-DOS capability would be an added bonus. (Ed. note: Features recently added to the CO-POWER-Plus package include a print spooler, the ability to assign the RAM disk two drive names for use with programs that require two disk drives to run, and the ability to address two megabytes of memory.)

Several other manufacturers market RAM disks for CP/M Kaypros. MicroSphere offers an external package that also contains a print spooler. There are models that provide 4K, 32K or 64K of memory allocated to the print spooler, with from 256K to one megabyte of RAM available in the RAM disk. Advent Computer Products

offers an internal RAM disk with a maximum memory capability of up to two megabytes.

(Editor's note: WestWind Computer recently introduced a line of RAM disks called "DriveC 2." The basic unit is 512K and is expandable to one megabyte. Up to three of these units can be chained together for a total of three megabytes of RAM disk. You need WestWind's WW Interface—\$100—to use its RAM disk. Then the basic 512K unit is \$349, or \$499 for the one-megabyte RAM disk. Additional one-megabyte units are \$499 each, and the upgrade from 512K to one megabyte is \$150. These products are not included in the Tables because the article was prepared before WestWind introduced them.)

### How they compare

Each of the different RAM disks offers some unique features. Table 2 (on next page) compares various aspects of the three products. Software provided with each RAM disk contains diagnostic programs to check the memory chips and allow a faulty chip to be isolated for easy replacement. The MicroSphere product is the only one with an optional external power supply that provides power to the RAM disk, preserving its contents, when the computer is turned off.

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\*Okidata 92, 93, 192, 193, Star Micronics SD, SG, SR, Gemini 10X, 15X, Epson FX Series (R), IBM Proprinter, Panasonic 1092 (R)

\*\*Above Printers Plus: HP ThinkJet, Panasonic 1091, Epson MX with Graphtrax.

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## RAM DISKS

It should be noted that Advent offers (at an additional cost) a Turbo ROM that has, among other features, the RAM disk program in the ROM, eliminating the need to store the program on a floppy disk.

**TABLE 2: Comparison of RAM Disk Features**

Item	SWP Co-Power Plus	Micro Sphere	Advent
Size of RAM Disk Software Program (1)	10K	2K	4K
Drive Designation Options	A - P	A or E	A - P
Time to Load RAM Disk, sec	4.0	12.0	2.2
Works with Kaypro 10	Yes	No	Yes
Separate Power Supply Available	No	Yes	No
Time to Load 30K File into PW, sec (2)	14.7	14.2	13.2
Time to Run SPELL (Word Plus) through 30K Text File, sec (3)	31.0	30.0	27.8

(1) As determined from disk directory

(2) 39.6 sec for conventional disk

(3) 60.5 sec for conventional disk

The MicroSphere print spooler/RAM disk combination is housed in an external box (1.5 x 6 x 10 inches). A parallel cable runs from the computer's Centronics connector to a similar connector on the external box. Another Centronics connector is then used to run a cable from the external box to your printer. (You need a parallel interface on your printer to use this product.) An important aspect of this setup is that once it is installed, the printer cannot be operated without running the cable through the RAM disk box.

The last two lines in Table 2 compare the times required by each RAM disk to complete the operations listed. There are not large differences among these products, although the Advent RAM disk was slightly faster. All RAM disks are significantly faster than conventional drives.

One final comment for those of you who use key definition programs or other memory-resident programs such as the Plu\*Perfect series: The documentation for each RAM disk indicated that it would work with some of these programs, but did not provide an all-inclusive list. If you are particularly attached to a specific program of this type, contact the RAM disk manufacturer to ensure the products are compatible.

(continued on page 52)



**TurboROM:** Provides substantial improvements to your CP/M Kaypro computer. Adds many new features including ability to read and write up to 10 other disk formats directly. You can't get more performance with any other product.

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- No software driver required if computer is equipped with TurboROM
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Speed Comparison at 4 MHz - Times measured in seconds.

Function	Floppy	MicroSphere	SWP	Advent
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Write 64K file	55.65	3.25	2.93	1.52

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# Sophisticating CP/M

Unix-like refinements can transform your Kaypro

by Roland Wobbe

**W**ould you like your CP/M Kaypro to have a more usable command language, or even a programming language built into the operating system? Wouldn't it be great to be able to have a SUBMIT file stop in the middle of a job to prompt for input of a file name from the keyboard? If you've seen or used MS-DOS, you may have lusted after its ability to treat files as devices, or its batch processor with "IF" and "GOTO" commands.

With a limited effort on your part, your CP/M Kaypro can become more civilized and gain many of these refinements, features strongly inspired by UNIX.

What is UNIX and why is it so inspiring? A little checking will tell you what the fuss is about. Many people know UNIX. The system is not new. UNIX has been used in Bell Labs (which originated it) and universities for more than a decade. Originally it was written by programmers for programmers as a multi-user system for minicomputers. Users with MS-DOS Kaypros may recognize some of the features that have contributed to UNIX's renown:

- UNIX is a multi-user, multi-tasking system.
- UNIX supports pipelines (passing the output of one program to the input of the next) and input/output (I/O) redirection, the ability for the system to treat files as devices and devices as files. An example might be to send program output (ordinarily going to the screen) to a file or the printer.
- UNIX's command languages (known as "shells") are highly developed and can be used as simple programming languages, particularly in batch files usually called "scripts" or shell files. This aspect alone makes the system extremely flexible.
- Unlike CP/M, with its user areas, UNIX has a true branching directory system; recent versions ensure file security by various means (encryption, passwords, etc.).
- Written in C, UNIX is considered processor-indepen-



dent. Theoretically UNIX may be easily transported between unrelated computers by rewriting the C compiler and then re-compiling the UNIX source code.

• UNIX has an enormous bag of tricks (over 400 utilities at last count) that travel with it. Along with its command languages, pipelines, formatters and program development tools, these utilities allow the user to custom develop new applications, dependent only on the user's ability to recognize and manipulate UNIX's facilities.

## Is UNIX for you?

You will want seriously to consider adding UNIX features to your CP/M if *just one* of the items below describes your situation:

- Much of your time is spent in program development;
- You would like to do extensive batch (automated) processing;
- You need to make office Kaypros friendlier;
- You want your operating system to do more than give you cryptic "BDOS ERROR" messages—you want to make it a full partner;
- You frequently need custom programs for simple applications where commercial packages and high level languages seem like overkill or just plain overly complicated;
- You want to civilize CP/M on your hard disk or add-on drives (with file search paths, etc.).



## Hard to learn?

UNIX is notorious for being hard to learn, but that is due more to its rich variety of features and its size than to any inherent difficulty. Once the idea of using the "shells" to link software tools or to automate processes becomes obvious, UNIX becomes much easier. The user need only learn the tools necessary for the job. I would wager that UNIX is no harder to learn than MS-DOS. MS-DOS copies many of UNIX's features, but possibly because of PC size constraints or a misreading of UNIX's admirable design philosophy, MS-DOS is more a crippled copy than a clone. UNIX itself has few loose ends. XENIX (Microsoft's popular version of UNIX for micros) users find it well worth the learning time spent. The experienced CP/M or MS-DOS user should have little trouble making a transition to UNIX.

## Discovering the philosophy of tools

Though I had worked around computers most of my academic professional life, I never had the desire to own one until the advent of micros made them so convenient. Though I originally purchased it for word processing, I knew my Kaypro could be a powerful tool for literary analysis, which is my business. However, other than the usual word processing and proofreading software, the specialized application programs that a literary scholar might want (programs to do frequency counts, concordances, or any kind of keyword-in-context searches) were unavailable for micros.

Then I read about the UNIX "software tool" rationale, and I knew I had found more than an answer to my problems. I had discovered one of those crystalline ideas that inspire other ideas.

Software tools are single-function programs that are adaptable to many situations. The various public domain directory programs for CP/M (D or SD) are examples of software tools. Options make some tools even more adaptable. Because tools are usually designed to get their necessary input from the command line and write their output to the computer screen, they can be linked in complex ways to do complex tasks.

If you have the right tools, you can then build other special-function tools that, in turn, can be linked together in the same way. The word-index tool in Listing 1 (on page 40) is a good example of this type of construction and requires little programming skill, only trial-and-error experience.

Considering the limits of a 64K microcomputer, adding UNIX features is a big job, but several systems do it. Each takes a slightly different approach. All are useful upgrades to traditional CP/M for the serious user. The owner of a Kaypro with a hard disk drive, large RAM disk or multiple drives, for example, finds that the right system quickly becomes a necessity.

I have used two systems—MicroShell with MicroTools and Carousel Tools Kit. The MicroShell/MicroTool combination is easier to learn, is a good environ-

ment for developing applications, and is excellent for automating tasks. Carousel Tools probably will appeal more to those who already use UNIX or who are familiar with Carousel's fine MS-DOS tool package and are looking for a similar system adaptable to CP/M.

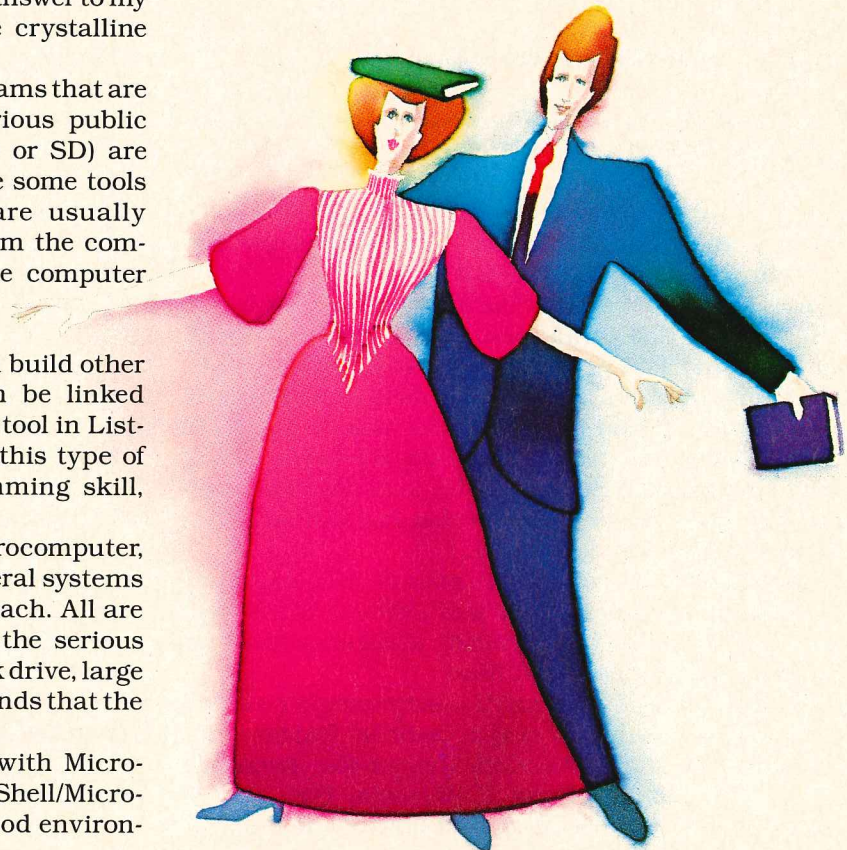
## MicroShell and MicroTools

New Generation Systems' MicroShell provided the UNIX-like environment I needed. MicroTools is a separate package of 25 .COM files that run individually under CP/M or together under MicroShell. All read input from the command line and write output to the screen unless told to do otherwise by the shell.

