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The Magazine for Kaypro Use
September/October 19

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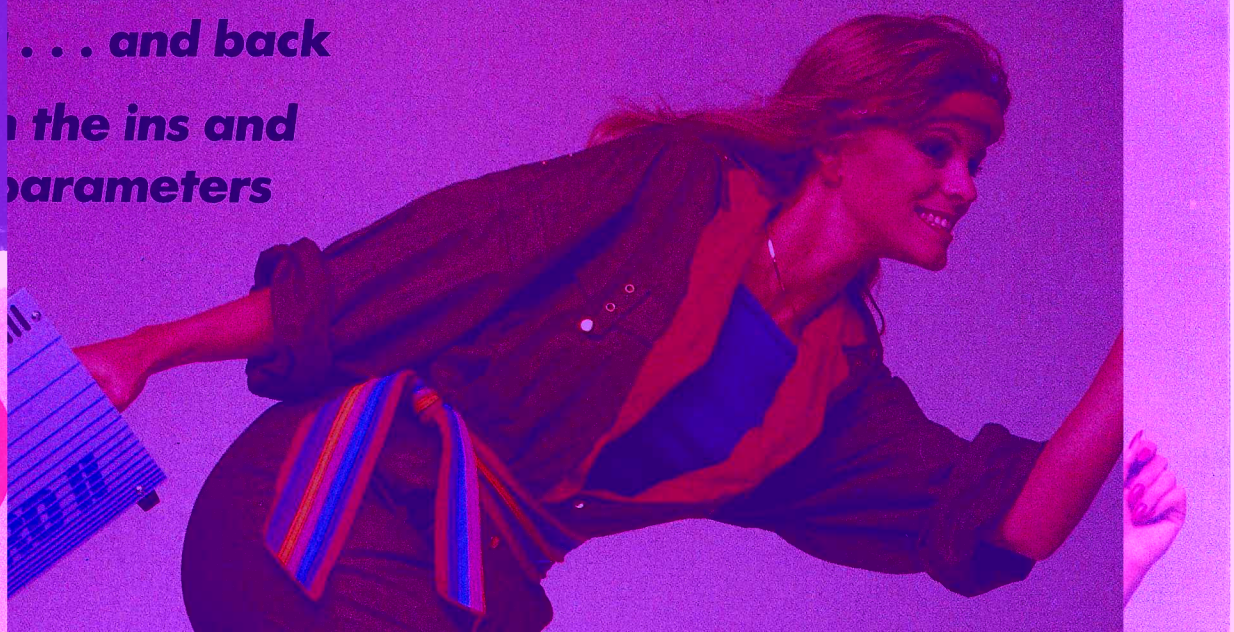

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Aren't willing to leave well enough alone?

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MICRO CORNUCOPIA

Micro Cornucopia is not just a magazine covering single-board based systems, it's really a 2-year-old users group for folks who just can't leave their single board systems alone. The systems we cover include the KayPro*, the Big Board, the Xerox 820, and some new 16-bit boards like the Slicer.

We get inside single board systems to see what makes them tick (or not tick). When we get done we usually know how to make them tick faster and better.

For example, we detail how you can change your standard 2.5 MHz vanilla-flavored KayPro II into a 4 or 5 MHz screamer, yourself! You can even add a switch so you can select either 2.5 or 5 MHz in an instant. We also discuss adding hard disks to your II.

Regular Features Include:

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On Your Own Column
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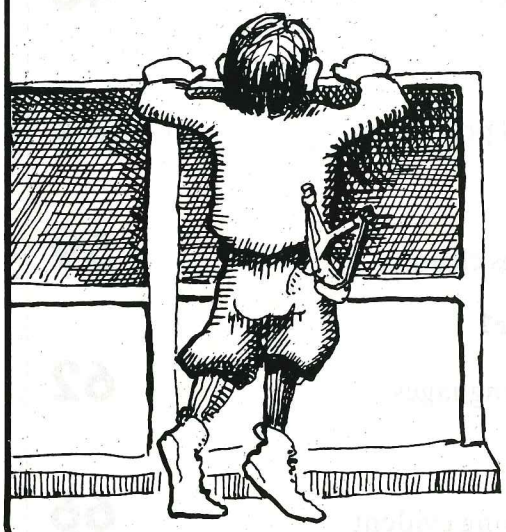

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MODEM7+.COM: This is MODEM7 & MODEMPAT combined - you can communicate with anything!

KMDM795.COM: Super-version of MODEM7 set up for KayPro.

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KayPro Disk K5 - MX-80 Graphics

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KayPro Disk K6
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KayPro Disk K8 - Small C Version 2 Source

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NEW!

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ZCPR: The big news on this disk is this self-installing version ZCPR available only from Micro C. Once you have ZCPR in your CP/M, you'll never go back to straight CP/M! For instance, ZCPR searches drive A for any program not found on drive B, so, even an empty disk in drive B appears to contain every program on A. It's great for text editors, compilers, etc. Plus many more new features to make CP/M easier to live with. In fact, Digital Research incorporated many features of ZCPR into CP/M 3.0.

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Publisher and Editor
Ezra Shapiro

Associate Editor
Terian Tyre

Assistant Editor
Susan Hyman

Technical Editor
Tyler Sperry

Contributing Editor
David Thompson

Art Director
Eric Mattei

Art Assistant
Matt Schulz

Photography
Ron Powers

Advertising Director
Jay Hyde

Advertising Offices
405 W. Washington St., #179
San Diego, CA 92103
619-296-1373

Editorial Offices
533 Stevens Avenue
Solana Beach, CA 92075
619-481-4353

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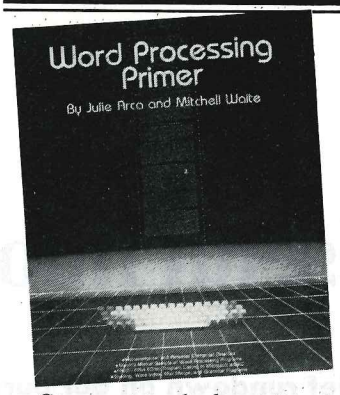
Word processing systems demystified!



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By Arthur Naiman

Whether you're a novice or an experienced computer user, here's the guide that will help you select the best word processing system for your needs. It shows exactly how word processors work – and how you can push them to their fullest capacity. The book surveys currently available microcomputers and their word processing software, letter-quality printers, storage systems, terminals, keyboards, and video monitors. 250 pp., illus., $15.95

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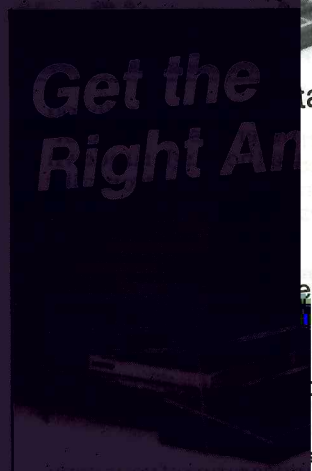

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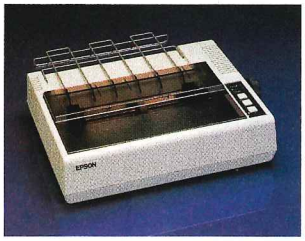

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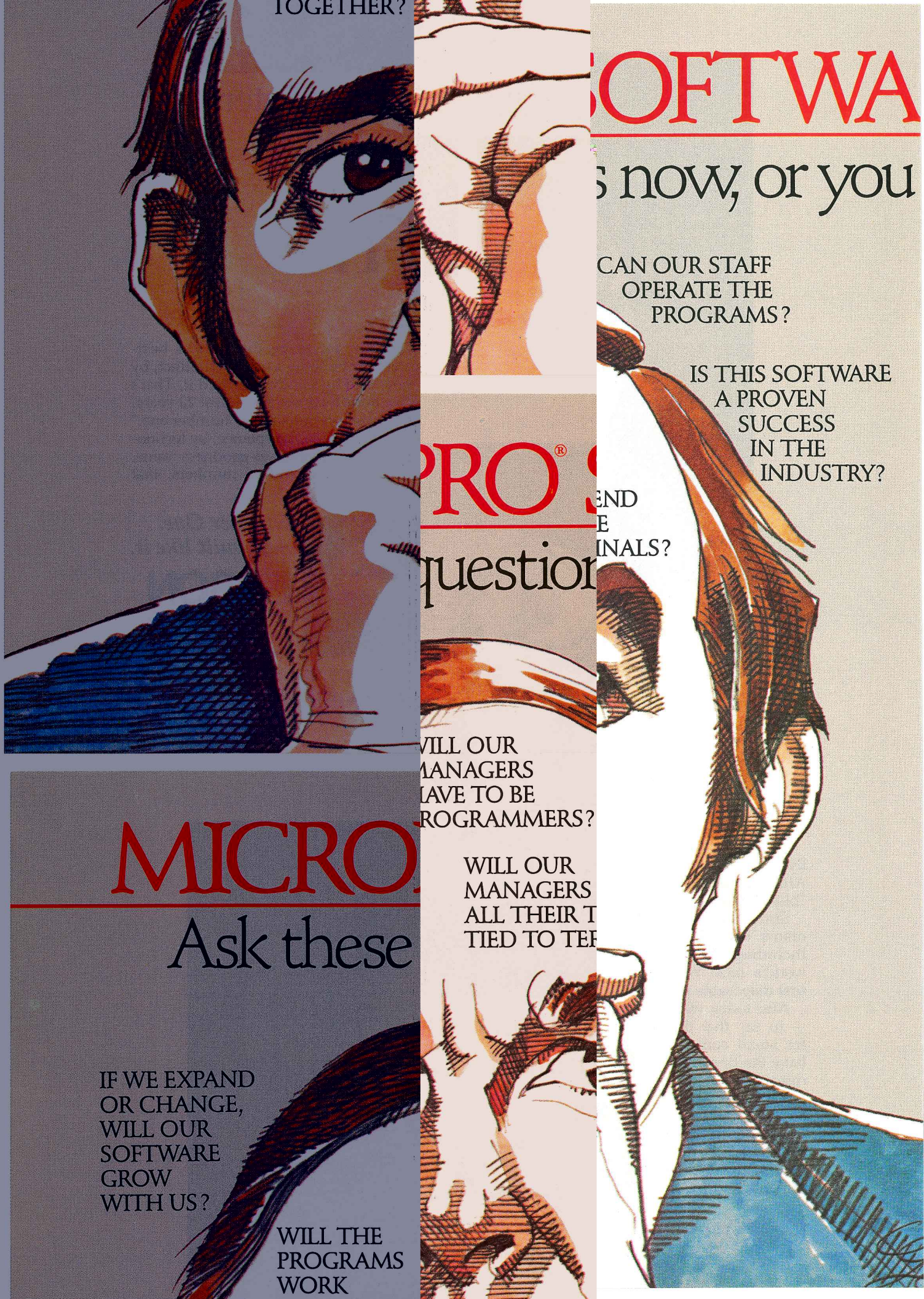
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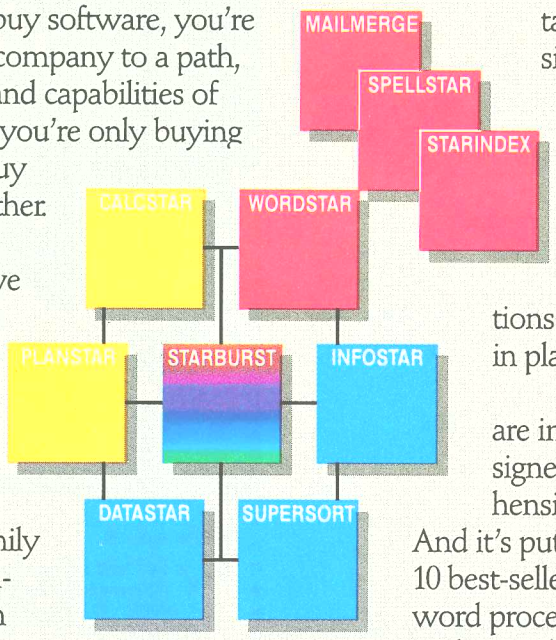

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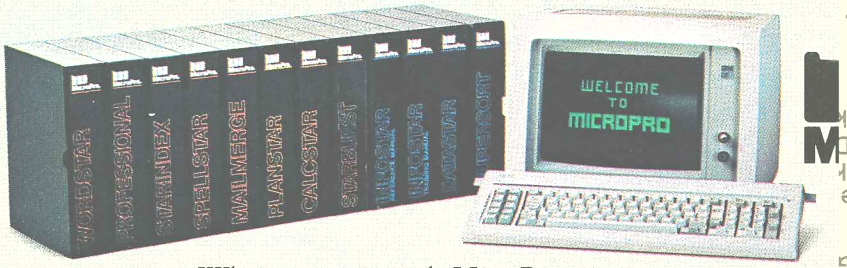

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```
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  SUM : REAL;
BEGIN
SUM : = A + B + C;
WRITE ('AVERAGE IS', SUM/3.0);
END;
```

To call up the procedure from anywhere in the program, just write;

```
PRINT_AVERAGE (3, 6, 15);   or,
PRINT_AVERAGE (–1, 0, 37.4);   etc.
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L E T T E R S

The deluge

In which the praise nearly turns our head, but a few readers keep us honest

CONFIG, revisited

I received the first issue of **Pro/Files** and am pleased to report that it is off to a good start. After reading the magazine and working with the CONFIG program, I have a few comments and a question.

I bought a Kaypro II but I have heard about the new Kaypro 4, and Kaypro 10. I would like to read about them in your magazine. I can't think of a better place to read about them than in the maker's own magazine. I am particularly interested in reading about possible upgrade packages that you or others may offer.

In using my CONFIG program I wanted to define one of my numeric keys to act as another CONTROL key. I at first thought the diagram on page 24 had one in place of #3 but later discovered it was only the "^" probably used for growing one half of a split screen. The symbol "^" is also the symbol for CONTROL. Does CONTROL have a hex code number? If so, what is it?

Robert F. Scheifer
San Francisco, CA

We have received many requests for "reviews" of the two new Kaypros, but considering who we are, we rather doubt anyone in his right mind would believe in our journalistic integrity. We recommend you talk to your Kaypro dealer. A brief teaser, though: the Kaypro 4 is identical to the II except for the doubled capacity of the disk drives. The 10, of course, contains a 10 megabyte hard disk and has better, though limited, graphics capability. Both new machines are capable of reading Kaypro II disks, so you can move up without much trouble.

As manufacturers, we do not offer any upgrade kits, nor do we recommend any third-party products. They do exist—read the ads in ***Pro/Files****—but installing one will void your warranty.*

Finally, there is no hex code for the CONTROL key, as there is none for the SHIFT key. The effect of both keys takes place within the circuitry of the keyboard itself, and is never seen by the computer. —*Ed.*

I couldn't stand the pressure any more, so I entered the uncharted computer waters last Christmas after researching various computers and systems for nearly a year. Nervous and full of self doubt, until I bumped into Kaypro II. Now, seven months later, I feel I have graduated from the "uneducated slug" stage. I even figured out how to configure my Smith Corona TP1 just a few days before documentation arrived from SC and from your support staff at Kay Computers (or is it Non-Linear?)

As soon as my wife will let me, I plan a long session in my computer closet at home reconfiguring the numeric keypad. My question: Once I have reset CONFIG on the CP/M master disk copy, can I transfer the system tracks with the new configuration to other disks by performing the SYSGEN routine?

Don Wright
Council Bluffs, IA

Neither. As of July 1, the official company name became "Kaypro Corporation." Should make life easier.

And yes, SYSGEN will move the new configuration from disk to disk.
—*Ed.*

They like us!

You are to be congratulated on your first issue of **Pro/Files**! You have produced an excellent magazine. Within three to four days after receiving the first issue, I had read it, cover to cover, including the advertisements.

The article titled "Reconfiguring Your Keypad" was well-written and easy to follow, so easy that I reconfigured my keypad for both Perfect Writer and Perfect Calc the first day. Enclosed are print-outs of the results. I intend to experiment further with their individual layouts.

I have one technical question at this point: Is there or will there be screen graphics for Kaypro II by changing or adding a board (See page 14, last paragraph: "bear in mind the limitations of the Kaypro II's non-graphic video

(Continued)

section").

Happy publishing and computing!

Greg Hall
Los Angeles, CA

Keep watching the advertisements; we're aware of a number of companies that are developing add-ons. For further dope on graphics, see our technical questions column. —Ed.

I have looked over your first edition of **Pro/Files** and think it will be a very useful magazine especially to those of us that are trying to "self-teach" on the Kaypro II.

It seems the more I work with the computer, the "smarter" the little devil becomes!

When I let my mind wander over the many possibilities that the computer presents, I have often wondered why someone has not come up with software that would allow a person to type a letter in English to the computer, and have the printout produce a letter in any given foreign language. It would seem this software would have some appeal to world travelers that might want to correspond with friends they had met in their travels, or many business applications for that matter. Have you ever heard of anything like this?

Donald Porter
Beloit, KS

While there are a few word-by-word vocabulary drills out there, there is no program that will translate a letter into a foreign language. The problem is context—figuring out precise shades of meaning, and translating idiomatically, is an enormously complex task far beyond the power of a simple microcomputer.

There's an old joke about a man who builds a Russian/English translating machine. As a test, he feeds the machine the phrase "Out of sight, out of mind." The machine spits out a Russian translation. He feeds the Russian sentence in. The machine fires back, in English once again, "invisible idiot." —Ed.

I am way too old to admit that I am thrilled by anything, but I do have to admit that I am very enthusiastic about the unexpected arrival of the first issue of **Pro/Files**. It fills a great void as a source of concentrated information regarding the Kaypro. Having no local KUG, my only prior source of information was the KUGRAM. I welcome the advertisements in **Pro/Files** as much or more than the features and departments. It's great to know what's available and where to get it. I am afraid, however, they (the advertisements) are going to cost me a lot of money.

Of the several excellent articles in Volume 1, Number 1, I nominate "Reconfigure your numeric keypad" as the most valuable. I had no idea this capability was available.

Although Joe Clark ("They don't show the paperwork on TV") is doubtless a better-than-average private investigator (since he uses a Kaypro), he didn't do his homework on "The Rockford Files" or "Magnum, P.I." Rockford can't possibly be called sleazy and his father was not an alcoholic, nor is Magnum pictured as being rich. Investigator Clark is forgiven, however, for not watching TV shows wherein the heroes are private investigators. I admit to not watching any of the shows wherein the heroes are electronic engineers.

I look forward to the next issue of **Pro/Files**. I may cancel a couple of my other subscriptions, for with **Pro/Files** around, who needs **Byte** or **Personal Computing**?

Warren Pope
Downey, CA

Apologies are in order. We'll send a case of sarsaparilla to Rockfish's daddy, and a contribution to the Fresh Air Fund for Mr. Magnum.

However, considering most of what's on the airwaves these days, we bet we'd enjoy a show featuring a feisty but lovable E.E. . . . —Ed.

Could you please send me a replacement copy of the new **Pro/Files** magazine? My original copy became quite waterlogged when my cat elected to give it a bath prior to my reading it. Thanks for your help.

Ronald Emmons
Los Angeles, CA

In our opinion, a real catastrophe! —Ed.

As a professional writer and former magazine editor myself (**Chicago** magazine, among others), I was delighted with the first issue of **Pro/Files**.

I found the contents interesting and readable. And I can see that as I become more proficient with my new Kaypro II **Pro/Files** seems likely to continue to be helpful.

Apparently, the Non-Linear Systems people are letting you do your editorial job without too much interference. They're smart.

Richard Frisbie
Chicago, IL

Congratulations and best wishes for success with your new venture. Marvin Grosswirth's "Read at your own risk" was most informative. The advice, "Read the Damn Manual," should precede all response to pleas for help. David Thompson's "The cottage computerist" was inspirational. If I can earn a few bucks with my Kaypro, then the initial expense might be acceptable to my bunk mate, sometimes called wife. All things considered, a very nice start, for just another computer magazine.

I enjoyed reading your account of the early days owning a Kaypro. I shared many of your frustrations. Like

(Continued)

Can you tell the IBM® from the Transtar 130?

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LETTERS

(Continued)

you, this is my first computer, even though my last job as Chief, Office Automation Division, Defense Logistics Agency introduced me to the wonders of microcomputers. When I retired last year, owning a microcomputer was high on my list of priorities. Thankfully, Kaypro was introduced at a price I could afford, so now I have the bug.

Good luck and best wishes for continuing success.

James W. Revels
Colonel U.S. Army, Retired
El Paso, TX

First, free software, now a free magazine. Wow! Who needs Atlantic City?

John Pryor
Brookville, OH

Please run some articles on modems, and bulletin boards and give advice as to what works with Kaypro. All articles I've read are not specific enough and I feel quite confused on the subject.

Keep up the good work.

H. R. Steigleder
Bowling Green, VA

Coming, next issue! —*Ed.*

Choosing a language

First, let me express my pleasure at receiving issue number one of **Pro/Files**. Non-Linear Systems has been no more than a distant, unreachable corporation to me since I bought my Kaypro. Now, with the inaugural issue of **Pro/Files** they have suddenly established a personal connection with me via my mailbox. In a world of dealers who never seem to care for help, **Pro/Files** is likely to become the single most valuable accessory for the Kaypro owner.

(Continued)

Second, I would like to point out a correction to the article entitled "What do you say to a computer?", which discusses different programming languages. In the table on page 44, LISP is listed as a compiled language. While it is true that LISP compilers do exist for some of the largest LISP systems, LISP is almost always used in an interpretive mode. Most LISP compilers are used only for compiling certain classes of frequently used functions for addition to the subroutine library of an interpreter in order to speed up interpretation. In fact, many LISP programs can't be effectively compiled because of the use of self modifying codes.

Furthermore, the table indicates that interpretive languages are at a higher level than compilable languages. This distinction is invalid for several reasons. First of all, there are a number of languages which can both be interpreted and compiled (most notably BASIC). Secondly, there are things that compilers can do which are very difficult and impractical for interpreters. In fact, the new proposed ANSI standard for BASIC has added so much complexity to the language that it will most likely require a compiler (or at least a P-Code precompiler) to make the programs executable. As mentioned above, there are also things that interpreters can do quite easily which are impractical to attempt with a compiler. Thus there is no distinction, in terms of expressive power, between interpretation and compilation. Within the group of languages listed under these two headings in the table, expressive power is typically measured by three language features: support of control structures, support of data structures and support of modularity. These do not lead to a clear cut ranking of languages by expressive power, however, they do provide ways of comparing the utility of languages in the context of a particular application.

I realize that in an article for beginners it is important to simplify complex issues as much as possible. As someone who teaches beginners, however, I can also vouch for the fact that a misleading simplification can make things much worse for the reader (or student) later on—first impressions stay with us, even if they are wrong. Please have authors keep this in mind whenever they are writing tutorial articles.

I'll be anxiously looking forward to the next issue. Keep up the good work.

Chip Weems
Computer and Information Science Department
University of Massachusetts
Amherst, MA □

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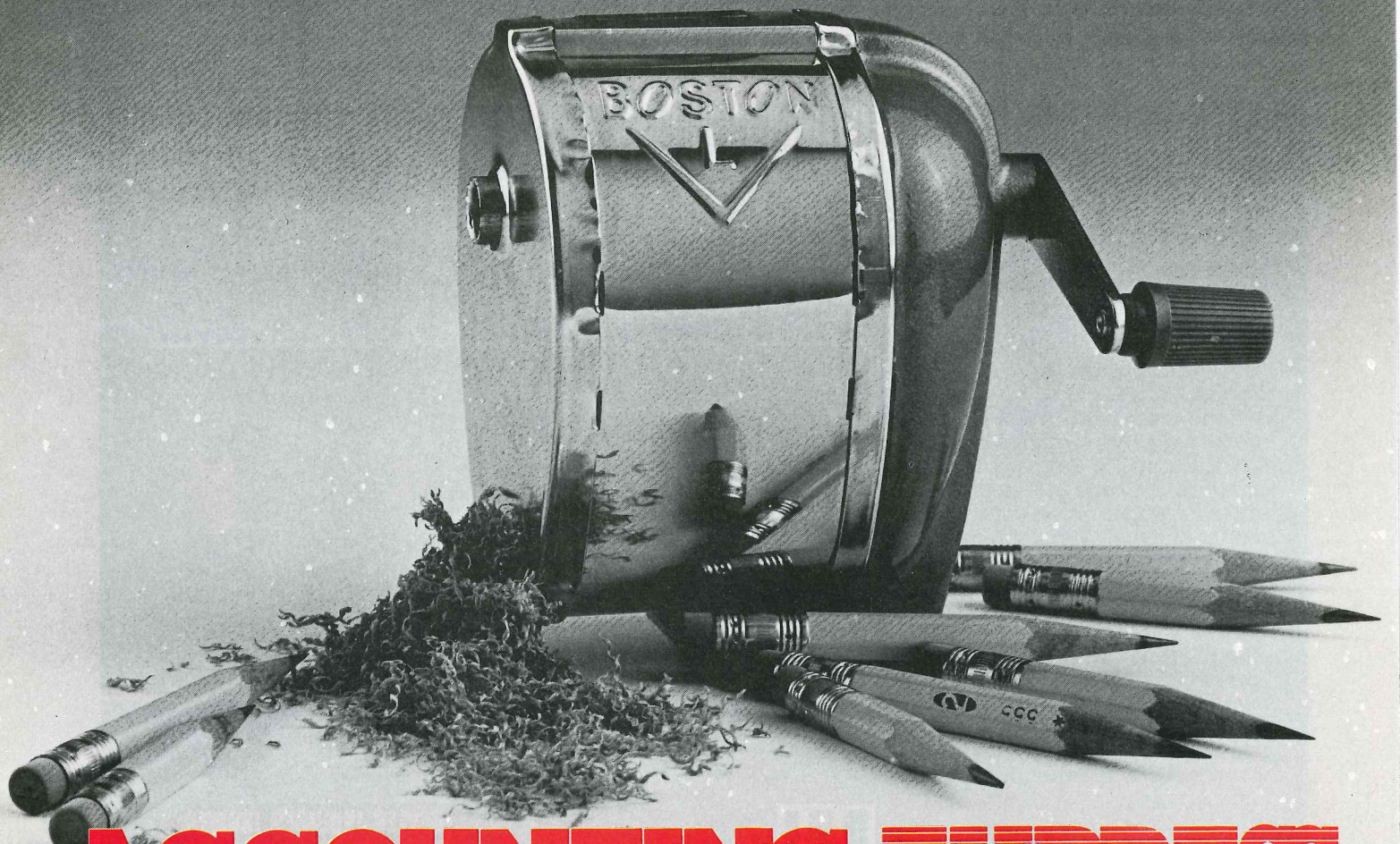

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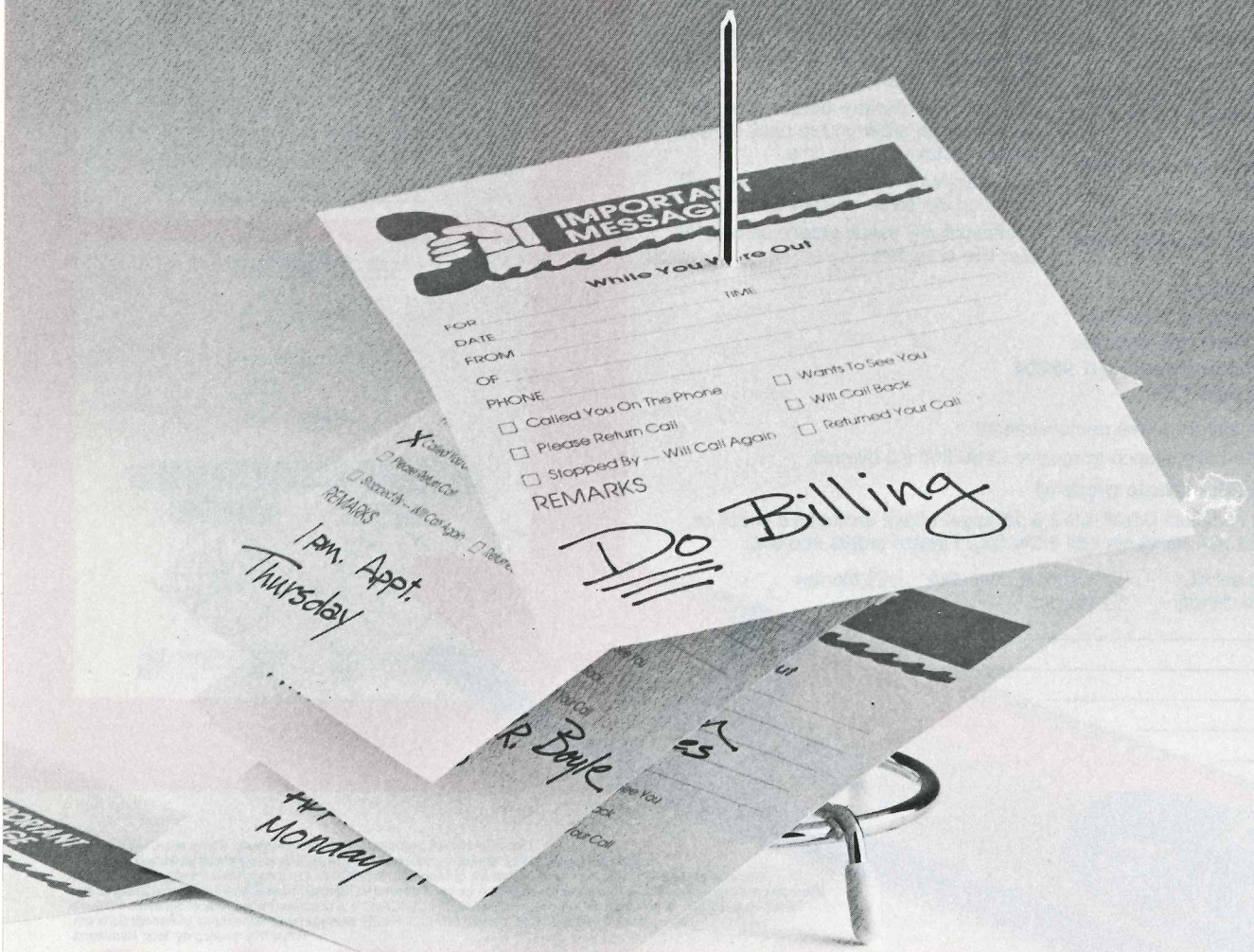

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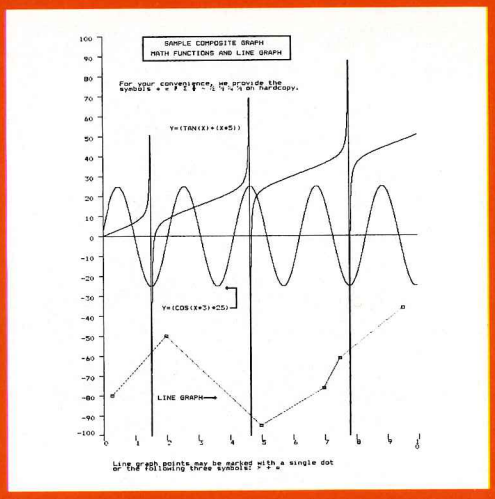

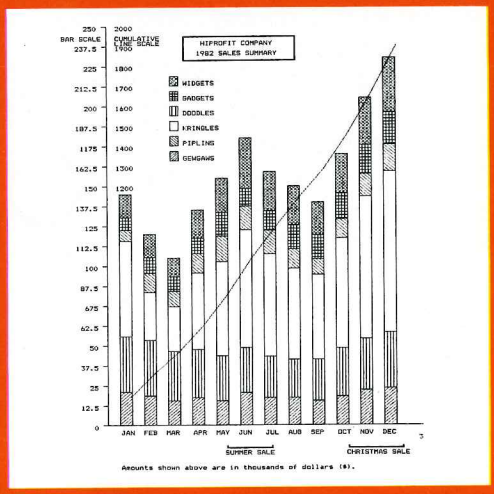

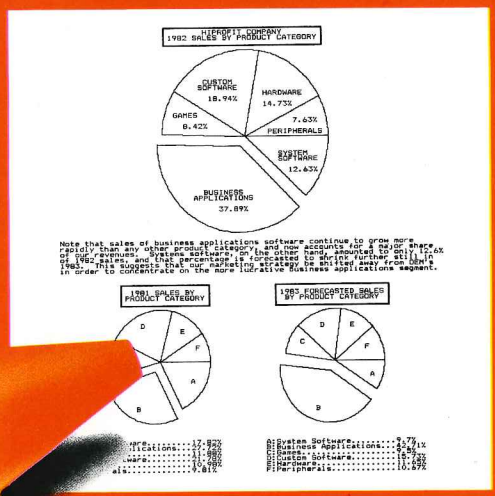

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by Tyler Sperry

Disk formats

In your first edition you mention the availability of many programs that will reformat software to run on the Kaypro II, which I have. There are several programs now available for the Apple II that I need to be able to run on my CP/M Kaypro II. Please tell me where I can get such a reformatting program.

Russel Wilcox
North Dighton, MA

That's not quite what we said. Moving things from computer to computer is a tricky question, particularly when it involves the transfer of software from one machine to another. All software is one way or another dependent on hardware, or at least, operating systems. Such things as video control, port addresses, and so on, vary so much from machine to machine that almost any transfer is unlikely. I doubt that you'll be able to move a program from a standard Apple to a Kaypro (the microprocessor chips are extremely different) unless it's a short, and relatively mindless, BASIC program (Applesoft and Microsoft BASIC are essentially the same language).

Transfer of programs between two CP/M machines is easier, but still not guaranteed—there are no universal standards for hardware even within the CP/M family. If you're using a CP/M Z-80 card on your Apple, you could attempt to send data between the two machines' serial ports, using a cable (be sure the pin configurations match) and appropriate communications software on both ends. But as above, I doubt it will run unless it's either very straightforward or comes with a good installation routine.

Text files are another matter. Using a good communications link, you probably should be able to move text from one machine to the other with ease.

There ARE programs that allow the Kaypro to read files directly from disks prepared on a variety of other computers, chief among them being UniForm, from MicroSolutions, which is included with new Kaypro II's. Currently, UniForm as distributed with our machines will allow you to read disks in Osborne I (single and double density), Xerox 820 (SD) and 820-II (DD), and TRS-80 Model I (SD) formats. The program is also available in an expanded version that allows the Kaypro to read the above formats plus Access Matrix, Superbrain Jr., NEC PC-8001A, Morrow Micro Decision, Heath/Magnolia (DD), Zenith Z-100 (DD), IBM PC (CP/M-86 SSDD), DEC VT180 (DD), TI Professional (CP/M-86 DD), Omicron CP/M board, and TRS-80 Model III (Memory Merchants' CP/M) disks, $49.95 from MicroSolutions, 125 S. 4th St., De Kalb, IL 60115, or at many Kaypro dealers. Remember, though, that you're taking your chances with software from other machines.

Unfortunately, I know of no program that will allow you to read Apple disks with your Kaypro.

Diagnostics

I have one request. One program that would benefit the user is a diagnostic program to determine when and if the Kaypro has a bug, such as a program to check the disk drives, the memory, the keyboard, etc.

I have taken my Kaypro in, thinking that I have a problem, and find that it is alright. This makes me appear to be rather retarded. If you can help me on this, I would appreciate it.