The MicroShell manual is thorough, though it does assume the user is familiar with CP/M and has programming experience. It is well thought out, with careful explanations, a usable index, sample shell programs, and instructions for getting started in MicroShell without reading the rest of the manual.

One sample program included in the manual shows how to build a menu driver for other CP/M programs. Instructions and samples point the user toward structured, modular shell programs. The manual does not contain tutorials or drills. Clearly, the user is meant to learn the system by experimentation, but with its good reference manual this approach might only be risky for the novice.

MicroShell replaces CP/M's CCP with its own command interpreter, which is larger than the CP/M CCP and shrinks the TPA (Transient Program Area) by 6K.





**LISTING 1: Word-Index Tool**

This program produces a word index of a file. The program is called "INDEX.SUB" and is invoked by typing the following command under MicroShell: **INDEX (name of file to be indexed)**.

All lines beginning with a semicolon are comments.

```
; Index. sub Version 1.0
-v
; "-v" is a MicroShell switch disabling the echoing of
; every line to the screen. "+v" is a useful debugger.
%#args %A
; Reads the number of arguments from the command line
; and sets a numeric variable to that number. In this
; case, only 1 arg. is expected. Test on line below
; checks for it, passing control to the routine
; labeled "on_error" in event of failure.
%if %A NE 1 then goto on_error
%erase
; "erase" clears the screen
%iffile $1 absent then goto no_file
%upcase %1
; "%1" is a string variable used for argument
; substitution. Value is assigned and passed to the
; program in the command line.
%print INDEXING $1
; By placing "-n" after uniq below, the index can
; include a frequency count.
deform -w $1 | sort | uniq >TEST. NDX
%print INDEX COMPLETE
%exit

%on_error
%erase
%print
%print INDEX requires single filename on command line
%print
%print "G Usage: INDEX d:filename.ext "
notice that MicroShell passes control chars.
%print
%print Try Again
%exit

%no_file
%print
%print "G CANNOT FIND $1 Check directory"
%exit
```

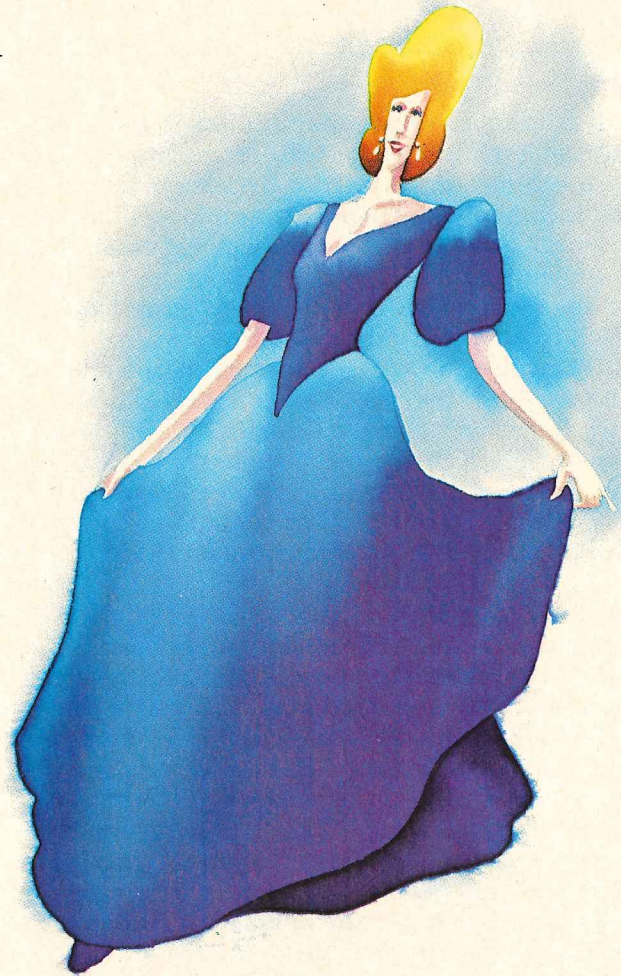
This is a "shell" program using both MicroShell and MicroTools. This file is part of a group of text analysis tools available for the asking (see *Quick Reference Summary*).

This still isn't large enough to hold all of MicroShell's features, so the rest of them are in overlay files that are brought into memory as needed.

This gives CP/M most of the file handling features of MS-DOS and UNIX and preserves or expands necessary built-in CP/M functions such as ERA, DIR, REN, TYPE and SAVE. Its batch processor is more powerful than MS-DOS's, and programmable search paths are so useful that you almost immediately begin taking them for granted. Search paths and multiple commands can share one line, and that line can be edited using WordStar-like keystrokes.

Additionally, MicroShell can pass variables and use such control statements as IF and GOTO in batch files. Advanced users can build friendly shells (interfaces for the novice user) out of shell files.

In other words, MicroShell is a surprisingly powerful language in itself. Its major built-in features are pipelines and I/O redirection. Compatible programs include WordStar, dBASE II, Bascom, BDS C, and more. (Perfect Writer's editor and printer run fine, but



because Perfect's formatter runs out of memory, a temporary exit to CP/M is needed). Combined with the UNIX-like MicroTools, described next, this gives the Kaypro user a brand-new system with lots of flexibility and power.

The MicroTools collection (25 programs) was originally distributed commercially as a MicroShell companion product, but now is available free for non-commercial purposes (see *Quick Reference Summary on page 45 for sources*). The tools are designed to operate in either a CP/M or MicroShell environment, and only two require MicroShell to function. Documentation is clear and concise and is based on the conventions made traditional by UNIX utility documents.

Experienced UNIX users will recognize the tools, though not necessarily their current names. Most tools seem to have been intended either as report formatters (arranging or editing data columns) or as program development tools. This is not meant to imply a lack of utility. Remember, much program development involves the manipulation of text in the form of source code.

**Carousel Tool Kit**

As the name suggests, the Carousel design emphasizes software tools rather than the shell. Clearly, the tools  
(continued on page 44)



**TABLE 1: Comparison of UNIX-Style Software Tools**

C-TOOL = Carousel Tool Kit; M-TOOL = MicroTools

C-TOOL	M-TOOL	ACTION OF TOOL
ar		File archiver
cat	cat	Concatenates files
cd		Changes current directory
ch		Changes strings in text files
cmp		Compares files, prints line differences
comm	com	Prints files' common lines (com also reports unique lines)
cp		Copies text or binary files
cpress		Compresses files
crt		Copies files to the terminal screen and pages
crypt	crypt	Encrypts, decrypts files on user supplied key
	col	Prints the input file in multi-column formats
	cut	Cuts characters, columns or fields, prints rules
	deform	"Deformats" a file in a variety of optional ways
date		Print or set date and time (on micros with clock)
dc		Desk calculator
detab		Converts tabs to spaces
diff	diff	Compares text files by lines, reports differences
e(ed)		Line text editor
echo	echo	Prints its arguments
entab		Converts spaces to tabs
expand		Uncompresses compressed files
fb		Searches for blocks of lines with text patterns
fc		Fortran compile, link and load
field		Manipulates data in formatted fields (see also cut & rec)
find	grep	Searches files for patterns (uses regular expressions)
form		Makes form letters, prompts for input
format		ROFF-like text formatter
fsort		Sorts Fortran specification statements
	get	Changes/restores default drives or users in MicroShell files
include		Includes contents of a file in another file
install		Changes Carousel shell defaults or C-Tool forms
isam		Makes index-sequential access list
kwic		Prepares lines for keyword-in-context index
lam		Merges lines of files together
ld		Link and load
ll		Prints line lengths
	ln	Creates or destroys file links across user areas
logout		Exits Carousel's shell
ls		Lists files in a directory
macro		General purpose macro processor
mcol	col	Arranges text in multiple columns
	merge	Merges sorted files, comparisons on words or fields
mv		Moves (rename) a file
	next	Used to get next list item in MicroShell loop
number		Numbers the lines in a file
os		Converts backspaces into multiple lines
	p	Creates a submit file that simulates a pipeline
	paste	Concatenates files horizontally
pl		Prints specified lines or pages in files
pr	pr	Pages files for printing; M-TOOL has 18 format options
pwd		Prints current directory name
ratfor		Ratfor (structured Fortran) preprocessor
rc		Ratfor compile, Fortran compile, link and load
	rec	Reformats one-line, multifield records to multiline records of one field/line, used esp. with COL and CUT
reset		Resets the file system
rev		Reverses lines
rm		Removes (deletes) files
run		Executes a C-TOOL from the CP/M's CCP
sedit		Stream editor
set		Print, set or unset C-TOOL shell variables
sh		Shell (C-TOOL's command line interpreter)
show		Shows all characters including control characters
	sleep	Provides programmable processing pause
sort	sort	Sorts & merges lines; M-TOOL also sorts fields
split	spl	Splits file into specified smaller files with specified or default name
	str	Searches binary files for strings, reports location
tail		Prints last lines of files
tee	tee	Saves intermediate results in a shell pipeline
tr		Transliterates (substitutes or deletes) characters
tsort		Sorts symbols topologically
uniq	uniq	Compares adjacent lines in sorted file, removes redundancies, counts occurrences of duplications
unrot		Unrotates lines rotated by kwic
wc	wc	Counts lines, words and characters
which		Locates a command using the C-TOOL shell search path
xref		Makes a cross reference list of symbols



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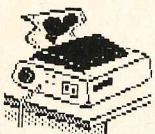
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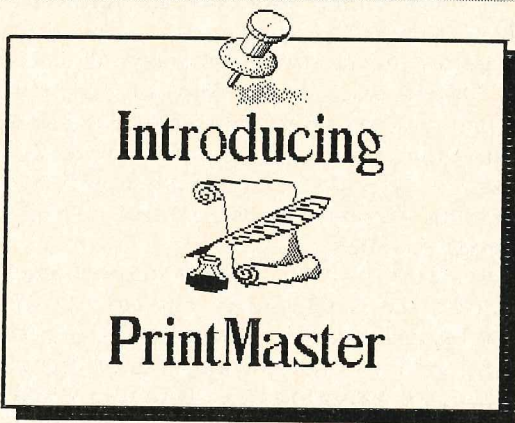
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are its strength. It's a larger package than MicroTools—about 60 tools rather than 25—but numerical comparison is misleading. It may take several Carousel tools to duplicate the functions of one MicroTool with options. Others, such as the Fortran tools, will be of limited use to many users. Some of the tools duplicate CP/M functions that are disabled under Carousel's shell. Carousel's tools seem more like their UNIX counterparts than do MicroTool's, but they are clumsy to use without the shell.

The structure of the Carousel manual may cause problems for the novice user. The first third seems almost scholarly in tone, complete with references to books and articles. The emphasis is on the software tool philosophy, adapting this system to CP/M-80, an initiation into UNIX terminology, and tutorials that are helpful but don't go far enough. The remaining two-thirds of the manual contains references to each of the tools in a format derived from UNIX-style documentation. This style is usually clear, but its terseness can leave the novice grasping to discern the meaning. A major failing is the lack of examples of "scripts" or batch files using the shell's features and the tools.

I have the distinct impression that the author has tried to provide a manual that is everything to everyone. He explains not just UNIX expressions, but even CP/M fundamentals for the novice. This results in a manual straining to appeal to two disparate audiences, the novice CP/M user and the UNIX user who wants a bit of that system on his home CP/M machine.

### *Carousel adds limited control to processes that benefit from automation.*

The shell in Carousel is just another tool designed to act as a replacement for the CCP and as a batch processor for the other tools. It is not really much more than a hopped-up version of SUBMIT. This shell was not designed, as was MicroShell, to act as an interactive, programmable interface for the operating system. However, with its associated tools, it does add limited control to processes that may benefit from automation, such as assembling, compiling and linking, or extensive passive (rather than interactive) editing and formatting of text. Listing 2 (at top of next column) shows Carousel in action.

### **Comparisons and ZCPR3**

Both systems will be helpful to the user whose needs exceed common applications programs and whose programming efforts are not minor. Both systems will help automate CP/M and some applications. The chart (on page 41) presents a comparison of the features of the two systems. The Carousel package, with its compre-

### **LISTING 2: A Carousel Tool Kit Script**

The function of this script is similar to the MicroShell/MicroTool word-index tool shown in Listing 1.


Double number symbols (##) are comments.

```
## This script is called FREQSORT, uses Carousel Tools
## and runs under its shell. It puts text file words
## on separate lines, alpha sorts, counts occurrences,
## removes redundancies and sorts words from high
## frequency to low. Output is written to "FREQFILE."
## Command line: freqsort (name of text file)
echo
echo SORTING AND COUNTING $1
tr <$1 !a-zA-Z "@n" | sort | uniq -c | sort -r > freqfile
## options "-c" and "-r" cause counting and
## reverse order sorting
echo RESULTS NOW IN FILE: freqfile
echo
## Following line pulls out of FREQFILE words
## preceded by 2-digit numbers of 10 or larger,
find <freqfile "[1-9][0-9]" > bigfreq
echo
echo Printing to the Screen words occurring 10
echo or more times in $1
crt bigfreq
rm bigfreq
echo REMEMBER, RESULTS NOW ON FILE AS: freqfile
```

hensive bag of tools, is aimed more at the program developer who has some experience with UNIX. MicroShell, on the other hand, because of its powerful interpreter, focuses on the user who needs to automate applications for others in the work place or who wants an easier introduction to the features of UNIX.

Probably the only other enhancement for CP/M that has similar flexibility and utility is ZCPR3. Like MicroShell, ZCPR3 has not tried to duplicate the tools of UNIX at the expense of ease of use. However, ZCPR3 is obviously aimed more at the Z80 assembly language programmer than at the run-of-the-mill advanced user. And because ZCPR3 is essentially a permanent change of CP/M on your disks, it becomes more of a commitment. Exiting to standard CP/M is not a keystroke away, as with MicroShell or Carousel.

Comparing the three systems presents a bit of the old apple-and-orange problem; there may be some similarities, but flavor makes the big difference. Unquestionably, all three systems are designed for the serious CP/M user.

Whether you try MicroShell/MicroTools, Carousel Tool Kit, or even ZCPR3, you will discover new horizons. Your CP/M Kaypro can behave like the minicomputers of just a few years ago. It's amazing what can be done in 64K. 

*Roland Wobbe teaches and researches small computer applications in literary criticism. His favorite literary pursuit is close analysis of the fiction of Graham Greene.*



## Quick Reference Summary

**Product:** Carousel Tool Kit, v. 2.0  
**Manufacturer:** Rocky Mountain Software Systems  
 1280C Newell Ave., Ste 1367  
 Walnut Creek, CA 94596  
**Phone:** (800) 832-2244; (800) 732-2311 in CA  
**Sugg. Retail:** \$89.95

**Product:** MicroShell, v. 2  
**Manufacturer:** New Generation Systems Inc.  
 2153 Golf Course Drive  
 Reston, VA 22091  
**Phone:** (703) 471-5598  
**Sugg. Retail:** \$125

**Product:** MicroTools, v. 1.2  
 By the time you read this, they may be available for non-commercial use on some bulletin boards, or through some users' groups. If your KUG can't find them, send \$15 for two single-sided disks to:  
 Bill Kerner — Librarian  
 Kanawha Kaypro Users Group  
 124 Winners Circle  
 Hurricane, WV 25526

**Product:** Text Analysis Tools  
 (You must have MicroShell & MicroTools); send a blank diskette to:  
 Roland Wobbe, Humanities Program  
 West Virginia College of Graduate Studies Institute  
 West Virginia 25112

Other software tools are in the public domain and are available from a variety of sources:

*Micro Cornucopia*  
 P.O. Box 223  
 Bend, OR 97709  
 (esp. disks K6 and K9; \$12 each)

Software Tools Users' Group  
 1259 El Camino Real  
 P.O. Box 242  
 Menlo Park, CA 94025

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# PIP, PIP

## H o o r a y !

*This utility is good for more than copying files*

by J. Michael Butler

I always wondered who came up with the cutside name of PIP for the copying program in CP/M. Actually, I wanted to know why it wasn't named something simple—like COPY. As it turns out, there are a couple of good reasons.

PIP stands for Peripheral Interchange Program (I'm glad they shortened it to PIP!). The December 1985 "Beginner's Luck" column, which dealt with CP/M basics, mentioned PIP as one of the more useful CP/M utilities. It is most often used to copy files from one disk to another, but it has other functions. As its name implies, it moves data among peripheral devices, and as we'll see in a moment, PIP considers just about everything to be a "peripheral device." PIP can also change data during the copying process. Some of the possibilities will be illustrated later in this article.

To use PIP, you can type **PIP** at the **A>** prompt, followed by a RETURN. This will give you PIP's "\*" prompt. You then enter your command, followed by a RETURN. A faster way to use PIP is to simply include your command on the same line after you type PIP. The basic format of a PIP command is "PIP destination =source." This is read as PIP *to* the destination (where you want the data to go) *from* the source of the data. It's easier if you can just remember that the equals sign means "from." For example, **PIP B:=A:filename** copies the file *to* drive B *from* drive A.

### **The many faces of peripheral devices**

PIP will interchange information between any two of your peripheral devices. In the command above, the two drives, A and B, are the peripheral devices. In fact, as far as CP/M is concerned, *any* part of your computer except the central processing unit (CPU) and memory is a peripheral device. This includes built-in components, such as the screen, as well as external hardware, such as modems and printers—what we usually think

of as "peripherals."

Furthermore, a peripheral device can be either an actual physical device (printer, etc.) or a "logical device"—a function of the operating system.

An analogy may help explain the concept of logical devices. Think of a post office with post office boxes assigned to postal customers. The post office boxes correspond to logical devices, and the postal customers correspond to physical devices. Just as mail is routed through post office boxes to postal customers, information is routed through logical devices to physical devices. And just as two or more people can share a post office box, any of several physical devices can receive information from a logical device. For example, the logical device LST: can send information to three very different physical devices: a printer connected through the parallel port (LPT:); a printer connected via the serial port (TTY:); or the screen (CRT:). The physical device being "pointed to" by the logical device is determined by the IOBYTE. The IOBYTE controls the input and output (I/O) of data and can be changed with the CONFIG program. (See "Love that IOBYTE," PROFILES, October 1984.)

The most common peripheral devices include the following:

#### *Logical devices:*

- CON: console or terminal, including both keyboard and screen (input or output)
- LST: listing to printer (output only)

#### *Physical devices:*

- CRT: cathode ray tube (the screen)
- LPT: line printer (parallel port)
- TTY: teletype or other serial device

Digital Research's CP/M manual has the complete

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---

list of devices PIP recognizes, and various books on CP/M can explain more about how to use PIP with them.

For a quick demonstration of moving data between peripheral devices, turn on your printer and at the A > prompt type **PIP LST:=CON:**, then press RETURN. If you have everything set up properly, you should notice that from then on whatever you type on the keyboard is first displayed on the screen and then printed out by the printer. The command you just typed told PIP to take everything entered on the CONsole (keyboard) and

---

### *PIP's functions can be modified by means of optional instructions called parameters.*

---

send it to the LiST device (printer). By the way, you must press LINE FEED following every RETURN or you will overprint each subsequent line on top of the first. If you want to quit, type ^Z. This is recognized by PIP as an End-Of-File (EOF) marker, which stops PIP's activity. More on EOFs and ^Zs later. In this case, it simply means "I'm through."

#### **Options used with PIP**

PIP commands can be modified by the addition of "parameters," optional instructions that dictate what happens to a file *while* PIP is copying it. These parameters must always be enclosed in square brackets.

Parameters are a good part of what makes PIP such a handy program. They allow PIP to do much more than just copy files. You can, for example, copy only parts of files, delete parts of files, change everything in a file from upper case to lower case, and more. (*For a list of PIP's most useful parameters, see Table 1 on page 48.*)

The verify option ([V]) is probably the most-used parameter of PIP. This checks to make sure the file copied to the destination is the same as the source file—an error check, if you will.

To go into a bit more depth, Kaypro 10 (hard disk) owners use the "get" parameter to move files between different user areas. For example, to copy a file from drive B, user area 6 to drive A, user 0, the command is **PIP A:=B:filename.ext[G6V]**. The parameters are read as "get from user area 6 and verify that the files are the same." The only trick here is that when you issue the PIP command, you must be in the user area where you want the file to end up. As this example demonstrates, multiple parameters can be used with PIP.

To see other parameters in action, turn on your printer and type this command at the A > prompt: **PIP LST:=filename.ext[T8PN]**, where the file named is an ASCII text file—such as a program listing. If you got a printed listing of your file with all tabs expanded to

eight spaces (a result of the T8 within the square brackets), form feeds inserted every 60 lines (the P means insert page breaks), and lines all numbered (a result of the N within the square brackets), you did it right!

Want a practical use for the above command? Let's say you're a writer and you want to compare two documents line by line. Wouldn't it be helpful if you could print out the documents complete with line numbers without having to add them yourself? You can—just write the documents to disk and then print them using the N parameter with PIP: **PIP LST:=filename.ext[N]**.

Or, how about programming? I program in dBASE II and do a *lot* of debugging (ugh!). It's extremely helpful to have listings of my programs with line numbers in front of each line when making changes, especially since WordStar, which I use to edit bugs, shows the current line number in the status line (non-document mode). (Newer versions of dBASE tell you which line of a program you were in when an error occurred, making debugging even more convenient.)