Thomas N. Gaiser
Comfort, TX

Any service technician will tell you that the hardest problems to fix are those which are intermittent, because the problem must appear consistently before you can track it down and fix it. If you have a problem that seems to come and go, try to notice the circumstances surrounding its appearance. Bugs in the software will often appear only after an exact sequence of actions from the user, while some hardware problems won't appear until after the machine has warmed up for an hour or two. All sorts of strange things can happen if you don't take the time to read the manuals. See if you can make the problem repeat

(Continued)

before *you take your Kaypro to the shop.*

To the best of my knowledge, there is no omniscient program that can test all of your Kaypro's innards at one go. There are programs available that will test one particular section of the computer, such as the memory. A collection of such programs is available from Supersoft, Inc., P.O. Box 1628, Champaign, IL 61820. A "diagnostic disk" such as this can be helpful, but to be really effective it requires a pretty sophisticated user or technician.

Since I'm sure you are not one of those mental defectives who reports a problem without reading the relevant manual, that is about all I can offer in the way of advice. Good Luck.

Graphics

I have spent the better part of a year trying to find someone or some magazine that could explain what "graphics capability" is all about. Is this capacity totally a hardware issue? Or is there adaptive software that turns a non-graphics micro into a graphics micro? Will future Kaypros have graphics capabilities?

James R. Lane
Los Angeles, CA

Almost everything that a computer can do will require both hardware and software. Your computer's capacity to display graphics on the screen is determined by the hardware design. Your ability to use the graphics is another matter, dependent on your programming skills and the software that comes with the machine.

Strictly speaking, the Kaypro II and 4 have no graphics capability; they have what is known as "character mapped" displays. Without modifying the video section of the hardware, the best that clever software can do is represented by the Ladder and Catchum games that come with the Kaypro MBASIC diskette.

The Kaypro 10 display is similar to the previous machines, but by the addition of a little extra hardware and some fancy footwork in the software, we are able to imitate a "pixel-mapped" display. (A pixel is defined as the smallest block of light on the screen that can be individually controlled.) In the Kaypro 10, the display can be turned into an array of squares 160 wide by 100 high. This resolution is adequate for bar charts or a game of Aliens, but it is, ahem, light years behind the graphics in Tron.

As memory prices fall and new video processors become available, you should expect to see high resolution graphics appear on new Kaypro models.

Paper punch

We have one Kaypro 4 and another planned for the fall. We are now using the machine for mailing list maintenance and list generation, which loads it heavily some days and leaves it idle on others.

We would like to look at the feasibility of adding a paper punch and attendant software to make the machine useful for generating input tape for our typesetting computers.

Assuming we acquire a punch with RS-232 interface, serial or parallel, can you give us an idea of what would be involved in getting the punch to operate and output TTS coded tape?

Carl Schumacher
X-High Graphic Arts
Elkton, VA

If you are able to find a punch that can accept data using the RS-232 serial port or the Centronics-type parallel interface, then you should have no more trouble in getting the punch to work with your Kaypro than you would in getting a new printer to work. In this case, my advice is the same as it would be for a printer: insist on a demonstration before you buy.

Assuming you can find a suitable tape punch, the next task is to get a program for it that will accept files created by your favorite word processing program. If you are smart or lucky, the same company offering the punch will have a software package ready to go.

The more common approach to the problem is to bypass the paper tape entirely by connecting a "black box" between your Kaypro's RS-232 port and your typesetting machine. CyberText Corporation, Arcata, CA, markets just such a box for connecting Kaypros and other computers to Compugraphics machines. Actually, what they sell is the MicroCOMPOSER Interface System that consists of both the interface hardware and the software package to run it. Prices start at $1150.

CRT woes

The hardware problem I have is that a few pixels on the screen light when the system warms up. As the system gets warmer, more pixels light up forming a vertical line in the 64th column. The dots flash at the same rate as the cursor and do not appear to be any normal character. When a character is printed where the dots are, the dots and the character merge together. I have replaced most of the chips in the video circuitry without improvement. Visual inspection reveals no bad foils. My warranty has expired and I no longer live near my dealer. HELP!

Steven Gale
Carnegie-Mellon University
Pittsburgh, PA

It appears the clue you missed is that this problem might very well be heat related. One simple trouble-shooting procedure for that sort of problem is to grab a can of circuit coolant (available from your local Radio Shack), and carefully spray each IC in the video section for a

(Continued)

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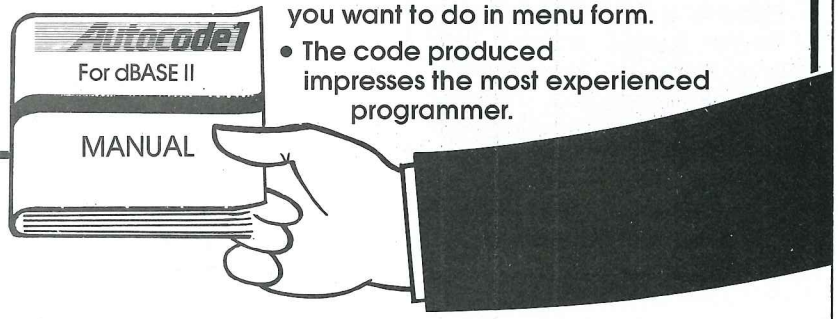

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Q & A

(Continued)

second or so. When you get to the chip that's the culprit, the screen should suddenly clear to a normal display.

It sounds to me like your machine could be suffering from the dreaded "Slow EPROM Syndrome." You can check this by cooling U43, the character generator. If that's the problem, you have two choices. You can order the 2716 EPROM—Kaypro part number 81-146A—from your local dealer. If no Kaypro dealers near you have one of the EPROMs in stock, you can also order a replacement from Micro Cornucopia for $29.95. (See their ad in this issue.) Either EPROM will give you the added benefit of cleaning up that irksome lower-case g.

I have two questions to offer as grist:

1. About four seconds after I turn my Kaypro II off, a very bright spot appears in the center of the CRT. It takes about 20 seconds for this spot to die out. This first appeared last week when the Kaypro was about six months old. I fear that it will eventually burn a hole in the CRT phosphor. My dealer is as puzzled as I am. I suspect an open bleeder resistor on the high voltage power supply, but have no schematics to check it. What should be the value of the high-voltage power supply bleeder resistor? Any others report this trouble? Do you have any ideas or suggestions?

2. Where can I get some good documentation on S-Basic? I like the way the language works—especially the speed at which it runs once compiled, but I certainly could use some better documentation.

Louis Taylor
Magnolia, TX

Your first question poses a bit of a problem. There have been several manufacturers for the video monitor used in the Kaypro II, and you don't state the maker of your particular monitor. Also, unlike the main logic board, the video section contains high voltage that can be LETHAL. Without knowing that you are a qualified technician, I cannot suggest that you take a chance of getting curly hair. Let your dealer take the risks.

When you take your Kaypro to your dealer, have them look for a resistor connected between ground and the anode of the CRT. It will be as thick as a pencil and perhaps half the length. The schematic for the Elston video monitor shows a value of 240 Megohms at 3 watts—not the sort of resistor that you can expect to find at the electronics hobby shop! If the bleeder resistor is open, your best attempt at a replacement will come from a TV repair shop.

As to your second question, there is no doubt that the S-BASIC User's Guide is the problem child of Kaypro documentation. The original manual from Topaz Programming was aimed at systems level programmers; if you knew both BASIC and another language like PASCAL or C, you probably didn't think it was too bad a manual. Alas, the vast majority of Kaypro users shared Jerry Pournelle's opinion that it was one of the two worst-written computer manuals ever produced. (No, the other one wasn't from Kaypro. Guess!) Rewriting a manual takes time, but things have improved since then. The latest manual is much clearer than the original.

I suspect that what you are looking for is not a reference manual or magazine reviews, but some tutorial material that actually shows how to program in S-BASIC. As far as I know, that sort of information hasn't been published. If you have some questions (or some answers) on S-BASIC, please write in.

We fully intend to try to plug the gap, but we've had a hard time tracking down both good writers who know the program and good programs written in the language. S-BASIC seems to appeal to proficient programmers who are doing rather complex things, and who have no inclinations to write about them. Help! □

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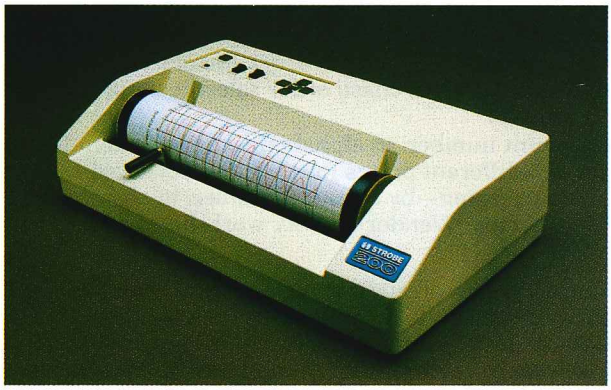

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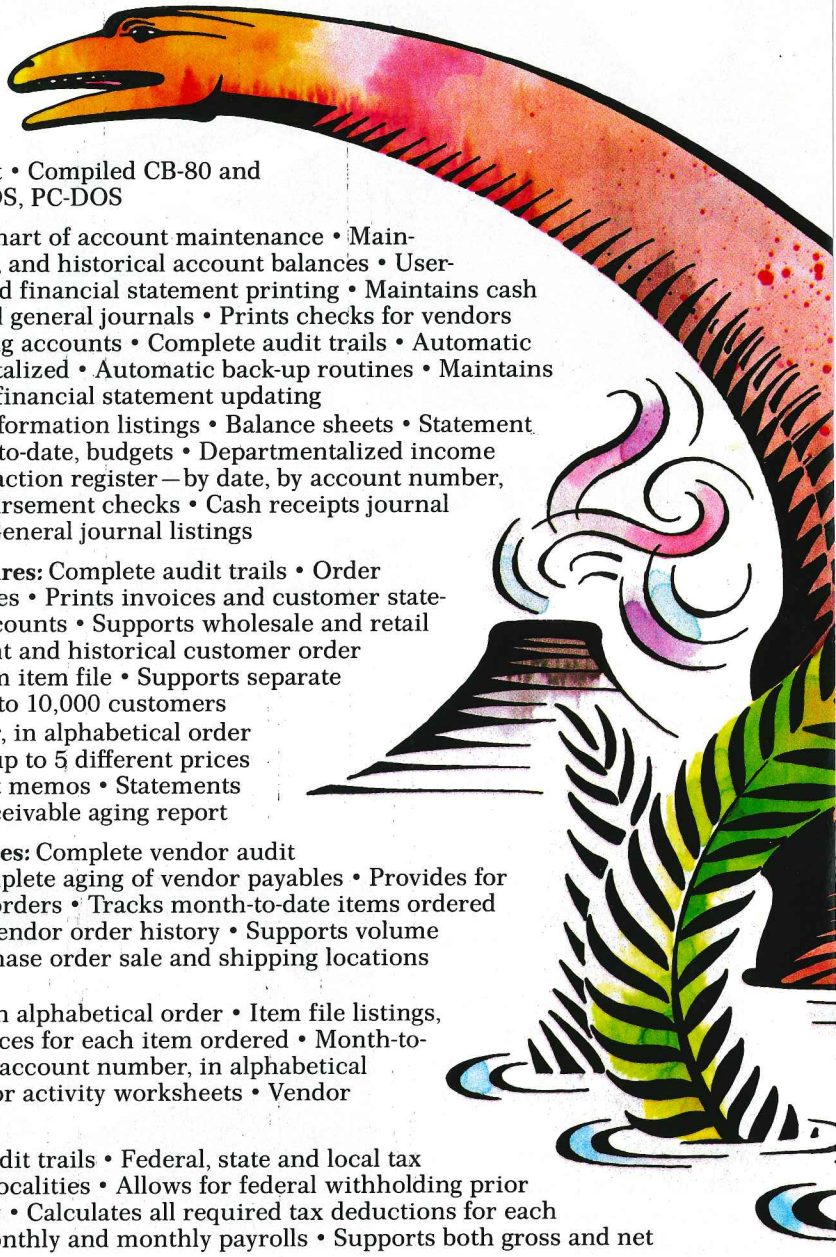

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Unhealthy attitudes

There's a time and place for antagonism; the editor lets both sides have it

by Ezra Shapiro

My role in the founding of the Northwest Kaypro Users' Group in Portland, OR, last summer came as a result of some rather mixed feelings about my new Kaypro—intense frustration alternating with overwhelming excitement. It was a new world for me, and I wanted to share my delight—and my anger—with others experiencing the same struggle.

The word processing program that came on those early Kaypros could not and would not run my printer correctly. What passed as "manuals" were stapled stacks of poorly printed pages labeled "for dealer use only," and those few sections that were actually readable were not particularly helpful (It took me weeks to figure out that a cryptically-named program called "SYSGEN" that claimed to "write CP/M to disks" would actually enable me to plug my program disks into the computer without first having to insert and remove my CP/M master. I didn't want CP/M on my word processing disk, I wanted my word processor on my word processing disk. What did I know about "system tracks?").

On the other hand, I started doing all my writing on the machine, and I had no regrets about abandoning the loyal Smith-Corona. I wrote a simple program that generated random paragraphs, and amazed my uncomputerized friends (At least they *said* they were amazed.). I acquired a copy of the public domain Adventure game, and started staying up all night exploring the depths of a cave populated with dwarves and snakes and magical devices of all sorts. It was *wonderful*. I couldn't shut up about it.

So Charlie and Stan and Karol and Phil and I found a pizza parlor and announced a meeting. Our initial goals were simple. We didn't trust our dealers, we found Kaypro unsympathetic and uncooperative, and we figured the only way to get help was to help each other. The manifesto we drew up stressed education, speakers, a newsletter, and the ability to act as a consumerist pressure group to get what we needed from the manufacturers. And we included a paragraph that stated our intent to conduct meetings in English rather than in computerese.

To make a long story short, it worked. The group has been running for over a year now (without me since January), and I'm pretty proud of my association with it. What made it a success? Several things. Mutual need. Active participation. A good social setting. And an atmosphere of healthy hostility toward Kaypro.

Things have changed. The dealers are better. The manuals are better. The machine is better. The software is better. Not the best, but better. The company manages to answer the phone and provide desperately needed help. They've even launched a *magazine*, of all things. So the end user shouldn't feel as downtrodden as he did a year ago.

Speaking as a user myself, rather

ILLUSTRATION BY SCOTT POLLACK

than a company spokesman, I still believe the goals we set in Portland are valid. I have strong feelings of consumer activism when I purchase a car or an appliance; a computer certainly falls into the same category.

However, now that I've had a chance to see things from *the other side*, I've had a number of blinding revelations.

The first is that there are limits to what can be expected from a computer and its manufacturer. Automobiles stall, they need servicing, things break, gas consumption and handling characteristics vary, and so on. We take this as a natural course of events. Computer owners as a group seem to be satisfied with nothing less than perfection—a criterion they would not apply in other aspects of their lives. I have found myself under attack on many occasions from owners who are irate about their Kaypros but who will neither give them up nor seek other means of help, and who claim their troubles have been going on for *months*. It's a paradox I'd find difficult to live with; if I bought a car that wouldn't run and couldn't be fixed, I'd do something drastic. Fast.

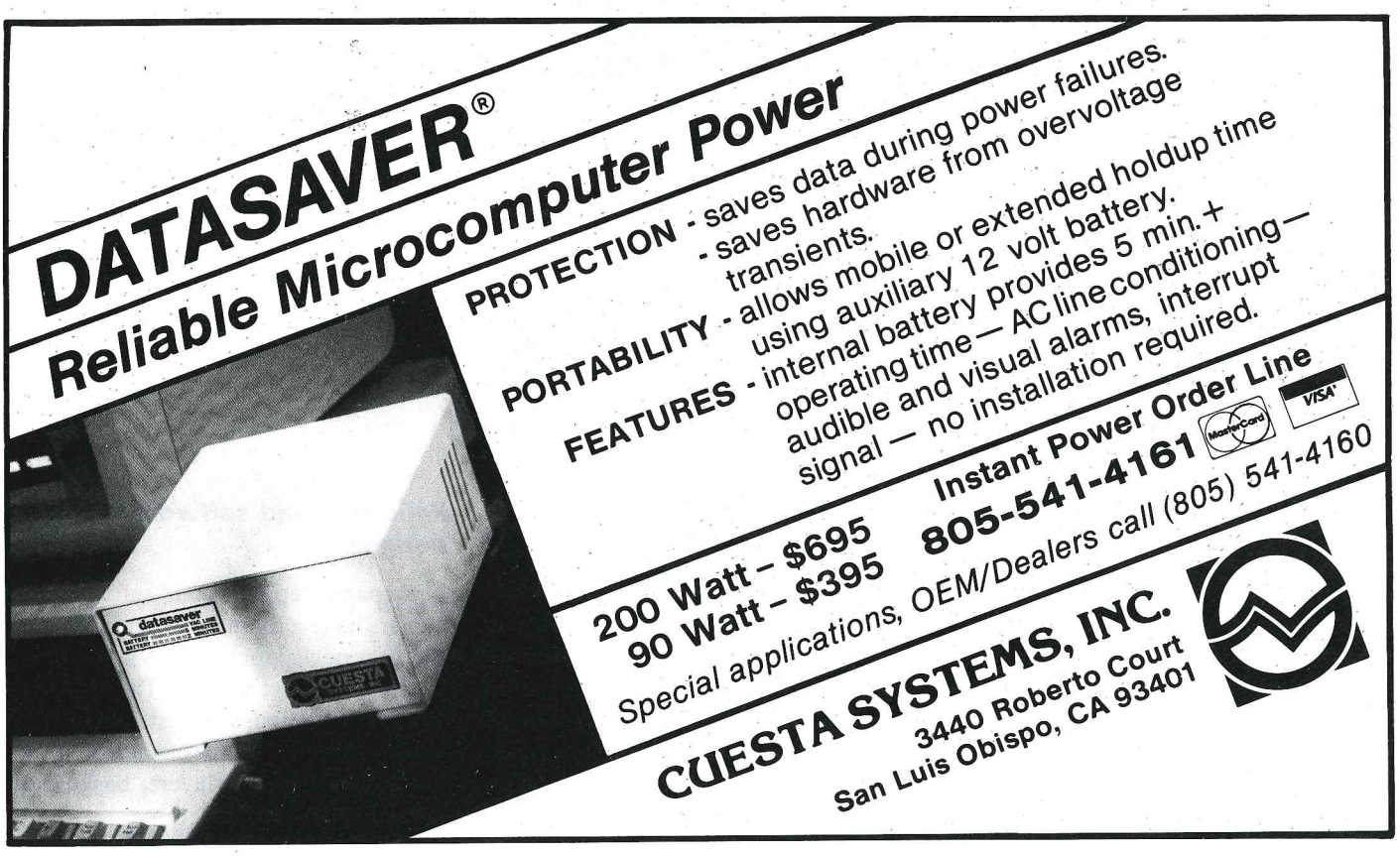
When the auto industry was at this stage of infancy, did car buyers demand driving lessons? Do we do this today?