Adding line numbers with the [N] parameter may cause one small problem: Some program lines are 78, 79 or more characters long. If the printer happens to be only 80 characters wide, you'll end up with a "wrapped" line on the printout after PIP adds line numbers. I get around that by using PIP to change my printer from pica to elite type *before* listing my files, which allows more characters to fit on a line. I put the code for elite type (more on this below) in a file called ELITE.COD. Then, when I send a file to the printer, I can use a command like this: **PIP LST:=ELITE.COD,filename.ext[N]**. The comma between ELITE.COD and the filename is read as "followed by." This causes PIP to first send the file containing the command to switch to elite type to the printer, *followed by* the file I wish to print. The [N] option numbers the lines of the output. (Using the comma in a PIP command is an example of "concatenation," which is a fancy way of saying "stringing files together.")

---

*I use PIP to change my printer from pica to elite type before listing my files.*

---

#### **Using PIP to control input**

You've seen how PIP can be used to modify output (to a printer, for example); it can also modify input. This can be illustrated by showing how to create a file using PIP.

Let's say you want an easy way to put specific printer codes in a file. (Each printer has its own set of codes to change the pitch and other aspects of what it prints.



Instead of running to the manual each time you need to change the code, you can create a file to do it for you.)

Type **PIP filename.ext=CON:**, and then press RETURN. After you type that command, the cursor will wait for you one line below it. From now on, every character you type, including control characters, will be faithfully reproduced in your file. I have a C. Itoh 8510 printer, and its code for elite type is ESC E. When I created my ELITE.COD file, I typed **PIP ELITE**

### *Have you ever tried to display a WordStar file and found hieroglyphics at the ends of words?*

.COD=CON:, then pressed RETURN and followed that by entering **ESC E ^Z**. This told PIP to put ESC E in my ELITE.COD file and then told it to stop with ^Z. If you try this at home, you'll notice that control characters don't show onscreen when you are typing (except tabs, carriage returns and line feeds that will move the cursor), but don't worry—they're still being preserved in your file. In the above example, the only thing displayed on the screen was an upper case E. Now the file ELITE.COD contains the specific code for my printer to make it print in elite type.

One more thing: If you make a typo while entering a

file from the CON: device, just type a ^Z to stop PIP and start over.

### **Renaming files with PIP**

One pretty common use of the PIP utility is renaming files. This is usually done when you're copying a file from one place to another. The format for this command is **PIP A:newname=B:oldname**. This is read as PIP to drive A the file with the new name *from* the file with the old name found on drive B. These two files are identical, except for their names.

Of course, you could first use the built-in CP/M command REN to first rename the file, and then use PIP to copy it to a different place—but why do two operations when one will accomplish the same task? It's nice to know about shortcuts, but the real trick is knowing *when* to use them.

### **The Z option for a quick fix**

Here's a PIP parameter of high interest to WordStar users. Have you ever tried to display a WordStar file using the TYPE command, only to find what looks like hieroglyphics at the ends of the words?

To see what I'm talking about, print out a WordStar file that you created in the Document mode. The command would be **TYPE filename.ext <RETURN >**. You will see what looks like a "garbage" file. The last character of many of the words will be either a graphics character or a Greek character, depending on the year and model of your machine.

**TABLE 1: PIP's Most Useful Parameters in Alphabetical Order**

[Dn]	delete text past column n <i>Example:</i> The command <b>PIP LST:=filename.ext{D70}</b> would not print anything to the right of column 70 in the file.
[E]	echo file to screen as it transfers
[F]	remove form feeds from file as it transfers
[Gn]	get the file from user area n
[L]	translate all upper case to lower case
[N]	add a line number to each line
[N2]	add a line number, without lead zeros, plus tab <i>Example of output:</i> 1(TAB)line of code or text
[O]	object file transfer; ignore EOF marks in middle of file
[Pn]	insert form feed every n lines
[Qstring^Z]	* stop operation when string is encountered
[R]	read a system file
[Sstring^Z]	* start operating when string is encountered
[Tn]	expand tabs to whatever n is designated
[U]	translate all lower case to upper case
[V]	verify copy by re-reading file
[W]	delete (over-write) read-only files
[Z]	change parity bit to zero on all ASCII characters

\*You must invoke PIP and get its \* prompt in order for these parameters to work with lower case letters.



What has happened is that WordStar has changed the codes for certain characters that you typed for its own internal housekeeping, and this change makes the "hieroglyphics" show up at the ends of some words. WordStar knows what it has done and can return the codes to their correct form before displaying or printing them.

However, if you want to use that file with some program other than WordStar, it is necessary to get rid of the hieroglyphics using the "Z" option of PIP. Using this option resets the last bit (also called the parity bit) of each character in the file. That is the part of each character that WordStar changes, resulting in what appears to be a graphics or Greek character.

The command **PIP FILE2.EXT=FILE1.EXT[Z]** makes a corrected copy (FILE2.EXT) of your original file (FILE1.EXT). To double check the supposedly correct file, use **TYPE file2** and just scroll it across the screen. There shouldn't be any Greek or graphics characters cluttering up the text.


### Illustrating the power of PIP

PIP's power is reflected in the options found in Table 1. Using parameters, you can echo a text file to the screen while it's being copied from one place to another ([E]); change all upper case to lower case ([L]) or lower case to upper case ([U]), and more. To demonstrate the control

and flexibility this offers, we have one more example. This will show how complex a PIP command can be.

Type this command: **PIP LST:=filename.ext[SJUMP TO JACK^ZQTYPE NO MORE^Z]**. This would print a listing of your file, and the printing would start where the phrase "JUMP TO JACK" occurs and would end with the phrase "TYPE NO MORE." The [S] and [Q] parameters mean start with this character string and quit with this character string, respectively. See Table 1 for more on these two parameters.

### Learn by doing

Educators have told us for years that we don't always absorb what we read. I had known for a long time that PIP had other capabilities besides copying files from disk to disk, but I never bothered to really learn them until I found practical uses for them. Now that I use these other capabilities, my computing life has grown easier. This reaffirms my new motto: "Necessity is the mother of education." When it comes to computers, most of us will leave invention to someone else, but we can still spend years educating ourselves about our machines' capabilities. 

*Mike Butler is a systems analyst for a business machines firm in Hot Springs, Arkansas. His work includes consulting, sales, service, instructing users, and writing programs.*

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# Altering SAVESTAR

## More on rescuing files from program crashes

by David Weinberger

The assembly language program SAVESTAR in the February 1986 *PROFILES* saves WordStar or Turbo Pascal files from memory if either should crash. You can modify SAVESTAR to rescue files from other programs if those programs store the material in memory in sequence.

Let's use NewWord (WordStar clone) as our example. You will edit a file with NewWord and then use DDT to find where the text begins. Edit a file that has an easy-to-spot beginning and a clear end, such as:

```
*YYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYYZ.
```

Exit NewWord and run DDT by typing DDT. Now tell DDT to start showing you what is in memory by typing **DXXXX,YYYY**; XXXX is where to begin and YYYY is where to end. These numbers must be in hexadecimal. (To dump all of memory, type **D0000,FFFF**.) But with NewWord you'd be safe looking between **6000** and **EC00**. So use the command "**D6000,EC00**."

DDT will now show you a bunch of hexadecimal numbers on the left and 16 columns of mixed letters and gibberish on the right. Concentrate on the right. Keep your fingers on the CTRL-S to stop the scrolling. When you find your sample text ("**\*YYY . . .**") stop the scrolling. Look for the beginning of the text (the "**\***"). Look across the line to the left. There will be a four-digit number (which may have the letters A-F in it, for such is hexadecimal, a.k.a. Base 16). Figure out the number of where the beginning of your text is. Write it down.

Here is a fictitious sample of what you might see:

```
7080 CA 47 7B FE 20 23 D2 41 7A CD 9D 78 2B F1 C9 CD .G{. #.Az..x+...
7090 7F 7A F5 3A 44 82 B7 C2 31 7B D2 2A 59 59 59 59 .z.:D...1{*YYYYY
70A0 59 59 59 59 59 59 59 59 59 59 59 59 59 59 YYYYYYYYYYYYYYYYYY
70B0 59 59 59 59 59 59 59 59 59 59 59 59 59 59 YYYYYYYYYYYYYYYYYY
70C0 59 59 59 59 59 59 59 59 59 59 59 59 59 59 YYYYYYYYYYYYYYYZ...
```

Your text's first letter, "**\***," is the eleventh letter in the row that begins with memory spot **#7090**. In hexadecimal, you get all the way up to 15 before having to carry into the next column. To represent in a single

digit the numbers 10-15, hex uses A-F. You don't have to understand this to proceed. All you need to know is which memory spot "**\***" occupies in hex. You know it's somewhere between **7090** and **70A0**. So, start with the first number in the **7090** row (**7F**). Call it zero. Move to the next and call it 1. Continue until you get to the tenth number. Call that A, call the eleventh B, and so on up to F, or until you hit the "**A**." This tells you what the final digit of the number **7090** should be. In this case, the "**\***" begins at **709B**.

You're almost done. Using your word processor (the "**N**" option if using WordStar or NewWord), call up SAVESTAR.ASM. At the beginning "**Equates**," where it says "**BEGTEXT**," substitute the number you have just written down, suffixing the number with an H (e.g., **709BH**). Assemble it, as per the instructions in the original article, and test it (see "**How to test SAVESTAR**," below). When assembling it, you may want to save it under a new name (such as **SAVENW.COM**). You might also want to change the name of the file into which the material will be saved. To do this, at line 139 of the original program change the **tfcB** name from '**SALVAGED**' to whatever you want (uppercase, no period to separate the extension, and if it's not 11 letters long, pad it to 11 using spaces). By the way, for NewWord version 2.16, **BEGTEXT** should be **9F01H**.

Because Perfect Writer does not store all its text in memory, SAVESTAR cannot easily be altered to save its files. To see if SAVESTAR can be applied to another word processor's files, try this. First, edit a sample text with it. The text should have an unambiguous begin-

ning and end and should be a few pages long. Make sure you have viewed the end of the document, for that will ensure that the entire document has been read into  
*(continued on page 56)*



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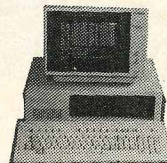
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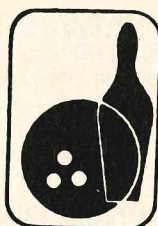
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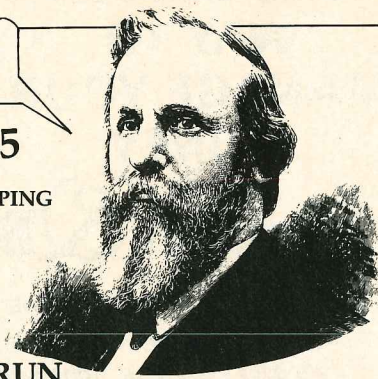
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## RAM DISKS

(continued from page 36)

### Installation and documentation

Installation of the SWP and Advent boards takes less than 30 minutes and is relatively easy, even for a non-electronics type like me. Both require removing the Z80 CPU chip and replacing it with an adapter board. The Z80 chip is then added to the adapter board, and the RAM disk data cable is plugged into the adapter board. Neither product requires any soldering. The Advent RAM disk mounts on its own bracket to the left of the drive shield beneath the level of the main board. Mounting of the SWP board varies, depending on which model Kaypro you have. On Kaypro 10s it goes on a bracket that mounts above the drive shield, while other versions come with a bracket that places the RAM disk behind the drives. Mounting the SWP board behind the drives can be more difficult because of interference with existing components in some Kaypro computers.