There is also an inordinate amount of complaining about documentation and training. The industry is what, half a dozen years old? When the automobile industry was at this stage of infancy did car buyers demand driving lessons from the makers? Do we do this today? No. We make the assumption that we'll have slim manuals to read and get most of our information from other sources.

The computer industry as a whole is making an enormous attempt to improve manuals and tutorial aids. They are giving away computers to schools by the truckload. They are holding seminars, sending speakers to groups, answering phone calls, and running themselves ragged trying to fill the gap in computer education. Never has the profitability of an entire manufacturing sector been so closely tied to teaching the mass public about its products. Yes, there are flaws in most computer manuals; book publishing companies are making a fortune as a result. However, do we as end users have the right to expect a kind of spoon-feeding that we expect in no other parallel situation?

The sword cuts both ways, guys. We're all pioneers together, owners, dealers, and manufacturers. If we *all* work on the issue of computer literacy, we'll make more headway than if one group sits back and bellows that it's all another group's fault.

We are certainly making mistakes at Kaypro. Like everyone else, we've learning as we go along. But we *are* trying, and with a little help from our customers, computing will get easier, and better, and this all won't be such a big deal. □



The cottage computerist

People are the most impatient of animals, and without a doubt, computer folks are the most impatient of people.

by David Thompson

Certainly one of the most frustrating things is the feeling that freedom and great riches are practically within your grasp, but you don't know which way to reach. I've talked to numerous folks who haven't the slightest idea what to do but who are panic stricken by the thought that someone else will do it first.

Ideally, I'd be able to wave a magic wand and then tell each one of you how you could be wealthy or happy (or both, although that's really pushing a magic wand). I would call you each by name (in a booming voice from a high place, of course) and dictate a complete itinerary for the next twenty years. However, I haven't found the right kind of stick, and my voice wouldn't last through the first dozen pronouncements. But if you'll bear with me, we might be able to come up with some interesting ideas.

For instance, software

Software design is one of the most wide open fields and it's the field that requires the smallest financial investment. If you want to write software for Kaypro users, all you need is a Kaypro, some time, and a certain something special to offer. The "something special" is very important. For example, don't expect to get rich and famous by writing a new text editor or compiler. They've been done many times.

You see, when people get into computers they tend to create software that makes their lives easier or more interesting. So the old-line programmers have been writing assemblers, compilers, and editors for years.

Reporters and software designers

Newspaper reporters and software designers have a lot in common. You see, the best newspaper writers aren't necessarily the best writers. They're usually businessmen, scientists, designers, farmers, cooks, actors, doctors, psychologists, bridge players, basketball

(Continued)

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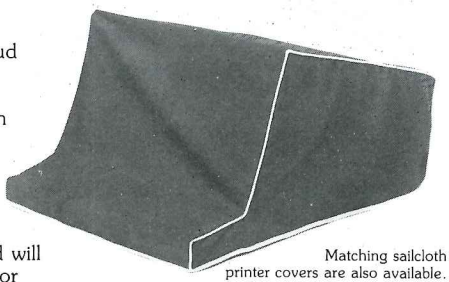

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(Continued)

coaches, or whatever—and writing ability? Well, that's a nice bonus.

People don't read newspapers to find out if reporters can write; they read them for information. If the writing doesn't get in the way, so much the better.

The best software designers aren't necessarily the best coders. They too are usually businessmen, scientists, designers, farmers, cooks, actors, doctors, psychologists, and so on—and despite many indications to the contrary, a few of them can even write good code.

The first phase

As new people (like yourself) get into computing, there'll be demands for new computer applications. If you can create software to meet your own special needs, you'll probably be creating software that someone else needs.

Let's say you are a forester or a real estate agent selling commercial properties or a used car dealer or a publisher of a small magazine or even a religious leader. As you become more and more acquainted with your computer you'll see new ways that the system can make your life easier and more profitable. You will purchase off-the-shelf software packages at first, but you may find that they don't meet all your needs. Or you may find that there's nothing yet available that really works for you.

If there seems to be nothing available, and you've checked as thoroughly as possible, be careful about deciding to take the plunge and concocting your own software. First, analyze your task carefully. How have you (and the rest of the world) been doing this task so far? Why hasn't someone else computerized it? Is the market too small or hard to reach? Has no one else thought of it? Has no one with your expertise worked on it yet? Is it really an appropriate application for a computer?

Be honest. There are lots of reasons, for instance, why a TV screen hasn't replaced a teacher and a blackboard. Sure, it would probably be very cost-effective to have one university professor teaching all the English classes in the U.S., but who would attend that kind of class? How would students share ideas with the instructor? Would one-way communication really be education?

Even in business and home applications, changing to computerized operation has many side effects. You need to look at these effects before you spend a significant chunk of your free time (did anyone say free time?) chasing an empty pot.

Once you've decided

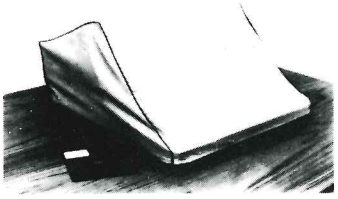
But let's say you decide on a project. You write, debug, rewrite, and redebug as you create something that meets your needs. Over a period of six months or a year, you smooth the rough edges, add new facilities here, simplify somewhere else, write what you think is a helpful manual. When you get done, you should have something that is really valuable to you, something that you can depend on to work solidly and consistently.

If you've designed it well (with a general audience in mind) you'll find that as others in your field hear about it, they'll start lining up at your doorstep.

Pass out a few review copies to these folks. Be sure to put copyright notices on the software and the manual. (Nothing should leave your shop without a copyright notice unless you plan to release it to the public domain.)

Insist on being present when the first users try the package. Take notes, and smile a lot, but don't cheat by saying anything. Where do they have trouble? What little gotchas keep them from being able to use the software immediately?

(Continued)



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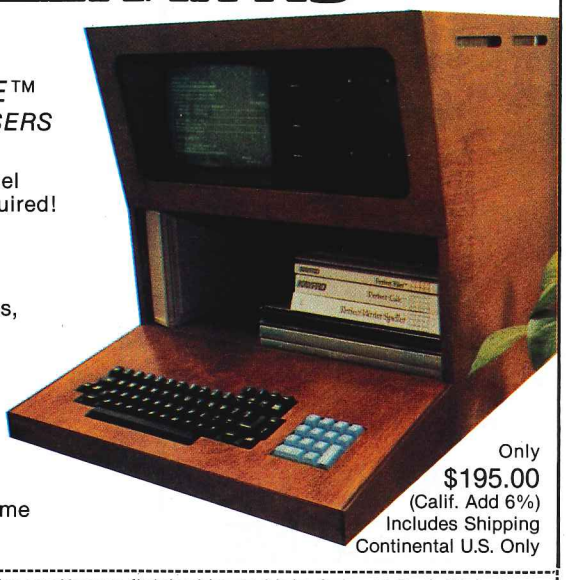

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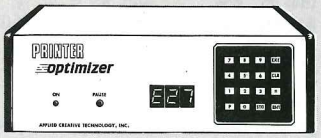

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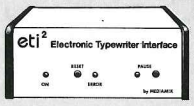

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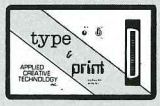

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How do they use the manual (if they use it at all)? Where do they look when they have problems? Is the information there? Could changes in the manual or program remove the problem? Can the software be redesigned so that they don't need the manual at all?

What program functions do they need that aren't available? What functions don't they need? How does the user interface help get the task accomplished? How does it hinder?

Once you've watched others use your software and have observed their reactions you'll have a better feel for the strengths and weaknesses of your package. Then you go back and edit both the software and the manual. Following this, you go another round or two with the novices.

This trial by fire (or ordeal by novice) is the most important part of the final package checkout, but most software designers and manual writers don't bother.

You see, documentation is usually whipped out by the designer in the wee hours of the morning so that his company can finally ship the product—which means it's written at the wrong time, by the wrong person, for the wrong reason (Ever wonder why documentation stinks? And product testing? That's done by the purchasers, isn't it?).

One experience

Over a year ago, Willis Gore, a university professor, contacted us about marketing a spelling checker he had just finished. "Great," I thought, "here's a way to try out some marketing theories I've got about top quality but very inexpensive, software."

Willis sent me a copy, and I tried it. It worked! It was very powerful! It did everything he said it would do.

However, I had to name all the intermediate files (the unmatched-word file, the new text file, the new user-dictionary file . . .). I had to run each program in the proper order. And the programs ran very slowly—and they took a lot of room on the disk.

After checking the spelling on two small text files, I had an arm-length list of all the files I had used, deleted, or renamed. And, though the manual was incredibly complete, I spent a lot of time flipping back and forth through it. It was organized by function rather than by the flow of the program. If it were going to take that much effort to check my spelling, I wasn't going to bother.

So I spent hours writing up a wish list for the checker. That wish list was the beginning of a 9-month redesign of the package, and the present program bears little or no resemblance to the original. Then I sat down with some computer illiterates, showed them how to put the disk into the drive (label up), handed them the manual, and watched quietly.

Now, the opening paragraphs in the new, completely rewritten manual tell you to copy the original disk, to type SS (to run the executive program), and then to watch it fly. It's so easy to use that anyone who can run a CP/M program will feel right at home. *Now* it's ready for market.

More to come

If you want to get into consulting, for instance, stay tuned. But in the meantime, you might consider writing some software. The experience you'll get writing a full-feature software package will certainly help prepare you for this lucrative field.

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S A T I R E

Guarding against A.I.E.

A look at the most obstreperous peripheral of them all

by Cliff Odendhal

Anthroperipheral Interface Error, commonly known as A.I.E., is one of the most insidious and little-recognized syndromes of the computer age. This frequently overlooked problem is the cause of a great deal of the anomalous behavior encountered in computer input—such as crashed data, locked keyboards, and random error messages.

Of all the devices at work in any modern computer system, the Anthroperipheral Module is the most cantankerous when in use. It is highly affected by humidity, static electricity, power fluctuations and the cycles of the moon. Even its appearance is a performance factor. Some managers go so far as to claim a kind word directed to the unit does wonders.

A.M.'s come in all sizes, shapes, and colors. As well, there are wide variations in performance depending on age, condition, and previous service. Also a factor is the size and lubricity of the Main Processing Unit (M.P.U.), which sorts and delivers all commands to the Digital Manipulators. It is these D.M.'s that actually press the keys on the command board. Great precision is required here; anomalies will most certainly occur unless all factors are in perfect balance.

While it is true that no computer could process without an A.M., it is worth noting that these devices are prone to make even the best hard/software nearly useless. All of us who work with computers have run into the problem of having input data only to have it all disappear when our Anthroperipheral warm-booted the program by accident, mistaking the <CTRL> key for the <SHIFT> key while trying to type an upper case C. Or how about that annoying error message saying "Can't open file B;BOGUS.TXT" caused by the A.M. not holding <SHIFT> down long enough while typing <:/;>? The worst, to my mind, is the smug, snide, sarcastic CP/M prompt that flashes "PIIP?", or "STET?", or "ALEAINS?" All these irritating and time-consuming problems can be traced directly to A.I.E, Anthroperipheral Interface Error.

So what can be done about this pervasive syndrome of malfunction? The answers are many—some simple, some complex. Initially the key is recognition. You must be aware of the presence of A.I.E. to combat it. While there is no cure for A.I.E., it can be treated and brought to an acceptable level of occurrence. The best medicine is prevention and here are some things you can do . . .

First, proper maintenance of your A.M. is essential. It must be kept clean and dust-free at all times. See that it is encased in a suitable covering to keep it warm and to improve its appearance. Make sure it has plenty of lubrication and an adequate power source to avoid energy-level dropouts. Also, provide a well-designed stand that the device fits into comfortably.

Second, don't overwork the Module. Detaching the device every now and then and placing it in a different location for few minutes or so has been known to show a marked decrease in anomalies. Strange as it may sound, praising the peripheral also seems to have a positive result in output. Fewer errors are noted among A.M.'s employed in offices where there is more praise and appreciation than tension and pressure.

Third, there are mechanical factors to consider. Don't allow the D.M.'s to rest on the keyboard. Try to keep the M.P.U. (located at the top of the unit) cool and clear of any unnecessary stimuli. Set the speed level at a steady, even pace, avoiding excessive rapidity of input.

It is this rapidity of input which seems to be at the root of A.I.E., followed closely by M.P.U. failures (memory access disruption, scrambled signals, over-lubrication, etc.).

Again, I can't stress enough the importance of preventive maintenance and proper use procedures, Anthroperipheral Modules contain many complex systems, none of which are modular to the device itself. This means that permanent failure of any one of the components (M.P.U., D.M.'s, speed controls, games addiction, etc.) can necessitate repair or replacement of the entire unit.

Remember, treat your A.M.'s with respect and they will give you many years of service—without A.I.E. □

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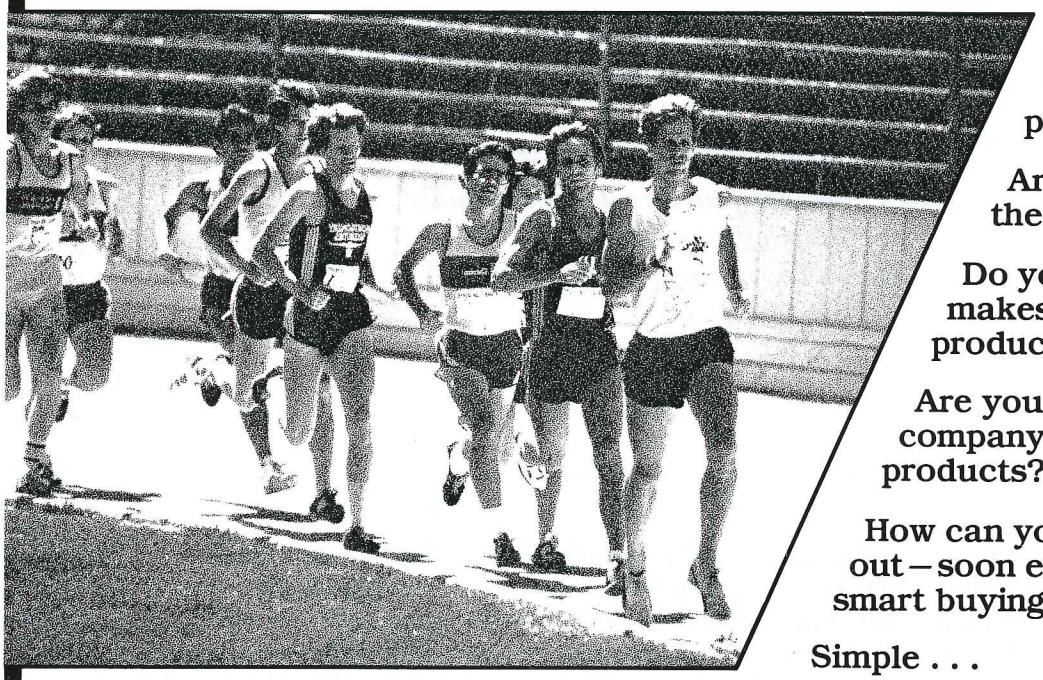

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Bringing up baby in the small office

A new computer can threaten the stability of an office environment. Here's how to ease the transition.

by Marvin Grosswirth

For every enthusiast who can't wait to begin using a personal computer, there is probably at least one person who lives in fear of the machine. The condition is called "technophobia"—fear of technology—and although it applies to technology generally, it seems to be most evident when it comes to computers.

When a computer is introduced into the workplace for the first time, technophobia usually takes the form of variations on a single basic question: "Will I be replaced by the machine?"

A worried employee is likely to be reluctant, resistant, and even hostile to the introduction of a computer, a circumstance that will make computerization difficult at best. At worst, it can completely cancel out any benefits that might have been gained by automating.

Large corporations, accustomed to dealing with technophobia, have developed basic techniques for nipping it in the bud. Before new machines are even brought into the organization, employees are told what to expect and how it will affect them. Then automation is introduced slowly and gradually, beginning with those sections or departments that are most likely to be amenable to it. Eventually almost everyone comes around to accepting the computers, and employee technophobia is for the most part mitigated, if not completely eliminated.

Small organizations, however, have neither the time nor the funds to embark on such programs. In an office with, say, twelve or fewer employees, there is no place to hide a computer. Once it's there, it's there, and at first it tends to dominate the scene. Everyone knows about it, everyone is aware that directly or indirectly he or she will be expected to contend with it, and, with the possible exception of those who have some computer experience, even those employees who claim to welcome the new machine probably feel a trifle intimidated by it.

How does one deal with technophobia in the small organization? One way is simply to ignore it, on the premise that the technophobes will realize, over the course of time, that there is nothing to fear. Unfortunately, some of the most valued employees may not wait that long. In the belief that job security is threatened, they may look for—and find—other jobs. Until then, the company has to contend with troubled workers.