The MicroSphere installation is comparable if you don't have a CP/M 2.2u ROM. However, if you have one of the new Kaypros that uses this ROM, you may have to solder a socket to the main circuit board. Since my particular Kaypro model did require this modification, and my most delicate soldering experience was with copper pipes, I elected to have the soldering done by an experienced Kaypro repairman. The entire installation took about two hours. MicroSphere now has an adapter board that sells for \$50 and eliminates the need for any

soldering. This makes installation of the MicroSphere RAM disk (for all Kaypro models) similar to that for the other two products in terms of time and complexity.

A final comment must be made about the MicroSphere RAM disk: If you want to use it with a new Kaypro that has a 2.2u CP/M system, MicroSphere provides a new monitor ROM that gives you a 2.2g CP/M system (MicroSphere's CP/M version 2.2g, not Kaypro's). You also end up with a 62K CP/M system rather

**Documentation was adequate for all three products, but could have been better in all cases.**

than the 63K system that came with the machine. Although MicroSphere indicates that the 1K reduction in memory does not affect most programs, you may want to verify that your favorite software does indeed run with a 62K system. You should also consider whether the 2.2g CP/M system will cause any problems with any of your other programs.

Documentation was adequate for all three products, but could have been better in all cases. The SWP instructions were brief but included sketches, which

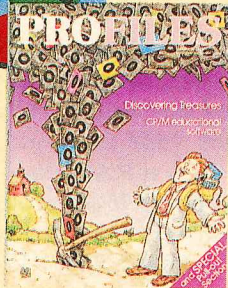
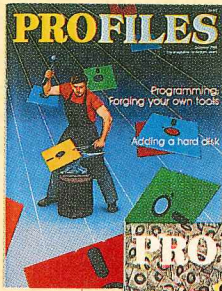


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**RAM DISKS**

the other two did not. I find sketches or photographs to be quite useful (as well as reassuring) in locating a component. The SWP and MicroSphere manuals have a lot of room for improvement—they were stapled and unbound. The Advent manual was of higher quality and contained much more detailed information for the technically inclined.

**Which one for you?**

As with most products, deciding which RAM disk is best for you will depend on your particular requirements and how you use your computer. If you frequently print out long files, a RAM disk with a print spooler may be the best choice. If you would like to run some of the MS-DOS software on your present CP/M Kaypro, then the SWP CO-POWER-Plus board could be best. If you need to process large data base files, then the Advent RAM disk or the CO-POWER-Plus with two megabytes of memory may be the most attractive.

My choice? I like the unique features of each of the RAM disks. Think I'll hold out for a board combining all of the above features with a battery-powered RAM and a 10-megabyte memory.

*Durwin Schmitt is an aerospace engineer with Martin Marietta's Denver Aerospace Division. He uses his Kaypro extensively in his current assignment involving the activation of the Air Force's Space Shuttle Launch Facility at Vandenberg Air Force Base.*

**Quick Reference Summary**

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When you do decide to get off the dime, some words of caution. In comparing key programs, ask the other guys how well they work with RAMdisks, modem programs, upgraded ROMs, speed-up kits, ZCPR, and all the other neat things you may have done or want to do with your computer. (XtraKey is far and away the most compatible.) Then ask them how much memory they use. (Important with programs like Perfect Writer, NewWord and others. XK uses 2.7K, SK needs 5.0K.) Or how much disk space they take up to use and save definitions. (XK—7k, SK—56K) Or how much their last update cost. (XK—\$10, SK—\$25.)

Ho hum. It seems the answers still come up XtraKey. Price includes manual, quick reference card, starter definition sets for many popular programs plus new SETPRINT definitions for printers. **Only \$39.95.** (Available for most CP/M computers.)

SmartKey is a trademark of Software Research Technologies, Inc. Above comparisons based on SmartKey v4.2. \*Kaypro only.

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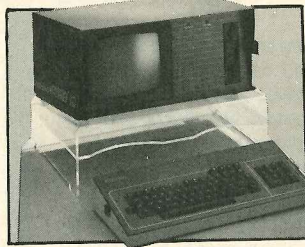
CLASSIFICATION	1985 Total	% of Total	1986 Total	% of Total	1987 Total	% of Total	1988 Total	% of Total	1989 Total	% of Total	1990 Total	% of Total
<b>HARDWARE</b>	180.2	5.2	182.5	5.4	184.4	5.4	186.3	5.4	188.2	5.4	190.1	5.4
1. Radio/Refrigeration	238.9	12.8	229.5	10.8	224.2	10.2	211.5	10.1	194.7	9.1	187.1	8.6
2. Hardware	275.2	8.2	322.4	8.7	351.1	8.7	375.8	8.7	391.4	8.7	406.5	8.6
3. Video	284.9	12.9	282.1	10.9	274.5	10.1	264.9	10.0	251.0	9.7	237.5	9.2
4. Home Appliances	122.8	6.9	129.5	6.8	132.5	7.1	136.2	7.2	139.8	7.3	143.5	7.4
5. Home Electronics	219.9	11.0	218.7	10.8	202.2	10.8	194.2	11.1	186.4	11.1	179.9	11.0
6. Hardware	122.8	6.9	129.5	6.8	132.5	7.1	136.2	7.2	139.8	7.3	143.5	7.4
7. Furniture	184.1	7.1	182.5	7.0	181.0	7.0	179.5	7.0	178.0	7.0	176.5	7.0
8. Sporting Goods	88.1	3.1	82.8	3.4	75.4	3.7	70.3	4.3	65.2	4.2	60.1	4.2
9. Footwear	225.5	12.6	225.9	12.4	224.4	12.4	222.7	12.5	220.5	12.5	218.2	12.5
10. Department Shop	184.1	7.1	182.5	7.0	181.0	7.0	179.5	7.0	178.0	7.0	176.5	7.0
<b>TOTALS</b>	3514.1		3562.9		3622.4		3682.8		3743.4		3803.9	
<b>SOFTWARE</b>	442.8	6.1	458.3	6.5	484.8	6.5	512.4	6.5	541.1	6.5	570.2	6.5
1. Data Processing	679.2	9.4	642.3	9.1	616.8	9.3	591.9	9.4	567.5	9.5	543.6	9.5
2. Data's Spreadsheets	275.2	8.2	322.4	8.7	351.1	8.7	375.8	8.7	391.4	8.7	406.5	8.6
3. Data's Spreadsheets	284.9	12.9	282.1	10.9	274.5	10.1	264.9	10.0	251.0	9.7	237.5	9.2
4. Data's Spreadsheets	122.8	6.9	129.5	6.8	132.5	7.1	136.2	7.2	139.8	7.3	143.5	7.4
5. Data's Spreadsheets	219.9	11.0	218.7	10.8	202.2	10.8	194.2	11.1	186.4	11.1	179.9	11.0
6. Data's Spreadsheets	122.8	6.9	129.5	6.8	132.5	7.1	136.2	7.2	139.8	7.3	143.5	7.4
7. Data's Spreadsheets	184.1	7.1	182.5	7.0	181.0	7.0	179.5	7.0	178.0	7.0	176.5	7.0
8. Data's Spreadsheets	88.1	3.1	82.8	3.4	75.4	3.7	70.3	4.3	65.2	4.2	60.1	4.2
9. Data's Spreadsheets	225.5	12.6	225.9	12.4	224.4	12.4	222.7	12.5	220.5	12.5	218.2	12.5
10. Data's Spreadsheets	184.1	7.1	182.5	7.0	181.0	7.0	179.5	7.0	178.0	7.0	176.5	7.0
<b>TOTALS</b>	7219.3		7265.4		7323.6		7382.8		7442.9		7503.0	

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## Little Mysteries

Read-only file status and the eighth bit

by David Weinberger

**Question:** How does the computer know which files are read-only?

**Answer:** CP/M codes the read-only status in a very efficient way: It sets the high bit of the ninth letter in the file's name.

Now I'll explain what that means. On every disk there is a directory that is, in effect, a table of contents. Each file's name is listed, as well as information CP/M needs to find the file itself. The file's name plus the information is called the File Control Block (FCB).

Each name in the FCB consists of 11 letters: eight for what comes before the dot and three for the extension after it. (The dot itself is not recorded in the FCB.) If the file's name is short, it is padded out by spaces. Thus, in the FCB the file name "D.12" would look as follows (with the underlines standing for single spaces):

D-----12-

But that's not quite right, for the letters in the name are really stored as numbers, which are determined by the American Standard Code for Information Interchange (ASCII) that has become standard for personal computers. The ASCII code runs from zero to 127, which gives sufficient room for 26 uppercase letters, 26 lowercase letters, numerals, punctuation, etc.

But it also leaves 128 open numbers. Why? Because the standard unit of information in computers is the byte, which can have any value between zero and 255. A byte consists of eight bits. A bit is a switch that is either on or off. Thus, you can represent the state of any bit by a one or a zero (an "on" or an "off"), and of any byte by a string of ones or zeroes.

But a string of ones and zeroes can, if we choose, be interpreted as a binary number—a number in Base 2.

Without explaining all there is to know about binary numbers, suffice it to say that you only need seven bits to represent the numbers from 0 to 127. This leaves an eighth bit unused by the ASCII code.

Therefore, we can represent a letter using the first seven bits and can use that eighth bit (called the high bit) to mean something special. The way CP/M is set up, in the FCB it uses the eighth bit of the ninth letter of the filename to tell it whether a file is read-only (R/O) or read-write (R/W). If the high bit is set (i.e., it is a one), then the file is read-only and CP/M will get nasty if you try to alter or erase the file. If it is reset (i.e., a zero), it lets you write to it to your heart's content.

How do you set or reset it? You let STAT or some other utility do it for you, or you can use the special function built into CP/M (function #30, for those who care), which makes it easy to write an assembly language program that will do it.

### SAVESTAR

(continued from page 50)

memory. Then hit the reset button *without* exiting. Now examine memory, using DDT, looking for your sample text. If it looks like continuous text, try altering SAVESTAR and see if it saves anything worthwhile. (Some word processors store inserted text in a different spot than where it is actually inserted.)

It might be possible to alter SAVESTAR to rescue material from programs other than word processors, such as spreadsheets and data base programs. The requirements are the same: They must store their information in memory continuously. This leaves out dBASE II, for example, which only keeps what it is immediately working on in memory.

The trick is that you must be familiar with the way these programs store their material so that you can recognize the beginning of a file in memory.

### How to test SAVESTAR

To test it, edit a file with the program in question and carefully note its beginning and end. Then press the reset button (while in the middle of editing) and run the assembled SAVESTAR program. Now check the SALVAGED file to see if it contains all the text. Even if SAVESTAR works only part of the time, it can be a boon.



## Back Issues

Some back issues of *PROFILES* are available. Highlights of recent issues are detailed below. We'll send you the desired issue(s) for \$4.00 each, including postage and handling. Enclose your name and address along with a check or money order payable to Kaypro Corporation and mail to:

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# Tip Trader

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## Graphics programming

I particularly enjoyed the March 1986 issue of *PROFILES* and its emphasis on CP/M graphics. But in line with the letter from Bill Houle of El Cajon, California, I would like to see users become more computer literate by writing some of their own programs.