The best way to treat technophobia is to recognize it, confront it, and respond to it in a realistic, businesslike manner. Let's consider some of the more common types of technophobia and how they can be "cured."

1. Fear of being replaced by computers

This is, of course, an entirely legitimate fear. The whole idea behind automation of any kind is increased efficiency at reduced cost by having machines perform tasks previously done by humans—machines that don't get sick, don't take vacations, and don't demand time-and-a-half for overtime.

But there are other things computers don't do. They can't make decisions based on experience. They can't understand the nature and the "personality" of a business. They can't give

(Continued)

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The smaller the company, the more valuable and important each employee is. The purpose of computers, therefore, is not to replace people, but to make better use of them. By freeing workers from the drudgery of routine but essential tasks, computers allow them more time to develop, enhance, and use their other skills and talents for the betterment of the company and their own positions within the company.

That basic philosophy must be driven home to all employees, whether technophobes or not, because it enables an organization to get the most—and the best—out of both its employees and its computers. It could be expressed, in fact, in terms of a naked appeal to individual greed: the ability of computers to free one from routine opens opportunities to do the kind of work that earns raises and promotions.

The philosophical, however, must be backed up by the practical. When a computer is first introduced to the office, every employee should be told that it is a matter of official company policy that no one will lose his or her job because of the computer. You should go on record, either by making a public announcement in the presence of the entire staff or, better still, by issuing a memorandum and making sure that everyone receives a copy. The resulting sighs of relief may be audible throughout the office.

Technophobia can be greatly alleviated, and even avoided, by creating an understanding of the computer's role in the company. It has been said before, but it's worth repeating, that a computer is a tool, and a dumb one at that. It can never replace a person because it is nothing more than a collection of metal , plastic, glass, and electronics, totally incapable of doing anything except by human intervention and control.

Technophobia usually takes the form of variations on one simple question: "Will I be replaced by a machine?"

2. Fear of loss of status

It's not unusual, in a small office, for two executives or supervisors to share a secretary or an assistant. One person may be working for, say, both the purchasing agent and the sales manager. If much of the purchasing agent's resource information is computerized, it could be a simple matter to come up with a half-dozen suppliers of a needed item in a few seconds, just by touching a few keys. By the time the assistant is finished taking dictation from the sales manager, the purchasing agent could have all the information necessary to make an important decision—how much to buy from which supplier and what price. But if he won't go near the computer and prefers to wait until his "girl" is free to dig out the information, chances are you're dealing with an executive who sees the computer as a threat to his status. "I'm as important as the sales manager," the thinking goes. "He doesn't do clerical work; why should I?"

Similarly, the sales manager may be late in getting out a report for much the same reason. Rather than use the speed and efficiency of the computer to cull and classify figures and statistics, he prefers to wait until the assistant is available.

Loss-of-status technophobia is extremely difficult to deal with because it is founded almost entirely on emotion. Nevertheless, a simple appeal to reason often works. It can be pointed out to a reluctant executive that status is achieved by responsibility and productivity, not by the performance or non-performance of specific individual tasks. One achieves status—and compensation—by meeting one's responsibilities as efficiently and cost-effectively as possible. One also attains status by making the right decisions at the right time. By eliminating drudgery, and allowing more time and freedom for decision making, one enhances, not diminishes, status.

Another approach that often works is simple patience. Let the executive know that the computer is there for his use if and when he wants it. Sooner or later, familiarity, curiosity, or need is likely to induce a tentative confrontation with the machine.

One manufacturing vice-president we know needed a letter sent in a hurry on a day when his shared secretary was tied up and everyone else was out to lunch. Unable to proceed with his work until the letter was done, he meandered over to one of several personal computers around the office and, using the hunt-and-peck method, tapped out the letter on the keyboard and then printed it. He was astonished at how well it looked on the first try, although it was far from perfect. He made some corrections and adjustments and the second print-out was the one that was delivered. That put an end to his usual method of preparing correspondence, which was to write it out in longhand, have the secretary type a draft, and then have a finished product retyped. "I was lucky to get a letter out in an hour," he said. "Now, they're done in a matter of minutes, while my secretary is busy pulling together the stuff I need for my

monthly reports."

Perhaps the most effective way of proving that working with the computer doesn't diminish status is by example. The sooner the company president, senior partner, or some other top executive begins using the computer, the easier it is to demonstrate that no loss of status is involved. On the contrary, if it's good enough for the boss . . .

3. *Fear of learning something new*

"I'm too set in my ways to learn anything new," or, "I don't have the time to waste now," are typical expressions of this type of technophobia. The fear is probably grounded in a reluctance to engage in what might turn out to be a competitive situation. Many people really believe that they're too old or too "settled" to learn anything new; others think they simply don't have the patience for it.

In such instances, it's probably best not to push too hard. You can simply point out that in an active, growing, dynamic company, especially a small one, everyone is constantly learning something new about some aspect of the business—a new product or service, a new customer or client, new tax regulations, whatever. It's important to emphasize that it isn't your intention or desire to convert anyone to a computer expert or even an operator. All you're asking is that each employee learn enough about the computer to do his or her job a little better, a little faster, and, most important, a little more easily. Financial officers in companies of every size have been using electronics spreadsheets for

(Continued on page 43)

A worried employee is likely to be reluctant, resistant, and even hostile to the introduction of a computer.

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FEATURE COMPARISON CHART

FEATURE / VENDOR:	Rocky Mountain Software Systems	Peachtree	TCS	Data Base Research Corp.	Systems Plus
TRADE NAME:	Desktop Accountant	Series 4	Big Four	The Champion	Accounting Plus
Price	$395 IBM-PC format 495	$595 to $1,800 Depends on Dealer	$200 to $1,200 Depends on Dealer	$1980	$1980 to $2800 Depends on Dealer
Includes Payroll	YES	NO	YES	YES	YES
Fully-Integrated	YES	YES	YES	YES	YES
Ready-to-Run	YES	YES	YES	YES	YES
Audio Cassette Tape Start-up & Training Aid	YES	NO	NO	NO	NO
System "Road Map" Guide	YES	NO	NO	NO	NO
Free Users' Newsletter	YES	NO	NO	NO	NO
Source Code Included At No Extra Charge	YES	NO	YES	NO	NO
Telephone "Hot Line" Support Service	YES	YES	Depends upon local dealer	YES	Depends upon local dealer
Sample Data Files for Practice & Training	YES	YES	YES	NO	YES

Look who's using Desktop Accountant ™ software

Our excellent Desktop Accountant ™ accounting software is designed specifically for small-to-medium sized businesses — manufacturers, distributors, retailers, service firms, and many other types. Here is a sample (taken from our customer files) of the wide variety of businesses successfully using this user-friendly software:

● Bookkeeping services ● CPA/Accounting firms ● Construction companies ● Wholesale Florists ● Retail Florists ● Printers ● Insurance Agencies ● Shopping Center ● Machine Shops ● Engineering firms ● Software Companies ● Computer retailers ● Publishers ● Financial services companies ● Investors ● Appliance service firms ● Dairy ● Boilerworks ● University Business School ● Catholic Diocese ● Baptist Ministeries ● Sail Maker ● Convalescent Hospital ● Car Wash ● Public Library ● Cement Plant ● Industrial products manufacturing companies ● Mortuary ● Coal Company ● TV/Film producers and distributors ● General Store (in Alaska!) ● Health services organization ● Government Agencies ● Record and Tape stores ● Trade Association ● Graphics firms ● Office products companies ● Real Estate firms ● Oil Products distributor ● Instrument Company ● Hydraulic Products company ● Outdoor Expeditions company ● Many types of schools ● Chiropractors ● Physicians ● Landscapers ● Law Firms ● Restaurants ● Plumbing Companies ● and many, many more!!

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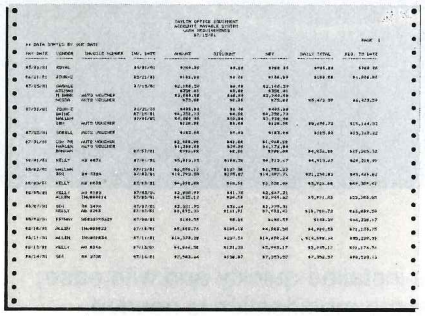

Desktop Accountant's 42 management reports may be produced on either your 132 column printer or on your 80 column printer with compressed mode.

Read What Users Say...

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—J.C. Bartels, President
(accounting firm)
Gonzales, Texas

"It's a great package! I've been in computers for over 20 years and from a technical point of view I'd say that Desktop Accountant is a top-quality, highly structured, well thought-out accounting system. It is easy to understand, and because source code is included, easy to modify—which I've done. For the price, the package is the best one I've ever seen...I continue to recommend it to my own customers here at our agricultural chemical and seed supply company."
—Luke Crawford
(agricultural supply company)
Kennett, Missouri

"To get anything better we would have had to spend multiple thousands of dollars. I think it's a dynamite package for the money."
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(manufacturing company)
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4. Daily Transactions Report
5. Itemized Monthly Transactions
6. Balance Sheet
7. Balance Sheet with prior year comparison
8. Income Statement
9. Income Statement with prior year comparison
10. Departmental Income Statement(s)
11. Departmental Income Statement(s) with prior year comparison
12. Detail report for individual accounts
13. Trial Balance Statement

Accounts Receivable

1. Daily Transactions Report
2. Invoices (with or without pre-printed forms)
3. Statements (with or without pre-printed forms)
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5. Detailed Aging Report
6. Itemized Monthly Transactions
7. Detailed Cust. Activity Report
8. Summary Cust. Account Report

Accounts Payable

1. Daily Voucher Report
2. Daily Credit Report
3. Checks with Detailed stubs
4. Check Register
5. General Ledger Transfer Report
6. Cash Requirements Report
7. Transaction Register
8. Open Voucher Report
9. Aged Payables Report
10. Detailed Vendor Activity Report
11. Summary Vendor Account Report

Payroll

1. Federal Tax Tables
2. State Tax Tables
3. Payroll checks with stubs
4. Payroll Check Register
5. Monthly Payroll Summary
6. Quarterly Payroll Summary
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SYSTEM CAPACITIES

Accnt'g Module	Master File Capacity	Transaction Capacities per month (approximate) 200K Diskette	500K Diskette	Hard Disk per Mb
GL	400 Accounts	1,000	3,500	7,000
AR	400 Customers	800	3,500	7,000
AP	400 Vendors	800	3,500	7,000
PR	400 Employees	—	—	—

CPM

SYSTEM REQUIREMENTS

Requires either CP/M® or MS-DOS (PC-DOS); MBASIC for CP/M®, BASICA for MS-DOS: 56K to 64K RAM; 2 Disk Drives or Hard Disk; at least 200K of Mass Storage (we recommend more); 132 column printer (an Epson MX-80 or similar printer with compressed mode is acceptable); call for exact requirements on specific systems.

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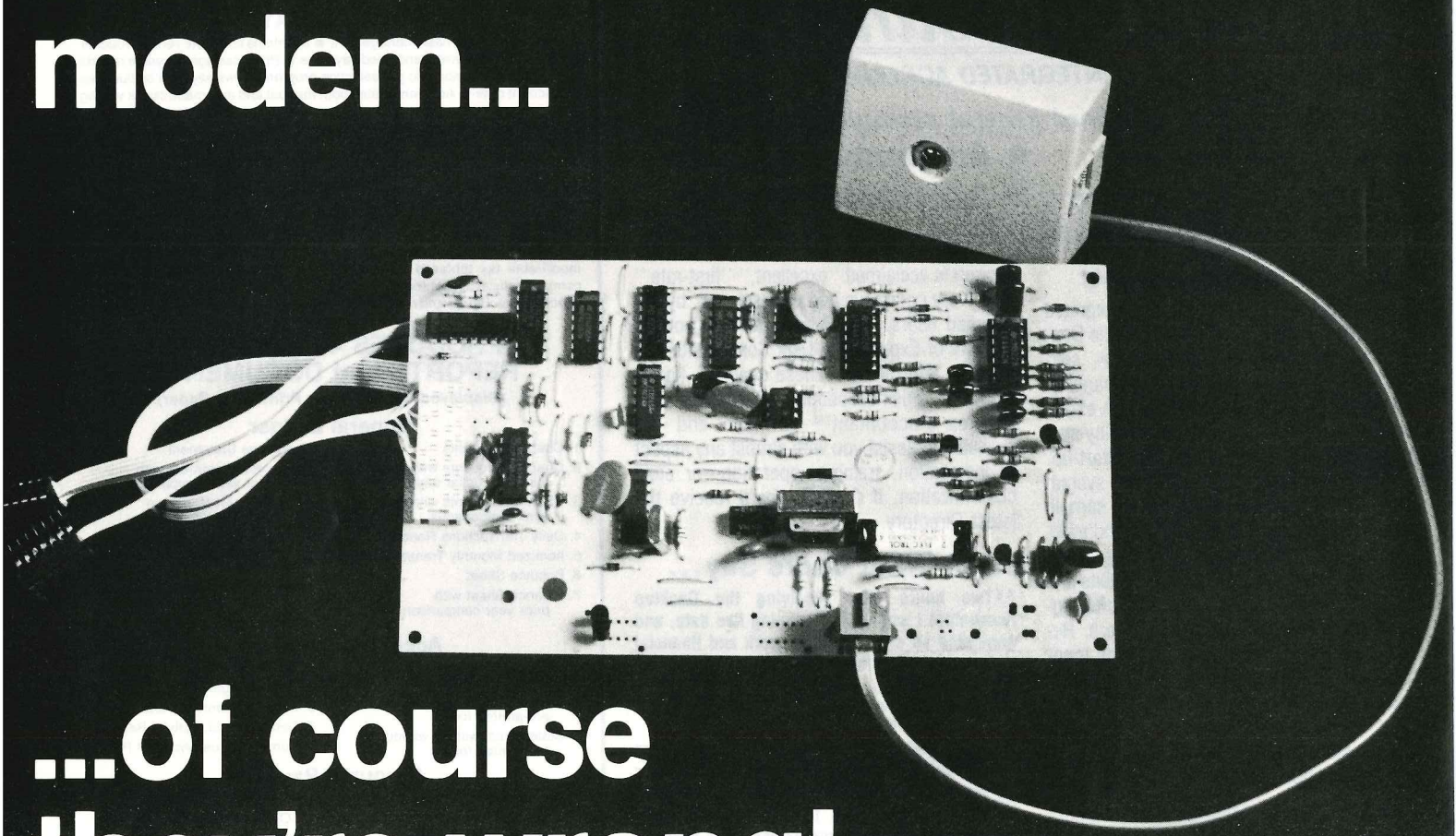
Most think the Kaypro can't have an internal modem...



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With use of the DS 300 AD, auto dial/auto answer modem, you can communicate in ways you could not before. Imagine having access to the latest stock listings, research services, news reports and computer programs. And, with the DS 300 AD you now can be in the forefront through the use of electronic mail. Not only will you save money and time by exchanging information and files with other computers over the telephone lines, but the simplicity will surprise you as well. Think of it, you now can have the ability to send major documents around the world in minutes.

The 300 baud modem is installed quickly and with ease; no drilling, soldering or Kaypro modification is needed. And, the DS 300 AD comes complete with software, all for one low price.

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For more information contact your local Kaypro dealer, or write or call:

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(Continued from page 39)

many months—even years—highly successfully, without the faintest idea of how to do word processing on those same machines. Many of their secretaries, word processing whizzes, don't know what an electronic spreadsheet is—and they don't care.

Chances are that you initially decided to acquire the system to deal with only one or two specific tasks. While recognizing that the machine's versatility makes it readily adaptable to many other jobs around the office, don't be too quick to "computerize." Concentrate on the specific tasks you originally had in mind. If your main concern is, for example, inventory control, someday it will occur to the bookkeeper that the computer might help with the payroll, or accounts receivable, as well.

A California chemical engineer who had originally refused to part with his slide rule was idly watching the company controller prepare a report with an electronic spreadsheet. In a flash of inspiration, it struck him that the same spreadsheet could manipulate chemical formulas by adjusting for changes caused by certain variables.

In a short time, the computer's versatility will become apparent to those who can benefit from it. Let your staff concoct new uses on their own; allow them the opportunity to take credit for new applications, even if you had the idea first.

4. *Fear of failure or embarrassment*

This too is a legitimate concern. The plain fact is that some people take to learning new things better and faster than others do. You can relieve this anxiety by emphasizing that there is no such thing as "passing" or "failing" when it comes to the new computer.

There are no deadlines, either. Allow each employee to learn at his or her own pace, either as part of a group or alone. Provide them with the opportunity to work with the computer in an atmosphere in which they feel comfortable, secure, and private (We'll have more to say about that shortly.).

Sometimes, one look at the documentation accompanying a computer is enough to convince a potential technophobe that the whole thing is simply beyond comprehension ("You gotta be an engineer just to understand the instructions!"). The answer to such an objection is, first, that it is probably valid, and second, that it isn't as difficult as it looks.

For one thing, it's mostly a matter of becoming familiar with a few terms. After all, no one learned how to type without learning the meaning of "shift key," "tabulator," "margin release," and a half-dozen or so other terms that were once new, strange, and unfamiliar. Furthermore, this seeming lack of understanding isn't uncommon; what's true for one novice is true for all. In effect, then, "we're all in this together," and by combining the entire staff's collective brainpower, it will be easier for everyone to learn. Also mention that a wide variety of supplementary materials is available which, if nothing else, proves that documentation causes problems for a large number of people.

It's important to back up your claim that the computer is easy to learn and operate. Make classes available to those employees interested in attending, either through your dealer or local schools. The fee, or course, should be picked up by the company. But don't require anyone to attend classes unless absolutely necessary in special circumstances.

Allow free and easy access to the computer. Permit employees to come in early, stay late, or work with it on their lunch hours or breaks, or any other time the system is not actually in use.