I have been writing BASIC programs to produce useful and entertaining displays on my Kaypro 4'84. My limited success has often been through trial and error, and I am happy to submit some tips for those who would like to try their hand at graphics programming.

Graphics drawing commands are in the form of ESCape sequences, starting with CHR\$(27). The ESCape is followed by an identifier that tells what you are drawing ("L" for a line and "\*" for a pixel), followed by the coordinates. To draw a dot in the center of the screen from within BASIC, type:

```
PRINT CHR$(27);"*";CHR$(82);
      CHR$(112)
```

Note that the coordinates are *row* first, *column* second.

To draw a diagonal line on the screen, type in and run the following short program:

```
10 PRINT CHR$(26) 'Clear screen
20 PRINT CHR$(27);
   "L";CHR$(32);
   CHR$(32);CHR$(131);
   CHR$(191)
30 END
```

*Any lines not having line numbers in front of them have been broken for printing convenience. You should enter them as one line.*

Note that two coordinates are needed to locate the beginning of the line and two more are needed for the end. To draw more elaborate figures, get some graph paper from an office supply store and mark off 160 horizontal blocks (32 through 191) and 100 vertical blocks (32 through 131). Draw your figure

(floor plan, etc.), note the coordinates, and write your program.

To draw more elaborate designs, you will need to graduate to FOR/NEXT loops and polar coordinates. Lack of space precludes going into much detail here, but here are some sample programs to help you work out their use.

```
10 PRINT CHR$(26) 'Clear Screen
15 FOR X = 32 TO 131 STEP 5
20   PRINT CHR$(27);
   "L";CHR$(32);
   CHR$(32);CHR$(X);
   CHR$(112);
25 NEXT X
30 FOR X = 32 TO 131 STEP 5
35   PRINT CHR$(27);
   "L";CHR$(32);
   CHR$(191);CHR$(X);
   CHR$(112);
40 NEXT X
45 FOR X = 32 TO 131 STEP 5
50   PRINT CHR$(27);
   "L";CHR$(131);
   CHR$(191);CHR$(X);
   CHR$(112);
55 NEXT X
60 FOR X = 32 TO 131 STEP 5
65   PRINT CHR$(27);
   "L";CHR$(131);
   CHR$(32);CHR$(X);
   CHR$(112);
70 NEXT X
75 PRINT CHR$(27);
   "L";CHR$(131);
   CHR$(32);CHR$(131);
   CHR$(191);
80 END
```

Important: Note that the print lines within the FOR/NEXT loops end with a semicolon. If you forget this detail the program won't run properly.

Now try polar coordinates.

```
10 PRINT CHR$(26)
15 D=3.14159/180:S=35
20 A=0
25 REM
30 X=S*COS(A*D):Y=S*SIN
   (A*D)
35 PRINT CHR$(27);"L";
   CHR$(82);
```

```
40 F=SQR(2*S*S)*COS
   ((A+45)*D)
45 G=SQR(2*S*S)*SIN((A+45)*D)
50 PRINT CHR$(27);"L";
   CHR$(82+X);
   CHR$(112+Y);CHR$(82+F);
   CHR$(112-G);
55 H=S*COS((A+90)*D)
60 I=S*SIN((A+90)*D)
65 PRINT CHR$(27);"L";
   CHR$(82+F);
   CHR$(112-G);CHR$(82+H);
   CHR$(112-I);
70 PRINT CHR$(27);"L";
   CHR$(82+H);
   CHR$(112-I);
   CHR$(82);CHR$(112);
75 REM
80 END
```

Note that you have drawn a square. Now rotate the square around its center point by making the following changes:

```
25 FOR A=0 TO 360 STEP 10
75 NEXT A
```

One last program simulates motion. This is called the "Archimedian Spiral." The GOTO command seen in line 70 causes the program to run forever. Enter a CTRL-C to halt.

```
10 PRINT CHR$(26)
15 D=3.14159/180
20 R=5
25 FOR A=0 TO 1800 STEP 10
30   R=R+(.017*R)
40   X=R*COS(A*D)
45   Y=R*SIN(A*D)
50   PRINT CHR$(27);
   "L";CHR$(120);
   CHR$(110);CHR$(120+X);
   CHR$(110+Y);
60 NEXT A
70 GOTO 10
```

Maybe this will inspire some of you hobbyists and hackers to try graphics programming. I have written over 40 graphics programs, including bar and pie charts, using the principles outlined here.

Russel Kirkpatrick  
Eules, Texas



### Our mistake

The program segment used as an example by James Hicks in his letter, "Cursor Positioning," in the March 1986 "Q & A" gives a syntax error in my system, which consists of CP/M Version 2.2 and BASIC-80 Version 5.21. The following program works:

```
10 DEF FNX$(ROW,COL)
    =CHR$(27)+"="
    +CHR$(ROW+32)+CHR$(COL+32)
20 PRINT FNX$(5,10); "(Prints
    desired string at row 5,
    column 10.)"
```

*(The above lines have been broken for convenience in printing.)*

Cyrus N. Wells, Jr.  
Las Vegas, Nevada

*Technical editor's note: You're right, I blew it.*

### More program codes for word processing

With regard to the excellent article by David Weinberger on assembly language in the February 1986 issue, I have a couple of other codes for different word processing programs. The following lines will work for the listed word processors.

BEGTEXT equ 9A3D ; for WordStar v. 3.3

; modified by Synonym Finder by Writing Consultants

BEGTEXT equ 9F01 ; for NewWord v. 2.14

*(The above lines have been broken for convenience in printing.)*

The above were found using DDT.

George W. Richards  
Rochester, New York

### Easier page breaks

I read Irvin Peckham's article on page breaks with Perfect Writer

(March 1986) with interest. But there is a simpler and quicker method. Provided you have WordStar, you can compose in Perfect Writer and print in WordStar with only one intervening step—and that is to transfer the file by means of ENSOFT, a public domain program.

Granted you forego a few environment commands, but no impor-

tant ones. The important features of Perfect Writer—multiple buffers, split screens, and yankbacks—are still available, and you don't have to rely on mathematics to determine page breaks, or make multiple trips though Perfect Formatter.

Try it, Irvin, you'll like it.

Stan Sulkes  
Cincinnati, Ohio

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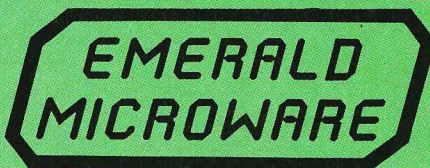
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# Beginner's Luck

by Don and Sharyn Conkey

WordStar tips and tricks

If you've begun using WordStar, you understand what business writer Ronald John Donovan meant when he warned *Writer's Digest* readers: "... there's more to word processing—and to writing—than typing." How will you ever master WordStar's 140-plus commands? You probably won't—and you'll probably never want to. Like the "pros," you will settle upon a subset of commands that do everything you need to do.

Here are hints for understanding and remembering WordStar's organization, plus a few tips to make your work go more smoothly.

## Understanding WordStar's organization

Think of WordStar's seven menus as seven drawers, each holding a different type of tool. Just as you wouldn't reach for a hand sander when you needed a power saw, you wouldn't look for a tool to delete a paragraph in the menu that lets you polish a paragraph's format.

All menus are named and accessed fairly logically. When you first load WordStar, it displays the opening menu. You're at the "grand opening" of your work. Since there is no active file, this menu operates on whole files (print, copy, etc.).

You need an active file to access the other six menus. Issue a **D** or **N** command (*in this article, commands appear in boldface*) to open—create or change—a file, and WordStar presents its main menu. This is the one you will *mainly* use to perform basic editing functions—e.g., cursor movement, text realignment, etc.

You access the remaining five menus from the main menu via commands. See Figure 1 below.

To remember the commands and menus, associate them mnemonically with their overall functions. The onscreen, print, and quick menus are accessed by their respective first letters—**^O**, **^P**, and **^Q**—and their names are indicative of what they do. Use the onscreen

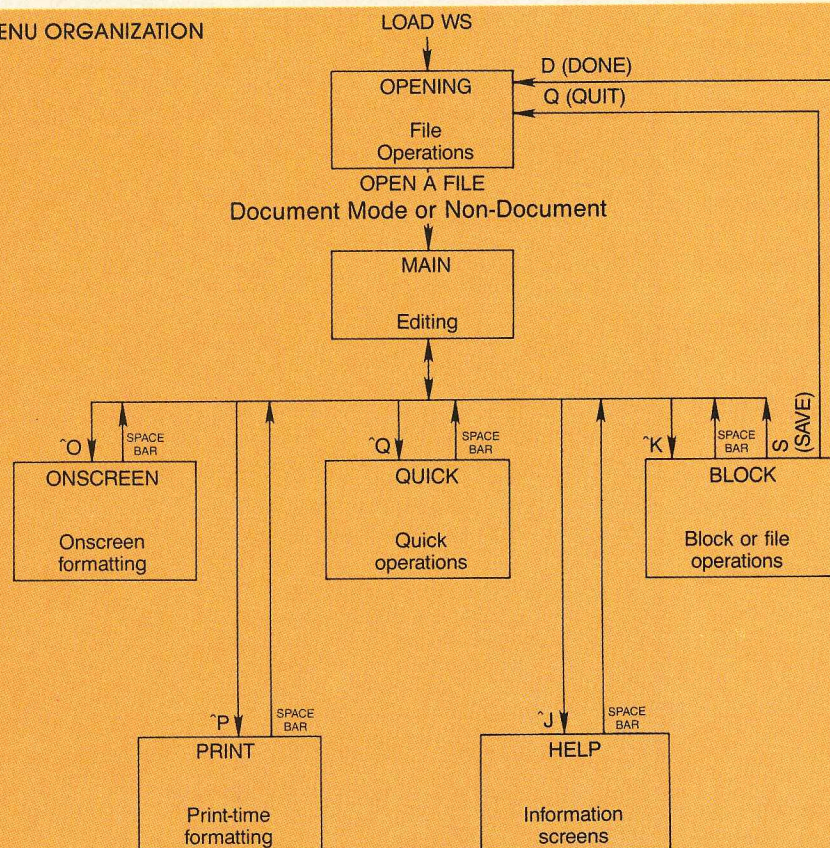
menu to change the format of text *on your screen*. Use the *print* menu to format what you *print*. (The command to actually print a file is a file-handling command and is on a different menu.) The *quick* menu performs cursor movement, editing, and other functions *quickly*.

The *block* menu (**^K**) operates on blocks of text—words, sentences, paragraphs—even whole files. **K** stands for the "k" in "block"; or, think of it as the "kick" menu. You want to delete some text? Kick it in the wastebasket with a **^KY**.

The last menu, the help menu, is accessed with **^J**. Just in case you need a little extra assistance.