Encourage people to take the machine home over a weekend (the transportability of the Kaypro is a real asset in this process.). Some entrepreneurs who plan to eventually have more than one computer buy two immediately. One stays in the office, while the other circulates from department to department and from home to home. This not only makes it easy to learn the computer in an unthreatening environment; it instills trust and confidence while building operating skills.

5. *Fear of the computer*

People worry about what can happen to an expensive and complex piece of machinery in the hands of someone who doesn't know how to run it. It may be necessary to give a somewhat melodramatic demonstration—such as pounding on a keyboard with your fist—to prove that it is virtually impossible to damage a computer by operating it. As far as anyone knows, no computer has ever been broken by someone learning to use it or just fooling around with it. The worst that's likely to happen is that, in self-defense, the computer will lock up and become totally unresponsive until someone comes along who knows how to get it running again.

A computer gets broken the same way anything else gets broken—by carelessness, abuse, or sabotage.

A final word

Questions and problems that arise from technophobia should always be taken seriously. People should never be ridiculed or embarrassed because of their fears. It's a sure way to render a technophobe incurable.

With a little understanding, a little compassion, and a sense of what to expect, technophobes can be converted to technophiles who see a computer as a vehicle for more and better productivity, as well as an opportunity for personal growth and development.

All things considered, that's not a bad exchange. □

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What's the catch?

Free business telecommunications software

by Morris Camp, Vice President, Business Computer Network, Inc.

Pick any recent computing magazine and you'll find an article on the subject of telecommunications, online networks, and other "Star Wars" types of services offered to anyone who owns something called a modem. Your eyes begin to glaze as you ponder the diabolical schemes you could play on competitors if you could gain access to all this valuable information. The excitement builds when you realize that Uncle Sam is no longer needed to deliver letters. And then—for these and a thousand other reasons—you decide to take the plunge.

You visit your local computer store and find that all you need is "a full-duplex Bell-103-compatible modem, and software that supports the X-ON/X-OFF protocol in asynchronous mode." But even as your head swims, you take a deep breath and prove your strength by buying the package.

You sweat and struggle, but after a few days, it begins to work! So you decide to try an online network and you call them for information. A week later a form comes in and you send back your membership fee. You wait a couple of weeks for them to mail you a password that will grant access to their system. Finally you're ready to network. Congratulations! All you need to do now is sign up for more networks—before long you'll know whether it was wise to invest in all this in the first place!

But wouldn't it be better to use the networks *before* you buy? And then pay for only the time you use and not be obligated to any large monthly minimums? Cancel any time you wish? Of course!

Read on and you'll see why we're giving you the software that fell out of this magazine when you opened it. No, we're not crazy. We at BCN decided it was time for a change. We felt it was time to design software that would get you to the networks without knowing any more about computers than how to strike two keys. So we bought the memberships for you. We developed procedures to log you onto any network from any city—without expensive toll charges—using our passwords. We added the ability to send and receive information to and from disk and/or memory. We created a way to advise you *immediately* of changes. As new networks become available, we can send you updates to your software, automatically, by computer, using the same software itself.

But wait, you say, how can this be profitable? Well, we charge 25 cents for each successful logon that the BCN software makes for you. Then we bill you for the time you spend on the networks (never more than the networks would charge you directly) using your credit card. We make some more money as a result of volume buying power. You save on membership fees and minimum monthly charges. We make a certain amount of profit from your use of the system. The networks themselves are guaranteed sales of large blocks of time without having to process thousands of individual bills. Everyone is happy.

When you place the BCN disk into your Kaypro, you'll see a menu of networks available to you. Select Option O, and go to the Off-Line Menu for services that are done while you're not connected to a network. Select Option 3 and fill in the User Information Profile (name, address, phone number, credit card, etc.). Your computer then will dial our host computer on a toll-free line—automatically—and request network access authorization.

Now comes the fun part! Choose any of the networks on the BCN Menu and within seconds you'll be on-line with the network selected. It's simple as that! Or if you want to send mail to a friend who has BCN software, just enter the number into the Phone Book provided and dialing will be done automatically.

Free software, automatic updates, a choice of networks, no obligation to continue, and special savings on a modem if you need it. We think it really *is* what you asked for. There's more in the manual—just spend a few minutes and you'll be pleasantly surprised.

Happy networking! □

On the move with PIP

This CP/M copying utility can do more than you expect

by Steve McMahon

If any one word of the arcane jargon of CP/M ever enters into popular parlance, it just might be "PIP," as in "Harry, could you pip this package over to Cleveland?" and "Could you please pip me the salt?"

When that day comes, everyone will have forgotten that PIP is an acronym for the CP/M Peripheral Interchange Program; it will be up to some obscure lexicographer to discover that PIP was once a computer program that CP/M users cursed and cajoled in the process of moving data from one place to another.

PIP stands a chance of elevation to household word status because of its tremendous importance to CP/M users. Mastery of the features of PIP is the hurdle that separates proficient CP/M users from novices. Those who have pretty well figured out PIP can set up disks as they please and get data through their printers and modems as necessary. Those who haven't are stuck with using their disks as set up by software distributors or dealers and are often forced to use awkward methods to get data out of their computers.

Although there are some good commercial and public domain programs that imitate PIP's features—some with excellent menus to ease use—they don't really replace PIP. PIP is compact, versatile, extremely reliable if used properly, and it costs you nothing extra since it's included with CP/M.

This article is meant to be an introduction to using PIP's various facilities, to get novices over that first hurdle (which isn't really a very high one at all). It is hoped that more experienced CP/M users will also find some useful information here.

PIP as pipeline

If you don't want to think of PIP as the "Peripheral Interchange Program" (and who does?), you might try thinking of it as a pipeline; with it, you can "pipe" data such as text or programs for one place to another. Those places can be files stored on disks, printed copy on your printer, or even the telephone line connected to your modem. (Unlike any real, physical pipeline, though, PIP does its moving without taking anything away from the source of the flow—it just copies an image of electric pulses from one place and recreates it in another.)

When you invoke PIP, you need to tell the program fairly precisely how to build the pipeline by telling it the names of the places you want to connect. PIP will understand you if your instructions take the form:

destination place = place or origin

The PIP pipeline flows from right to left, with the equal sign representing the pipe connecting destination and origin. Most of the rest of this article will be concerned with explaining how to describe places of destination and origin in a way that PIP will understand.

You can give PIP instructions in two different ways. Instructions may be put on the same CP/M command line in which you invoke PIP, for example:

A>pip destination = origin<RETURN>

Or, you may just run PIP like any other simple program, typing its name at the CP/M prompt and following it with a return:

A>pip<RETURN>

If you use the latter method, PIP will issue its own * prompt to which you reply with your specifications for the pipeline:

*destination = origin<RETURN>

If you have more than one command to issue to PIP, this latter form is generally the better. When PIP finishes up one set of orders under this form, it re-issues its * prompt—you don't have to wait through a warm boot. When finished issuing orders to PIP, just type a return in response to its prompt and PIP will return you to the CP/M prompt with a warm boot. Note that PIP generally translates lower-case to upper-case letters; you don't have to type PIP commands all in capitals.

Copying Files With PIP

By far the most frequent use of PIP is to copy files either for backup purposes or to create a convenient working collection of files on a disk. These files might be text files created with your text editor or spreadsheet program, command files with the suffix **.COM**, or files of data that are not command files, but also aren't text files (more on the latter later—they ought to be handled in a special way). PIP can copy these files between disk drives or on the same disk. When copying files, the "place" names you need to specify to PIP are simply the names of the files involved.

Say you wish to copy a file **LETTER1.MSS** to another place on the same diskette. This might be done in preparation for editing **LETTER1.MSS** without endangering your original file. Since this copy is going to go on the same disk, you will need to think of a new name for the duplicate (since you can't have two files with the same name on the same disk). As with the old, the new name will have to be a valid CP/M file-name consisting of up to eight characters followed by an optional period and three letter suffix. Also, the new name should be one that makes sense to you, and probably one that suggests the nature of its relation to the original. Your choice might be **LETTER2.MSS**, in which case you would issue the command:

A>pip letter2.mss = letter1.mss
<RETURN>

When PIP finishes the copy, the computer will warm boot and, if you ask for a directory, the new file should show up.

Actually, you should never issue PIP a copy command that looks like the one above. Instead, you should add a **[v]** to the end of the line so that PIP will know you wish to be sure the transfer was made correctly. When PIP finds a **v** parameter inside square brackets when copying files, it will read the copy it makes over to *verify* no copying error has been made. So, if you want to make sure your data gets copied accurately, your command would appear:

A>pip letter2.mss = letter1.mss[v]
<RETURN>

Verified copies take longer, but, if your files are of any value to you, all that time and effort will be repaid the first time PIP detects a copying error. The confidence this verification can give you is one of the reasons PIP is superior to many of its commerical and public domain imitators, some of which are faster but do not verify.

PIP can move files between disk drives just as easily. All you have to do is specify the drive name (**A:** or **B:**) whenever the destination or origin is on the drive other than the one you are currently logged onto (It never hurts to specify a drive name even if the destination or origin is on the same disk.). If you are logged onto drive A:, which is where **LETTER1.MSS** is, and wish to create a copy **LETTER2.MSS** on the disk in your B: drive, your command to PIP would appear:

A>pip b:letter2.mss = letter1.mss[v]
<RETURN>

The command to move files between disks can often be even simpler. Since the copy will be on another disk, you can give it the same name as the original without violating the rule against having two similarly-named files on the same disk. If you wish to create a copy of a file and put that copy on the disk in the other drive, you may instruct PIP to give it the same name as the original file. PIP understands some shorthand for this operation; if the destination given is a drive with no filename, PIP assumes you want the new file to have the same name as the original. If, for example, you were logged onto A: and wanted to put a copy of a file on A: named **LETTER1.MSS** onto B:, you would enter:

A>pip b: = letter1.mss[v]<RETURN>

Given a command like this, PIP will look for **LETTER1.MSS** on the disk in the A: drive (since this is the current drive as indicated in the A> prompt) and create a new copy of it on the disk in the B: drive. The same thing will occur as if the command had been written:

A>pip b:letter1.mss = a:letter1.mss[v]
<RETURN>

Using this form, one of the first commands you might wish to use is:

A>pip b: = a:pip.com[v]<RETURN>

to copy PIP from your system disk in the A: drive to a new working disk in B: (PIP is one command you'll probably want to have on nearly all your working diskettes.).

When making a transfer from one disk to another like this, PIP will allow you to refer to a whole set of files with one **ambiguous** name. An ambiguous name is one that refers to several real file names. An example is the ambiguous name ***.***, which refers to every file on a disk, or ***.COM**, which stands for every file on a disk with a **.COM** suffix. You would back up every file with a **.MSS** suffix from the disk in A: to the disk in the B: drive by entering the command:

A>pip b: = a:*.mss[v]<RETURN>

PIP will list all the files it acutally transfers in response to this ambiguous command. Another way to write an ambiguous file name is to use a **?** symbol to stand for every character in the filename for which PIP is to accept any value. Thus, if given the ambiguous name **LETTER?.MSS**, PIP would copy **LETTER1.MSS, LETTER2.MSS**, and so on (but not **LETTER1A.MSS**) to a new disk.

What does PIP do if there is already a file on the disk you are copying to by the name of the one you wish to copy? Unless you have caused the file on the

(Continued)

destination disk to be write-protected, PIP will erase it to avoid having two files with the same name on the same disk (If the file is write-protected, PIP will first ask you if you wish to delete it.). This is often exactly what you want done when backing up a disk. If it's not, you'll need to do something (like re-naming) to protect the similarly-named file on the destination disk. (*Note: this refers to write-protection using* software, *not adhesive write-protect tabs that cover the notches on your disks. PIP may be powerful, but* no *program can write to a disk with a covered notch.*)

File-copying errors

The most common error you will see in using PIP to copy files will be a disk write error caused by there being insufficient space on the disk on which you wish to put the copy. When an error like this occurs, PIP will report a **WRITE ERROR** and you will find in the directory of your destination disk a funny file with a .$$$ suffix. Unfortunately, **.$$$** is not a Digital Research jackpot and it doesn't mean the next copy of CP/M is on the house. Instead, it marks the place on the disk where CP/M unsuccessfully tried to create the new copy. You should go ahead and erase the **.$$$** file and look around for some way to make more room on the disk by erasing other unnecessary files. **STAT *.*** or a public domain extended directory program can report file sizes to help you find the space you need.

If this occurs, it may be that the file you will need to delete will have the same name as the file you are trying to copy. PIP does not immediately delete similarly-named files on the destination disk. Instead, it creates a working file with the **.$$$** suffix. When the transfer is complete, the similarly-named file is deleted and the **.$$$** file is renamed. This means you need to have free space on a disk equal to the size of the file you wish to copy—even if you intend to overwrite a similarly-named file already on the destination disk. If that space isn't available, you will need to delete the similarly-named file on the destination disk *before* attempting the copy.

Another type of error you may encounter is a **BDOS ERROR** in which the error message indicates the destination disk is read-only. This might mean that you have a write-protect tab on the destination disk, but it probably means you have changed disks without resetting the disk system. CP/M needs to know when you have changed disks or even opened a drive door. Tell it you have done so by typing a CONTROL-C immediately after the CP/M prompt.

A special case: object files

To copy a file, PIP has to have some way of knowing when to quit; it must be able to detect the end of a file. This is no problem for text files created by word processing or spreadsheet programs. These programs mark the end of a file with a special character, a CONTROL-Z, and are careful to avoid putting that character in any place other than the end of the file. While this end-of-file convention is convenient for text files, it doesn't work at all for what are called **object** or **binary** files.

Examples of object files include CP/M command files, indexes kept by data base programs, numeric data files created by some computer languages, and program overlays. Data in this type of file are kept in a form that is meant to be immediately useful to the computer as instructions or operating data, and the equivalent of a CONTROL-Z may appear at many places other than the end of the file.

Fortunately, PIP has a way of finding the end of such files, though you may have to tell PIP when to use this alternate method. CP/M keeps a record of how many sectors (a chunk of disk memory 128 bytes long) a file takes up. If PIP knows it can't look for a CONTROL-Z as an end of file marker, it just transfers all the sectors having anything to do with the file.

PIP automatically uses this technique with any file with a **.COM** suffix. The problem is that many object files do not have a **.COM** suffix. When copying these files, you must inform PIP that the file is an object file by putting a **[o]** after the origin file's name. So, if you were copying an object file named **BASIC.LIB**, your command to PIP might appear:

```
A>pip b:=a:basic.lib[o]<RETURN>
```

You would probably want to verify that a good copy was made by adding a **v** for verify to the parameter list inside the square brackets. In this case, the command would be:

```
A>pip b:=a:basic.lib[ov]<RETURN>
```

Object files are commonly marked by suffixes like **.INT, .OVR, .SWP, .REL, .CRL, .DTA, .INX**, or **.LIB**, but suffixes won't really help you be sure which files are object files and which files are text files. The best rule to follow is: If you didn't create it with your word processing program, treat it as an object file.

What happens if you copy an object file without including the **o** parameter? Possibly nothing bad. But, it is also possible that PIP will quit copying early and your copy will be useless.

Using PIP to add files together

Although PIP can create a pipeline to only one destination, it can go to several points of origin to get the data for that destination. This means you can use PIP to append one file to another, or even several files together. The basic form of the command is:

```
destination=origin1,origin2,origin3 . . .
```

You should use commas to separate the places of origin you describe to PIP in such a command. Don't put any spaces between the names.

If you had a pair of files, **DEMAND.MSS** and **THREAT.MSS**, which you wished to combine into a single file, **EXTORT.MSS**, you would issue the command (to the computer):

```
A>pip extort.mss=demand.mss,
   threat.mss[v]<RETURN>
```

Other places PIP knows

PIP's view of the world is not limited to files and disks. PIP can also get data from places of origin like your keyboard and serial port and move data to places like your video screen, serial port and parallel port.

(Continued)

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PIP knows your printer as **LST:** (list device) and your keyboard and video screen as **CON:** (console device). You may put these names in your PIP commands in a variety of ways that PIP will understand. The most commonly used is to send a file to the printer by commanding:

```
A>pip lst:=threat.mss<RETURN>
```

if **THREAT.MSS** is the file you wish to print. Notice that this command is really little different from the ones given above: the PIP pipeline flows from the right side of the equal sign (in this case the file **THREAT.MSS**) to the left (the printer). Also notice that there is no **[v]** in this command: PIP can't re-read your printer to make sure everything got there okay. You'll have to do that yourself.

If you had wanted to print more than one file, one after another, the command might have been:

```
A>pip lst:=greeting.mss,demand.mss,
  threat.mss,closing.mss<RETURN>
```

LST: could be either your parallel or serial port, depending on how your CP/M is installed. If you want, though, you can specify exactly which one of these you want PIP to send the file to. You might want to do this if you have two printers hooked to your computer or if you have a modem connected to your serial port and want to send a file to it. PIP knows the serial port by the name **TTY:** (for teletype device) and your parallel port by the name **LPT:** (for line-printer).

By combining place names in unusual ways, PIP can be made to do some amazing things. For example, you can make PIP into a crude word-processor by issuing the command:

```
A>pip file.doc=con:<RETURN>
```

After PIP digests this command, it will accept whatever you type as the contents of the file **FILE.DOC**. If you wish to type more than one line, use both the return and line feed keys to separate lines. Type a CONTROL-Z to end the file and get back to the CP/M prompt. A more useful PIP command might be:

```
A>pip lst:=con:<RETURN>
```

This command turns your computer and printer into an expensive (and not very good) electric typewriter by building a pipeline between your keyboard and printer. You can type more than one line and end the typing in the same way as noted immediately above. (If your printer has a buffer in it, it won't type immediately when you do. Instead, it may type only after you type returns, when the buffer is full, or when you quit typing by entering a CONTROL-Z.)

Another useful "place" PIP knows about is a fictional one. When PIP is given the device name **PRN:** (for print) as a destination, it sends the output to the printer with line numbers before every line. PIP also will issue your printer a form feed every sixty lines and will print eight spaces where ever your file contains a tab character. This feature is awfully useful for program printouts and any text draft that requires line number references. You would print the source code of a BASIC program **BRIBE.BAS** this way with the command:

```
A>pip prn:=bribe.bas<RETURN>
```

PIP's other parameters

The **PRN:** device mentioned above gives you an effect that instead could have been achieved using PIP parameters. Parameter **p** will cause form feeds to be added every sixty lines (if you want a form feed every forty lines, use the parameter **p40**), **t8** will cause eight spaces to be inserted in place of tab characters (**t5** would call for five spaces instead), and **n** would cause line numbering. So, if you wished to print out **BRIBE.BAS** with numbered lines, five space tabs, and a form feed every forty lines, you would type:

```
A>pip lst:=bribe.bas[nt5p40]
<RETURN>
```

The tab parameter **t** can be useful not just for changing the appearance of tabs, but to successfully print a file containing tabs on a printer that doesn't accept the tab character properly.

The **d** parameter provides another way to get around printer limitations. You may use the **d** parameter followed by a number to cut off lines sent to your printer at a certain number of columns. For example, if your printer goes haywire if you try to print lines longer than eighty characters and you want to print a program file that has a few unimportant comments that would run longer, you would enter:

```
A>pip lst:=bribe.bas[d80]
<RETURN>
```

Two other PIP parameters deserve mention here: the **s** and **q** (for start and quit) parameters can be used to pick out some particular part of a file to copy or print. Other parts of the file are then left behind. You may choose the sections to be printed by looking for unique strings of characters that mark off the section you wish to copy to another file or to the printer.

When you issue the command to start or stop printing at a particular string, enter the string after the parameter letter and mark the end of it by typing a CONTROL-Z, which will show up in the command.

If you had **THREAT.MSS** which contained the text, **Do this or we will be forced to erase all your floppy disks**, and you wished to print just the words **we will be forced**, you would enter the command:

```
A>pip<RETURN>
*lst:=threat.mss[swe^Z qforced^Z]
<RETURN>
```

A command like this should be entered at an asterisk prompt. If you enter the command at the CP/M command line, CP/M will convert your start and quit strings into capital letters.

Where to go for more

This information should be sufficient for most of what you're likely to want to do with PIP. PIP, though, knows of several more devices and accepts more parameters than have been mentioned here. Most of these are useful for more specialized purposes, for example transferring hex-format files. If you wish to know more, you should consult Digital Research's *An Introduction to CP/M Features and Facilities*, which was the primary technical source used preparing this article. □

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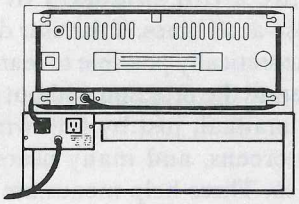

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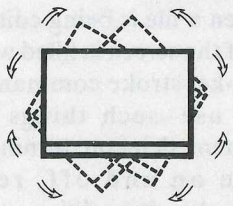

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H E L P

Double your fun—life gets interesting with two word processors

A look at Perfect Writer and WordStar, plus hints for trading text files

by Ezra Shapiro

With Perfect Writer and WordStar firmly established as the leading word processors of choice for Kaypro computers, it's becoming more and more likely that owners of one program will have to cope with files prepared by other owners using the other program. These "alien" text files can cause a nightmare of confusion, unexpected printouts, and tedious hours of reformatting.

The most effective solution to this problem is, obviously, to learn how to operate both programs. This is not as crazy as it sounds; once you've mastered the basic concepts of word processing, moving to a second package is relatively easy. You've got some functional differences to contend with and a new set of commands to memorize, but, after all, at least you understand the principles of what you're doing—which is more than you could say the first time around. And as each program has different strengths (and weaknesses), you might very well find advantages to using one program for certain types of work and the other one for other situations.

However, if you're satisfied with one package and have no desire to start behaving like a word processing trapeze act, there *are* shortcuts to use when you have to edit an alien file. They're not as fast as switching programs, but they *do* get the job done.

Whichever route you choose, you'll have to know a little something about the other word processor. What follows is a brief guide to the features of both programs and a discussion of the promised shortcuts.

In the beginning . . .

. . . there was WordStar. One of the very first word processing programs for personal computers, WordStar was designed by its creators at MicroPro to simulate as closely as possible the look and "feel" of dedicated stand-alone word processing office machines.

In the years since its inception, WordStar has become something of a *de facto* standard in the industry. It's the most popular program for editing text on the market, and chances are good that a text file you acquire from an unknown source will have been prepared with it.

A major factor in its rise to the top has been its system of help screens that provide a full summary of commands—at all times, if the user desires. It's theoretically possible to learn how to operate the program without cracking a manual, just by following the help screens, and many users have done so. These help menus are structured around a system of prefixes that's intended to minimize the amount of memorization necessary for a novice.

When a file is being edited, the top third of the screen is filled with a menu of one-keystroke commands for frequent use—such things as cursor movement, deletion, turning the insert toggle on and off, reforming paragraphs after editing, and so on.

A second level of menus shows screens of two-keystroke commands. This is where the prefix system comes in. Commands that begin with a **^O** are used for onscreen formatting—margin set and release, justification,

(Continued)

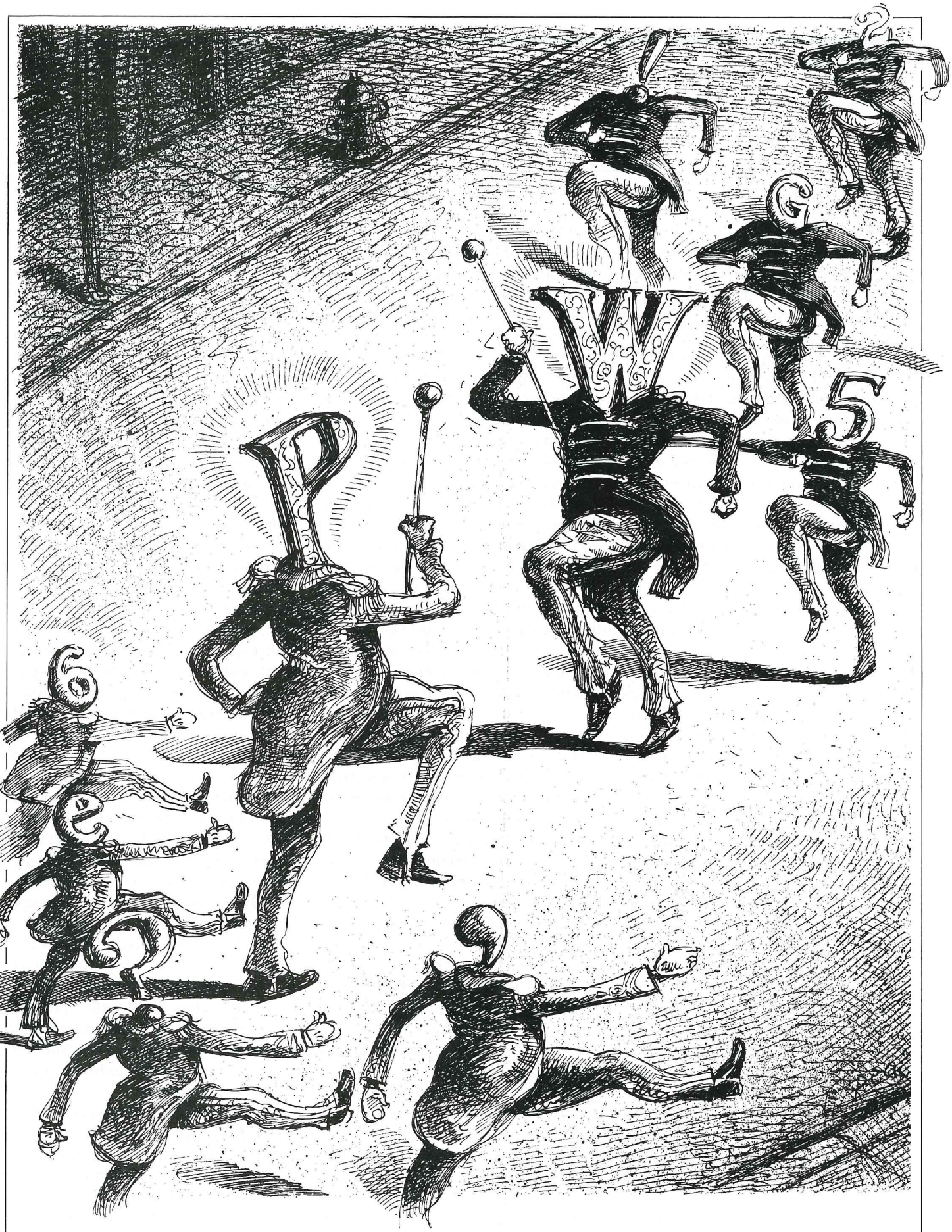

ILLUSTRATION BY EVERETT PECK

centering, hyphenation, etc. Commands beginning with **^K** are for file and block moves—reading files into the current document; moving, copying, and deleting blocks of copy; setting pointers; saving files; etc. **^Q** commands are shortcuts—fast cursor movement, search-and-replace, deletion, etc. **^P** commands control printing toggles. Finally, **^J** provides an extended help utility for detailed descriptions of commands.

The menus can be turned on and off to suit the level of expertise of the user, but remain available (if unseen) for easy access at a moment's notice.

WordStar is a "what you see is what you get" program. With a few exceptions (notably those items beyond the capacity of the terminal, such as boldfacing, underlining, and so on), what appears on the screen is what will appear on the printed page. Commands to the printer take one of two forms. "Dot commands," single lines that start with a period and a two-letter abbreviation, control such things as top and bottom margins, page numbering, headers and footers, etc. Embedded control symbols around words or sections indicate special effects like condensed prints or italics. Page breaks are represented by dotted lines which do not show up when the document is printed. Everything else—margins, indents, line spacing, justification, etc.—appears on the screen. And WordStar will hyphenate text automatically if you so desire. A last onscreen convenience is horizontal scrolling; if, for whatever reason, you create a file that is wider than the size of your screen, WordStar will scroll across lines automatically.

Seven files for seven buffers

Unlike WordStar, which can edit only one file at a time, Perfect Writer can work on *seven* files simultaneously. By making use of temporary storage areas, known as "buffers," you can switch from one text file to another without having to close the first file, load the second, close it, load the first, and so on and so forth. Perfect also utilizes a split screen feature; you can look at (and edit) two files (or different sections of the same file) at the same time. This is particularly useful for programmers who wish to duplicate routines at different places in their programs, and for writers who want to double-check possible phrase repetitions without losing current cursor location.

Buffers are also used to provide insurance against inadvertent loss of text. Deletions are temporarily saved, and a keystroke cancels the deletion (In WordStar, once it's gone, it's lost forever.). In fact, Perfect's buffer system is used for block moves. Rather than utilizing a special sequence of commands to move a block from one location to another, you erase the section and use the unerase feature (called "yankback") to restore it at a new cursor position. This method is used to transfer chunks of text from one file to a second while using two windows into two buffers.

Help is not as easy as in WordStar; Perfect's help is essentially a text file that can be read into an empty buffer. If you don't know the correct series of commands to do this, you're out of luck.

But Perfect has quite a few features not found in WordStar—buffers, split screens, yankback, single command transposition of characters or words, whole word upper- and lower-casing, backward deletion, and a larger selection of movement commands (No automatic hyphenation, though.).

Like WordStar, most editing commands are sequences of control characters. More complex commands, particularly those that involve a second window, are prefaced with a **^X** for "eXtended."

(Perfect does not use the same system of prefixes as WordStar, however, and this points up a raging philosophical debate in the design of word processing software.)

Perfect's commands are based on initial mnemonics, that is, the first character of a concept is used as the command. For example, **^F** moves the cursor *Forward* one character; **^E** moves the cursor to the *End* of a line. "Larger" commands make use of the escape key, thus **ESC-F** moves forward one word and **ESC-E** moves to the end of a sentence. WordStar bases many of its commands on *keyboard position*. Cursor commands are grouped around a "diamond"—**^E** is up, **^S** is left, **^D** is right, and **^X** is down, and so forth. Related commands are grouped at the edges of the diamond.

Proponents of schemes such as Perfect's argue that it is easier for an experienced touch typist to remember the key words that indicate commands. Those on the other side claim that location-oriented functions are more logical and easier to learn. In either case, inserting a command as you type interrupts your thought flow somewhat, and unless you're an awe-inspiring keyboard whiz it probably won't have too much effect on your speed one way or another. Nevertheless, switching from one sort of program to the other is something of a pain.

Another nuisance when making the transition—WordStar users experience particular difficulties with Perfect's **^X** commands, which can be followed by either a character or a control symbol, usually with quite different meanings. For example, **^X^S** saves a file from a buffer to a disk, while **^XS** runs the spelling checker. WordStar aficionados are used to slamming down characters after control prefixes with impunity; their program reads the second character correctly whether or not the user bothers to lift his pinky from the control key.

A major difference between the two word processors is text formatting. With Perfect, what you see is not exactly what you get. Perfect makes use of "style environments;" you type an "**@**" sign followed by a label for an environment, then bracket off the area of text you want formatted with paren-

theses, curly braces, or square brackets. Environments for italics, boldfacing, underlining, and so on, do just that. But many environment commands can do more than one thing. **@QUOTATION**, for example, produces text that is single-spaced and inset one-half inch from each margin. Environments can be used to set up not only text formats, but indices, tables of contents, footnotes, chapter and section organization, etc. Although these environment commands are a step further removed from "normal" typing than WordStar's embedded formatting, and hence more awkward to learn, they represent a powerful and time-saving addition to the word processor's arsenal of tricks.

The nature of files

Perfect Writer text files are "raw" ASCII files, that is, they use no special characters outside the standard set. They will appear as is on your terminal screen, and programs written in Perfect's "normal" mode will be accepted easily by a language compiler (such as S-BASIC).

Perfect Writer is actually a collection of three main programs, a text editor, a formatter, and a printer. In order to format a file, it must be run through the second of these programs, Perfect Formatter, which produces an output file (designated with the file extent ".FIN"). This .FIN file is unreadable and uneditable, but it is necessary for final formatted printout through Perfect Printer.

WordStar produces two types of files, "non-document" and "document." Non-document files are similar to Perfect's normal text files; both are raw ASCII files.

Document files generated with WordStar are another matter. WordStar is a single program for editing, formatting, and printing, and document files contain all the format instructions necessary for proper output; no intermediate .FIN file is generated. The program makes little notes to itself by inserting non-ASCII characters into documents (for those with more technical knowledge, WordStar resets high-order bits). As a result, if you display a WordStar file on the screen, you'll see a lot of garbage mixed with your text, which marks line breaks, hyphenation, page breaks, and even the last character of most words.

From WordStar to Perfect

If you want to work on a WordStar file with Perfect Writer, the first thing you'll have to do is strip those high-order bits and get the file back to plain old ASCII characters, which is a snap. Just use PIP to copy the file to a new name, and add **[z]** to the end of the command (see the article on PIP parameters elsewhere in this issue). Your command line will look like this:

```
A>PIP newfile.txt=oldfile.txt[z]
```

It's a good idea to begin the process by reading through the file and making mental notes on how you want it to look when it's finished. You may spot things on a first pass that may escape you later. You can always insert marking characters to pinpoint areas for

(Continued)

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special attention and return to them later using a search-for.

Next, go through the file and add carriage returns to the end of each paragraph that isn't separated from the next by a blank line. This holds true for outlines and special formats as well; if you want to retain styling, break it apart from other sections—remember, there are no environment commands in the text yet. If you don't mark things off in this manner, your final file will be one L-O-N-G paragraph. As you're doing this, delete single-line WordStar dot commands.

Eliminate the traces of WordStar soft hyphens (hyphens that only print if they appear at the end of a line) by using a global search-and-replace to substitute for a sequence that appears to Perfect as " ^_ " (note the final space!). This will pull most hyphenated words back together, but a few will slip by with excess white space between syllables. You'll have to fix these problems one by one. For pulling together words split with hard hyphens, do another round of search-and-replace.

Purge WordStar print toggles, which appear as control symbols around words or sections, and replace them with the appropriate Perfect "@" commands.

Reform paragraphs with **ESC-Q**. Do this one paragraph at a time; using the universal command repeat (^U) will occasionally break up your paragraphs in some very strange ways. A screen refresh (**ESC ^L**) will cure this, but you're better off avoiding it.

Finally, print out the file and **look at it**. If you notice problems, go back and fix them, but these procedures should work most of the time.

From Perfect to WordStar

If you need to convert a file from Perfect Writer to WordStar, you'll also have to go through some gyrations. At the outset, be sure you're working with a text file; WordStar can't handle the intermediate .FIN files generated by Perfect Formatter.

WordStar reads Perfect text files exactly the same way it reads its own non-document files (or files treated with PIP [z])—there's a nasty hard carriage return at the end of each and every line. Here's what you do:

As above, start by giving the file a quick read. Note sections that will demand special treatment, and decide on the look you want for the final document.

On the second pass, insert marking characters (such as a double dollar-sign) at the start of each paragraph. Use other symbols for other special formats, such as indented outlines. You are going to remove *all* carriage returns and *all* extra spaces; if you don't do your marking carefully you'll have to go back and reconstruct formats one at a time.

Next, use **^QA** to eliminate excess

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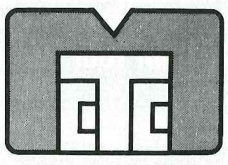

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spacing. This is particularly important if the file has been justified. Replace three spaces with one space, and use option **GN** to have the computer run through the entire file without asking you if it's okay to make the replacement each time. Note that this can take quite a while—there are a lot of spaces in your average text file. You can shorten the time involved by hitting **ESCAPE** as soon as the program starts replacing things. This tells WordStar not to bother to update the screen; replacing will continue to the end of the file at a much faster pace. The program will drop you at the end of the file when it's done. If you're uncertain about what's happening, you can stop the process with a **^U**.