You may have noticed that the same letters stand for different commands, depending on the menu you are in. For example, when you're in the **^K** menu, **S** means save. On the print menu, **S** means underscore. Forget trying to remember all the duplicate command assignments; concentrate instead on associating them with

FIGURE 1: WORDSTAR'S MENU ORGANIZATION



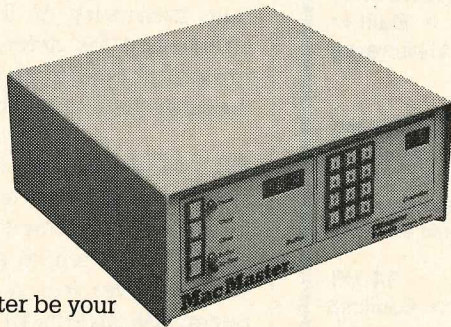
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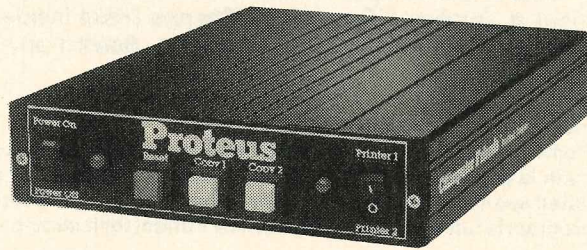
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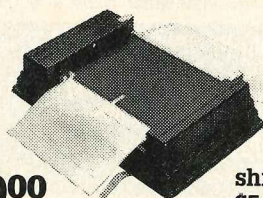


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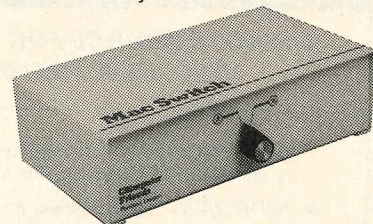


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## Beginner's Luck

mnemonics or ideas.

Admittedly, some associations take creativity. Y, for example, is often used for delete. One way to remember it: "Why did I create this mess in the first place?"

### And now for the tips

Now that you have a clearer understanding of WordStar's "geography," we'll share some tips that should give you a boost toward becoming proficient in its use.

First we'll suggest a few general points always to keep in mind as you start to work on a file. Then we'll give you some specific pointers—this time on things you can do in the block (^K) menu—performing block moves, and what to do if you get a "DISK FULL" message when you try to save a file. (Next month we'll give you hints on using the "quick" menu and more.)

### A file by any other name . . . takes time to find

Spur-of-the-moment file names may seem unforgettably logical, but files multiply like cancelled checks, and they'll be just as useless if you can't find the ones you need.

Use filename extensions to indicate document types: .LET for letters, .MEM for memos, etc. Don't use all eight characters for filenames; leave room for expansion. You may want to keep an original proposal file called WIDGET.PRO, for example, and save the updated version as WIDGET1.PRO. Use a "family" of names (like TEMP1, TEMP2, etc.) for scratch files that can be overwritten or deleted.

### The virtue of consistency

Just as a pilot completes a preflight checklist, your standard operations should be done all at once and in the same order. This minimizes errors. For example, if you like to operate with right justification and hyphen-help off most of the time, turn them off (^OJ and ^OH, respectively) as you begin your first edit.



## File size

WordStar's operation is faster using smaller files. Moving text a long distance or printing selected pages, for example, takes longer with large files. Editing small files is much less cumbersome, too, so where possible, break your work up into smaller files.

According to MicroPro, if you can move the cursor from the end of your file to the beginning (using  $\wedge$ QR for quick reverse) in seconds, the file is "small." If this operation takes minutes, the file is large.

Be sure you have enough space on your disk for two additional copies of the largest file you edit. If you don't, you may not be able to save a changed file, and you'll lose those changes. And whether your file is small, medium, or jumbo-sized, save often.  $\wedge$ KS saves your work to disk, and  $\wedge$ GP immediately takes you back to your place in your file. (This protects you against losing all your work in the event that a power outage or other accidental power interruption wipes out everything in RAM.)

## When in doubt, look left

Important actions take place to the left of the cursor. When the INSERT function is on, characters are inserted to the left of the cursor. The DELETE key removes the character to the left of the cursor.

Certain block operations (marking ends of blocks and their destinations) also take place to the left of the cursor.

## Why not leave INSERT on?

The INSERT function ( $\wedge$ V or the INSERT key, if you have one) can be the biggest pain in the fingers when you are editing documents requiring frequent tabs. The trick is to turn INSERT off. That way the TAB key works as it does on a typewriter: the cursor jumps over the text to the tab stop. When INSERT is on, the TAB key tabs the text, leaving blank spaces in its wake.

## Cut and paste

Here are the more specific tips we promised. WordStar's powerful block operations—moving, copying, and deleting text—are accessed through the  $\wedge$ K menu. Let's kick some text around.

First, mark the text you want to work on. Position the cursor at the beginning of the text, and issue a  $\wedge$ KB command. ("B" stands for

beginning, or for the "b" in block.) Next, mark the end of the text by moving the cursor *one character past* the last character in the block. (If you want to move an entire line, carriage return included, position the cursor at the beginning of the next line.) Mark the end of the text with  $\wedge$ KK. The second K stands for the "k" in block. (If your keyboard has function keys, use F7 and F8



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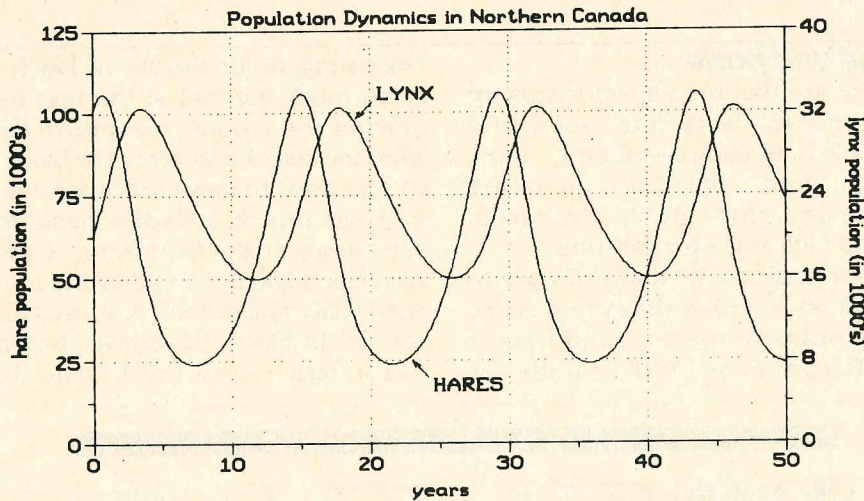
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for ^KB and ^KK, respectively.)


Once the block is marked, you can delete it, write it to another file, or move or copy it to another place in your current file.

To delete the marked text, simply issue the **Y** command from the **K** menu (^KY). To write the text to a separate file, use ^KW, which does not delete the text from the original file. To move or copy the marked text, position the cursor one character to the right of the point where you want the text to appear, then do ^KV for move (text will be deleted from the original position), or ^KC, to make a copy of the text at the new location. A ^KH will hide the markers from view after you're finished. Be sure to clean up trailing spaces or carriage returns and reform text (^B) as needed at the source and destination points.

### The dreaded DISK FULL message

You've spent two hours editing a file, you try to save it to disk with ^KD, and you get a "DISK FULL" message—you can't save the file. Is there a way out? Could be.

From within your file, type ^KF, which will display the directory of the logged disk drive and put you back at the main menu. Check the directory to see if there's an expendable file—a backup file, perhaps—and then type ^KJ. You'll be asked, "Name of file to delete?" and you can erase the expendable file. Then try ^KD again and see if there's now room for you to save your file.

To avoid getting the "DISK FULL" message, as we mentioned earlier, always make sure you have room for two additional copies of your largest file. 

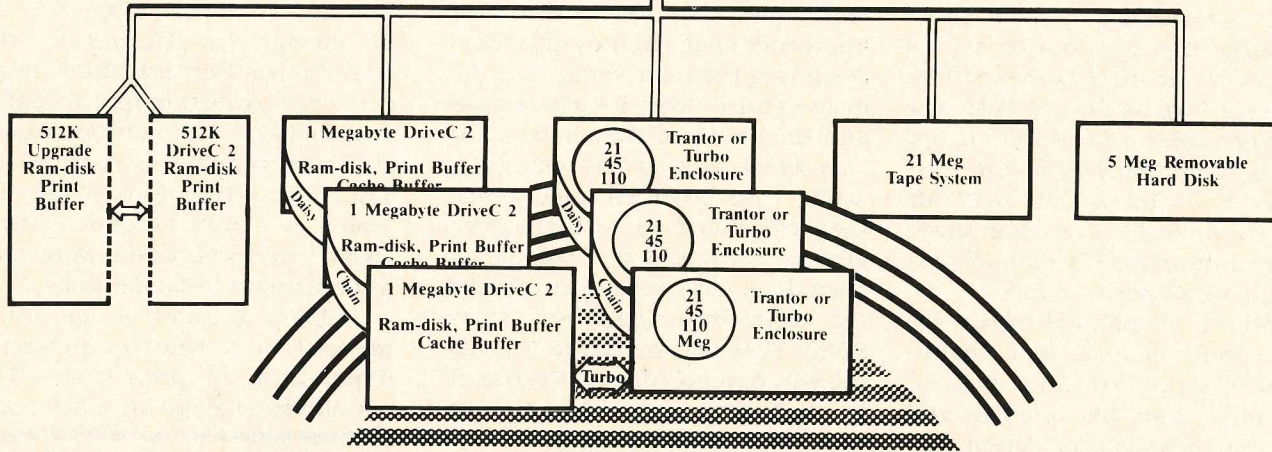
Don and Sharyn Conkey use WordStar daily to write articles and develop training packages for computer users. They've written for PC World, Writer's Digest, American Way, and many other national publications.



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by Tom Enright

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A lot of people are interested in speeding up their computers. The major stumbling block for most is money. Coprocessor boards for the IBM bus are expensive—from \$600 on up. But for less than \$25 you can replace your 8088 CPU with an NEC (Nippon Electric Company) V-20 and immediately gain 15 percent in overall performance.

While a 15 percent speed increase won't change your Kaypro PC or Kaypro 16 into a Cray, remember that this is an overall gain with existing application software. Some memory- and math-intensive operations run significantly faster. Other operations show less of a gain but still execute faster than with a normal 8088 CPU.

The NEC V-20 CPU, properly the PD70108, is one of a family of new high-performance processor chips from NEC. The V-20 is pin-for-pin compatible with the Intel 8088, and the V-30 is an 8086 replacement. Other members of the V-Series may or may not be released by the time this column is in print. The other chips, with the exception of a not-yet-released 8087 replacement, are high-performance 16- and 32-bit processors not compatible with the DOS environment. The subject of this column is the V-20 as a replacement for your 8088.

### **What makes it tick**

Modern microprocessors, including the 8088, have evolved into what are known as microcoded processors. The microcode of a processor is the internal code that tells it how to perform each opcode (OPERation CODE) passed to it by software. All software, no matter what language it started out as, is broken down into assembly language opcodes by a compiler, interpreter, or assembler. Each opcode results in the execution of many (from two to more than 100) microcode instructions inside the CPU chip.

What NEC did was come up with techniques that gave them more microcode space in the chip. While designing the microcode, they put in the entire 8088 instruction set and then noticed they had microcode space left over. Not wanting to waste that precious code space, they enhanced some instruction groups, created a few unique instructions, and topped it off with the entire instruction set of the 8080. They also managed to make the V-20 execute instructions faster by including more hardware re-

sources than exist in the 8088. application, division, shift, and rotation instructions. They are two 16-bit registers (TA and TB) that operate together as a 32-bit temporary register during multiplication and division instructions. During shift and rotation instructions, the TB register functions alone. The result is a 400 percent claimed speed increase over the same operation using microcode alone.

A Loop Counter is also implemented in hardware instead of depending on microcode. This counter is used during block trans-

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## *The Loop Counter allows affected instructions to execute in half the time required on the 8088.*

---

sources than exist in the 8088.

### **Internal hardware resources**

The V-20's increased processing speed is a result of its having more internal resources to work with. These expanded resources are dual 16-bit data buses in the execution unit, a dedicated Effective Address Generator, 16/32-bit temporary registers/shifters, a 16-bit Loop Counter, and both a Program Counter and Prefetch Pointer implemented in hardware.

Dual 16-bit data buses decrease the number of processing steps required to execute many instructions. The most noticeable speed increase (30 percent) is realized in addition, subtraction, logical, and comparison operations.

Having a hardware Effective Address Generator reduces the overhead inherent in calculating these addresses with microcode. This circuit requires only two clock cycles to perform the same calculation that takes the 8088 five to 12 clock cycles.

The 16/32-bit temporary registers/shifters are hardware devices that come into play during multi-

fer primitives that are controlled by a repeat prefix and multiple bit shift/rotate instructions. The Loop Counter allows affected instructions to execute in about half the time required on the 8088.

Both a Program Counter and Prefetch Pointer are included in hardware on the V-20. This allows a savings of several clock cycles on each branch, call, return, or break instruction.

### **Enhanced and unique instructions**

Enhanced instructions include extended opcodes for the following operations: push immediate data, push and pop all general-purpose registers, rotate and shift immediate data, multiply immediate data, and input and output strings directly to and from memory.

Opcodes unique to the V-Series include these operations: insertion or extraction of bit fields, addition and subtraction of packed decimal strings, comparison of packed decimal strings, rotation of BCD digits, clearing or setting of specified bits, and repetition of the next instruction until the carry flag is set or



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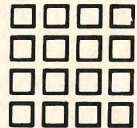
No system is perfect; CPI Business Systems are not exceptions. That's why users are entitled to support when they need it and that's why CPI continues to enhance each system regularly based on user's suggestions.

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CP/M: 64K (53K TPA) & CP/M 2.0 or higher.  
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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.

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## Technical Forum

cleared.

I'm not aware of any assembler or compiler that supports the unique or enhanced V-20 instructions, so the only way to take advantage of these features is to hand-assemble the opcodes in your source. Of course, any software that takes advantage of V-20 specific opcodes isn't going to run on an 8088.

### 8080 mode

Included in the V-20 instruction set is the ability to switch the processor into 8080 mode under software control. While in 8080 mode the processor will correctly execute Intel 8080 opcodes. This allows CP/M-80 to be implemented on a DOS machine more easily than would otherwise be possible.

execution times of the V-20 with many 8088 opcodes. It wouldn't be inconceivable under these circumstances to gain another 10 percent with some programs.

If you're willing to sacrifice portability by using the enhanced and unique instructions, you could gain an additional 5 percent. In math- or memory-intensive applications, you could gain even more. Assembly language hackers aren't likely to disdain throughput gains of this magnitude. Those of you who are firmly wedded to high-level languages will have to put up with the more modest 15 percent average gain.

If the V-20 makes sufficient inroads in the CPU market, companies like Microsoft might offer a dual-mode capability on their com-

## The increase in processing speed claimed for the V-20 by most sources is 15 percent.

Several software vendors have already taken advantage of this capability by introducing CP/M-80 emulators for DOS machines. These packages have the advantage of running significantly faster than a CP/M emulator done completely in software. The only caveat is that hardware-dependent CP/M software won't run. Neither will programs written for the Z-80, unless the vendor traps Z-80 instructions and emulates them in software.

### Conclusions

The increase in processing speed claimed for the V-20 by most sources (vendors and other magazine writers) is 15 percent. This is the average increase gained using standard application software and standard compilers. By using assembly language, you could take better advantage of the faster

compilers or assembler. They've done the same thing on their CP/M compilers and assembler for some time. If they can do that for the 8080/Z-80, why not for 8088/V-20?



"Don't get angry with it. I think Pascal limericks are neat!"



# Product Spotlight

by Tom Enright

Portable printer

The Kaypro 2000 has proved itself a popular machine. It's small, portable, and battery powered so you can use it anywhere. The only thing missing is a printer with the same abilities. Axonix Corporation is targeting its ThinWrite 80 printer directly at the laptop computer market.

Axonix specializes in products for laptop computers. It already makes a backlit screen upgrade for the Kaypro 2000 and the ThinPrint 80 (a battery-powered thermal printer). The ThinWrite 80 is for laptop owners who demand a standard dot-matrix printer in a portable package.

## Features

The Axonix ThinWrite 80 is an impact dot-matrix printer with the following features:

- A nine-pin print head
- 50 characters per second (cps) bidirectional printing
- 5, 8.5, 10, and 17 characters per inch (cpi) in draft mode and a near letter-quality (NLQ) mode; Epson FX compatible codes, with one exception discussed
- Three Epson-compatible graphics modes (60 x 216, 120 x 216, and 240 horizontal by 216 vertical dot densities)
- Two software-selectable character sets compatible with the IBM Graphics Printer
- Replaceable fabric ribbon cartridge with an estimated life of 500,000 characters
- Maximum paper width of 10 inches in single sheet, roll, or fanfold
- Dimensions of 13 x 7-3/4 x 2-3/4 inches (W x D x H) without the tractor and a weight of 6.6 pounds
- Centronics parallel and RS-232C serial interfaces
- A plug-in battery recharger
- A power monitor that turns the printer off to conserve the battery if no input occurs for eight minutes.

## Command emulation

The ThinWrite 80 command set

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emulates (uses the same commands as) the Epson FX series and the IBM Graphics Printer. This lets you choose from a wealth of software, including graphics packages, that already supports these printers.

The only problem that surfaces is with WordStar. When you install WordStar for most printers it asks you to turn off a "local line feed switch" on the printer. The Axonix doesn't have this switch, so if you



install WordStar for an Epson FX, the Axonix will give you two line feeds at the end of each line. Instead, install WordStar for an IBM Graphics Printer. You will get the same request to turn off the switch, but you won't get the double line feeds. And you get WordStar support for most features of the ThinWrite 80.

## Performance

Axonix's claimed printing speed of 50 cps doesn't stand up under testing. But neither do the claims of any other printer manufacturer. While printing solid blocks of text, the best the ThinWrite 80 could do was an average of 31 cps, or 62 percent of claimed speed. As a point of reference, the Okidata 193 delivers 126 cps, or 79 percent of its claimed speed of 160 cps.

A prime limiting factor in the overall throughput of a printer is how it handles white space. (A series of spaces or tabs creates horizontal white space. Blank lines or a

form feed usually make up vertical white space.) The Axonix printer doesn't speed up its print head during horizontal spaces or tabs—it moves at the same speed as it does while printing normal text.

Line feeds move the paper at a speed of 0.33 inches per second (ips), while form feeds move it at 0.92 ips. Again using the Okidata 193 as a reference point, line feeds move the paper 1.7 ips, and form feeds move it 2.2 ips.

Slow paper movement is the biggest factor in this printer's sedate 31 cps speed.

Battery life is of prime concern with a portable printer. Using the parallel interface under battery power only, the Axonix lasted 45 minutes before the low power (below 50 percent) warning came on. During this continuous printing test it managed to print 24 pages at 65 characters per line and 55 lines per page. This was with the parallel interface; the serial interface draws more power and reduces printing time to 32 minutes and 18 pages on a single charge.

A plug-in battery charger, the ThinCharge 1, comes with the printer. The Axonix manual warns that this charger will not supply enough power to operate the printer continuously—some power is still drawn from the batteries. For continuous desktop operation, Axonix also offers an optional AC adapter/charger called the ThinCharge 2.

## Optional accessories

Axonix offers several optional extras for the \$449 ThinWrite 80. A continuous forms tractor for fanfold paper costs \$29.95. If you prefer roll paper, a holder is available for \$19.95. A serial cable already wired for the Kaypro 2000 is available for \$29. The ThinCharge 2 for continuous use costs an additional \$10 when ordered with the printer. Axonix also offers a carrying case that holds the printer, chargers, and your Kaypro 2000 for \$100. ■



## Correction

Information given for the SPIKE BLOK power protection device in "New Products," March 1986, page 72, is incorrect. The suggested retail price is \$39.95, not \$25.

## Note this

wsNOTE is a companion program to WordStar that produces numbered footnotes or endnotes in WordStar files.

Notes can be written in a separate file or embedded in text. wsNOTE produces a print (.PRN) file of the original document, creating endnotes or footnotes from inside the original file, or from an external note file. The program can also be used as a numbering utility for bibliographies.

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Ellensburg, WA 98926; (509) 925-3011.

## One from column A

Desktop management software is now included with Potomac Industries' DiskPorter™ disk organizer. The menu-driven PC-Desk™ software features word processing, automatic letter writing with mail merge, an address file, calendar/reminder, calculator, telephone directory, and autodialer (requires Hayes-compatible modem). A complete (printable) user's manual and tutorial are on the disk.

The DiskPorter houses disks in a slim storage case, which opens to form a copy-stand easel. The organizer holds up to 20 5-1/4-inch disks. It has a removable numbered index to simplify disk identification and filing.

\$29.95. Potomac Industries, Ltd., 2300 M St. N.W., Suite 400,

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## Legal access

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Connection to Veralex is through special start-up software, and a packet-switching network.

\$295 one-time start-up fee and a \$60 per month database update fee, plus hourly online charges. The Lawyers Co-operative Publishing Co., Aqueduct Building, Rochester, NY 14603; (716) 546-5530.

## Another brother

A new 80-column, 100 cps, near letter-quality (NLQ) dot-matrix printer called the M-1109 is now available from Brother International. The M-1109 comes with tractor feed and a friction platen for single-sheet printing.

A Centronics parallel port and RS-232C serial port are standard. Switching from draft quality to NLQ printing (25 cps) is done by pushing a single button. The 96 ASCII characters and graphics, international, and mathematical character sets are included.

\$269. Brother International, 8 Corporate Place, Piscataway, NJ 08854; (201) 981-0300.

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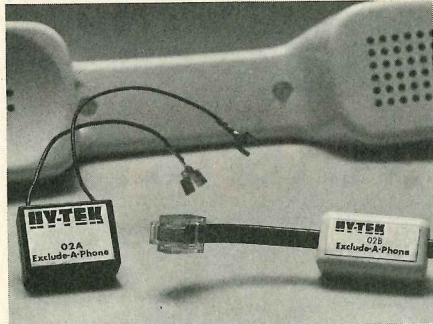


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