To make sure you get all the little devils, run the space crunching routine twice at three spaces to one, then twice at two spaces to one. If you're working on a large file, a sandwich is recommended at this point.

By now, the file is beginning to look rather strange; indents and blank lines will have disappeared. Don't worry, it will look stranger before you're through.

It's time to remove the carriage returns. Use another global search-and-replace, only this time replace each carriage return with *nothing*. As hitting the return key itself moves the program to the next step, indicate a carriage return with **^N**. When asked for the replacement string, just punch the return key. Options as before are **GN**. Congratulations—you've just turned the file into one long line of text!

To reconstruct, replace your marking characters with the appropriate strings. For example, if you want a document with indented paragraphs and a line in between, the replacement for the marking character would be **^N^N^I** (two carriage returns followed by a tab). Be **sure** you've got the insert toggle *on* for this phase! Your text will now be a series of extremely long lines, with a line of space between each one.

Finally, to form the whole into a series of paragraphs, do an automatic repeat paragraph reform (**^QQ^B**). If you want this to move quickly, turn off the hyphen help. Stopping for hyphens kills the repeat, and you'll have to start it up again after each hyphen query.

A brief caution

These procedures are not foolproof, and while they've been tested and seem to work, there may be some gaps. The basic ideas are solid, though, and with a little bit of messing around, you should be able to cope with any oddities that crop up unexpectedly.

Now that you know what to look for, you ought to be capable of handling text files from other word processors in a similar fashion.

The question of choice

Neither WordStar nor Perfect Writer is the ultimate word processor. Choosing between the two really depends on your needs—and your tastes. It doesn't *matter* whether you decide to use one or the other . . . or both. The only criterion, finally, is what's easiest for you. □

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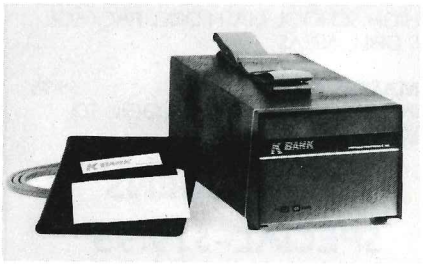

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C A R E

Disks, drives, and dirt

Should you invest in a head cleaning kit? How important is your data?

by Gordon Lewis

One of the first things we all learn about floppy disks is that we must treat them with care and respect. Never touch the surface of the magnetic medium. Never leave the disk uncovered when not in use. Never fold or bend the disk. Never expose it to magnetic fields. And on and on and on.

While these safeguards do protect the disk and the data it contains, one critical factor is rarely mentioned that can eventually destroy both. That factor is friction.

Friction is unavoidable in a floppy disk drive. The read/write head must actually be in contact with the disk and move across its surface in order to read and write data—all while the disk is spinning at a snappy 300 rpm. Still, we don't expect disk sleeves to carry the warning "Avoid using this disk whenever possible." And it's not as if we find disks disintegrating before our very eyes. Both disk drive and floppy disk manufacturers are well aware of the need to keep friction to a minimum.

As Kaypro owners, the disk drive manufacturer we are most concerned with is Tandon. They make the disk drives used in all Kaypro models up to and including the hard disk drive in the Kaypro 10. Astute observers will note that the Tandon drives used in the Kaypro II and 4 are identical to the drives used in the IBM Personal Computer. If they're good enough for the Kaypro, they're good enough for the IBM PC.

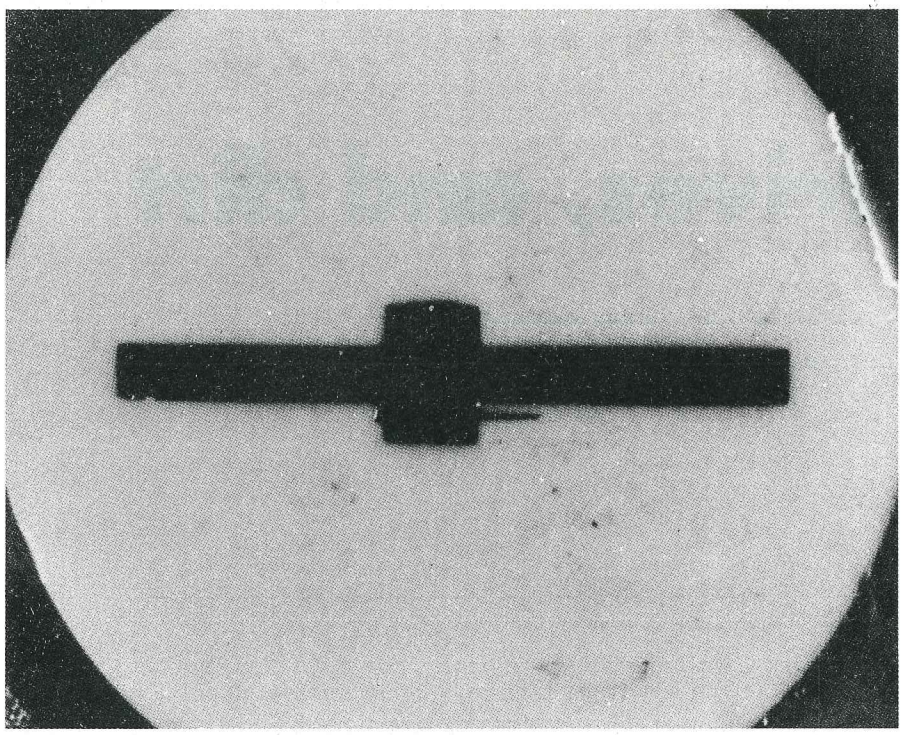
The product specifications and user's manual for these drives states that "The read/write heads are glass-bonded, ferrite/ceramic structures with a life expectancy of 20,000 operating hours." To elaborate, the read/write head is like a ceramic doughnut with a ferrite (iron compound) material glass-bonded into the center. Ceramics are chosen because they are extremely hard, can be highly polished to reduce surface friction, are non-magnetic, and are inexpensive to produce. The ferrite core of the "doughnut" is what actually does the reading and writing. It must not only transmit and receive magnetic pulses, it must also be able to withstand years of slow but steady abrasion from the magnetic media it comes in contact with.

There's little cause for worry on this count, however. The 20,000 media contact hours claimed in Tandon's product specification translates into 833.33 days—2.28 years—of continuous use. That's a lot of use. Even if you were to use your computer eight hours per day, which still wouldn't be eight hours of continuous use, it would take more than seven years before the read/write head was on its last legs. This is eons in computer technology time. Floppy disks and disk drives will probably be quaint anachronosms seven years from now.

It's safe to say at this point that the durability of Tandon's read/write heads is the least of your worries. Floppy disks are another matter. Regardless of quality, all disks are created using the same basic manufacturing process: a mylar base material is coated with a compound of magnetic oxides. It is then cut into a disk shape (referred to in the trade as a "cookie") and inserted into a polyvinyl chloride jacket. The jacket has an inner liner made of synthetic fiber which serves to help clean the disk while reducing friction.

How far the manufacturer chooses to go beyond the basic manufacturing process determines how reliable their disks will be and how long they'll last. Top quality disks are made with thicker coatings of magnetic oxides that are able to maintain the amplitude of the original signal for a longer time. They include more and better lubricants in the oxide mix, and the surface of the media is polished to a

(Continued)



Enlargement of a clean read/write head.

higher degree. Some also include a reinforcing ring for the center hole.

All manufacturers check their disks for manufacturing defects before shipping them off to your dealer. Some manufacturers' tests are much stricter than others. One manufacturer may test only one disk in ten in order to reduce his expense and your cost. Another may decide that cost is not of primary importance and will test every disk to meet standards over and above those set by ANSI (American National Standards Institute).

The net result of this attention to quality is that such disks, and therefore the data they contain, are more durable. As an extreme example, Verbatim's Optima Series disks are warranted to last seventeen years, based on a media life of 70 million revolutions with the read/write head normally loaded on a single track. Other premium quality—and premium price—disks are comparable in media life and signal integrity.

As we step down the ladder from premium quality to average and economy-grade disks, we also step downward in media life. Diskettes with a national name brand (Verbatim, 3M, Maxell, BASF, Wabash, etc.) can be expected to last an average of five years. No-name and private label disks are more prone to shedding their media surface with use and generally last no more than a year or two. As with most things in life, you get what you pay for.

Warranties, unfortunately, are an unreliable reference for estimating the quality of a particular brand of floppies. In almost every case, a "lifetime warranty" simply means that the disk is warranted to be free of defects for the life of the user. They don't, however, guarantee the disk against normal wear (whatever that is), and it's "normal" wear that will eventually destroy the disk long before you meet your maker. No warranty can guarantee the longevity of data saved on your disks, (accidents will happen!) so even the highest quality disks should have back-ups.

On the face of it, it would seem that head and disk wear is very little problem at all. Read/write heads are extremely durable. If your floppies start looking a trifle worn you can always substitute a fresh copy. The catch is that the oxide dust shed during the course of wear doesn't simply disappear. Much of it is captured by the porous inner liner of the disk sleeve, but a very small amount sticks to the read/write head where it then begins a chain reaction. The abrasive oxides cause even more oxides to be scraped off the media surface. Although these particles are microscopically small, it takes only a microscopic gap between the read/write head and the surface of the media to cause a read/write error, lost data, and lost time. Naturally, the more hours per day that your disks and drives are in use, the more rapidly the disks will wear and the dirtier the read/write head will become. This problem is most acute with bargain basement floppies, since they're less durable to begin with.

Metallic oxides aren't the only contaminants that can degrade the integrity of the head-to-media interface. Atmospheric pollutants such as smog, smoke, and dust can also have an effect. It's a sure thing that smokers who live in smoggy cities and who work with the windows open will have more problems keeping their disks and disk drives clean than nonsmokers living in remote areas.

It's important to remember that oxide dust and airborne contaminants are microscopically small. Visual evidence is subtle at best. Still, it's unwise to wait for irrefutable proof in the form of read/write errors. Unless you enjoy trying to piece together defective disk sectors, you're better off taking preventive measures. The simplest approach is to use a commerical head cleaning kit.

There are dozens of different brands of head cleaning kits, but only two major manufacturers: Innovative Computer Products, makers of the Perfect Data line of computer care products, and Verbatim, makers of Verbatim disks and the Datalife head cleaning kit. The two makers use the same basic principle but have slightly different ways of implementing it. Both use a synthetic fabric, dampened with an alcohol-based solvent and enclosed in a standard sized 5¼" disk sleeve. The disk is inserted into the drive, and when "booted," cleans the

PHOTOS COURTESY OF INNOVATIVE COMPUTER PRODUCTS

read/write head with a combination of rubbing action of the fabric and the chemical action of the solvent.

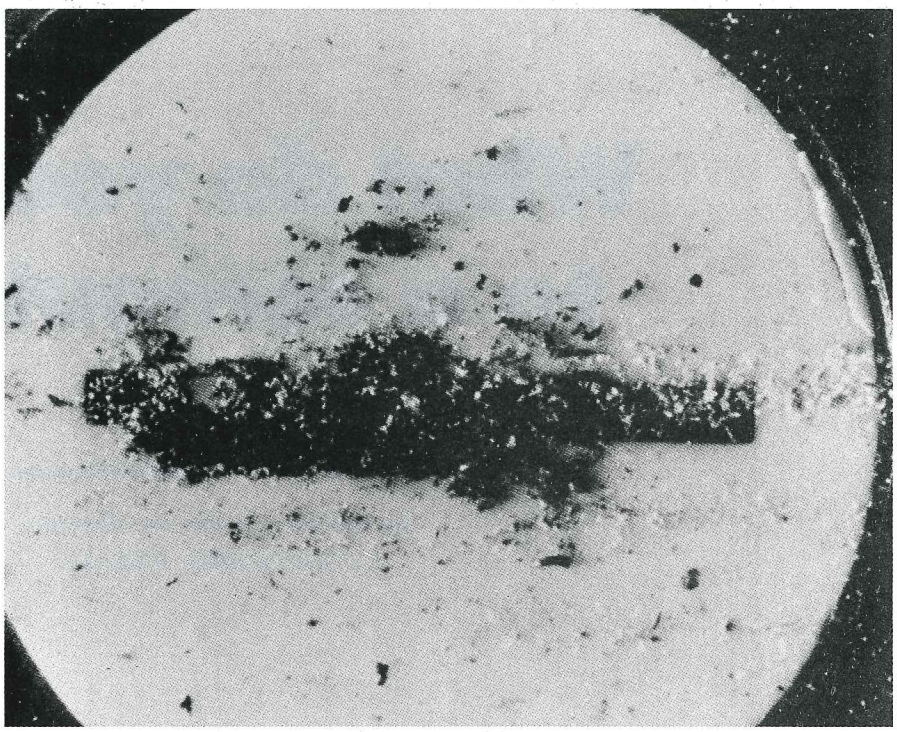
Perfect Data head cleaning disks are packaged dry, along with a separate 4 ounce bottle of solvent. You must sprinkle solvent onto the cleaning surface of the "disk" before putting it into your drives. Even if you're the heavy-handed type, the solvent isn't likely to harm the drive. Tests done by both Tandon and Perfect Data also prove that you can leave a dry disk in the drive for hours on end without causing any harm.

Beware of overusing reusable cleaning disks. The Perfect Data kit recommends a maximum of thirteen uses, but a cleaning disk should be thrown away immediately if it shows any obvious discoloration. You otherwise run the perverse risk of dirtying and abrading the read/write head with the cleaning disk.

Verbatim head cleaning disks are individually wrapped, pre-moistened, and made to be thrown away after use. The virtue of their approach, according to Verbatim, is consistency. You're always using a head cleaning disk that's pre-moistened with a pre-measured amount of solvent. Because the disks have never been used before and are thrown away after use, you're guaranteed consistency.

In practice, both products work well. Neither does a perfect job of cleaning read/write heads, however. The fabric and solvent don't totally remove oxides and contaminants that have built up over time (a year or more, depending upon how heavily they've been used. Heads like this may require a trip to the service technician.). The kits clean only the area they're actually in contact with. Since the read/write heads are slightly convex and the cleaning surface is flat, a small amount of the oxides are merely pushed to the sides rather than removed. In extreme cases, the oxides build up enough to cause data errors, but this is more prone to happen if you don't use a head cleaner than if you do.

There's no potential harm in using a head cleaner every day if you choose to do so. If you're a heavy user (5-8 hours per day), cleaning the heads once a week is often enough. Light to moderate users can get by with once or twice a month. Those who live in areas with high levels of atmospheric pollutants (smog) should clean their heads more often than those in areas with clean air.



Enlargement of a read/write head with oxide build-up.

Head cleaning isn't the final word on user maintenance of disk drives. Verbatim markets the Datalife Disk Drive Analyzer. This easy-to-use kit doesn't pretend to be as accurate as a service technician's instruments, but it's accurate enough to give you an early warning of impending problems. The Disk Drive Analyzer tests for radial alignment (centering over the proper disk track), disk speed, disk clamping (the ability of the clamping device within the drive to hold the disk firmly and accurately in place), and write/read (the ability of the drive to record and play back data). You probably won't be able to fix a problem if you discover one, but on the other hand, you have the opportunity to take the drive in for servicing before it endangers any of your data.

Some of you who've read this far may still be skeptical about the utility of head cleaning kits. "After all, I've been using Brand X floppies for a year now, I've never cleaned my drives, and I've never had any problems." This attitude is scarcely different from the gambler who brags, "I've played Russian roulette for a year now and I'm still alive."

Don't push your luck. Buy name-brand floppy disks and always back up valuable disks whenever possible. If you can't resist "bargain" diskettes, at least take the time to clean your drives often. Use whatever head cleaning kit you prefer; once a week if you're a moderate-to-heavy user; once or twice a month if you're not. Clean your drives more often if they are frequently exposed to dust, tobacco smoke, and bad air. Finally, if you're the type who hates to be the last to know, you might also wish to invest in a disk drive analyzer kit.

Disk drives require remarkably little maintenance on your part. Considering how critical they are to your computer system, you'll be doing both yourself and your Kaypro a favor by keeping them clean. □

What do you say to a computer?

Second in a series on choosing a programming language

by Alan Simpson

A computer program is a conglomeration of small routines or tasks. Each routine in a program is generally simple and straightforward, and may consist of anywhere from five to fifty lines of code. As a program grows, more and more such routines are interlaced into it, and the overall picture becomes increasingly complex in an exponential manner. As Ovid said over two thousand years ago with incredible foresight, "Adde parvum parvo magnus acervus erit (Add little to little and there will be a big pile.)." If a programmer writes his programs by adding little routines to other little routines in a haphazard fashion, he ends up with a big pile of routines. Big piles of software routines are often called "jungle code" in the business. Debugging, modifying, and managing jungle code is about as easy as finding one's way out of a jungle without a map or compass.

To combat the encroachment of jungle code, a number of authors began outlining what are known as "structured programming techniques." The basic idea behind structured programming was to provide a smooth logical flow by following clearly defined techniques when designing and developing software systems. However, few programming languages actually required such structured techniques. In fact, as far as some structured programming enthusiasts will assert, most programming encouraged jungle coding.

The programmer (and his reader) can clearly see that a given task is going to be performed

The basic problem with most computer languages, many felt, was that they encouraged the programmer to put together the routines of a program in a haphazard fashion. A programmer might belt out a few quick routines before realizing that he had left out something essential. In many languages, the simplest solution is to simply stick an additional routine into a convenient spot in a program and make the computer jump to it (with a GO TO command) when necessary. However, if the programmer discovers an omission in the new routine, then yet another routine might be inserted somewhere in the program to cover the gaps in the previous routine, and so on and so forth. Eventually, a program constructed in this manner winds up as a big pile of routines interconnected in an unsystematic (and unreadable) fashion. The structured languages provide many alternatives to the GO TO command in order to help keep the logic of a program smooth and understandable.

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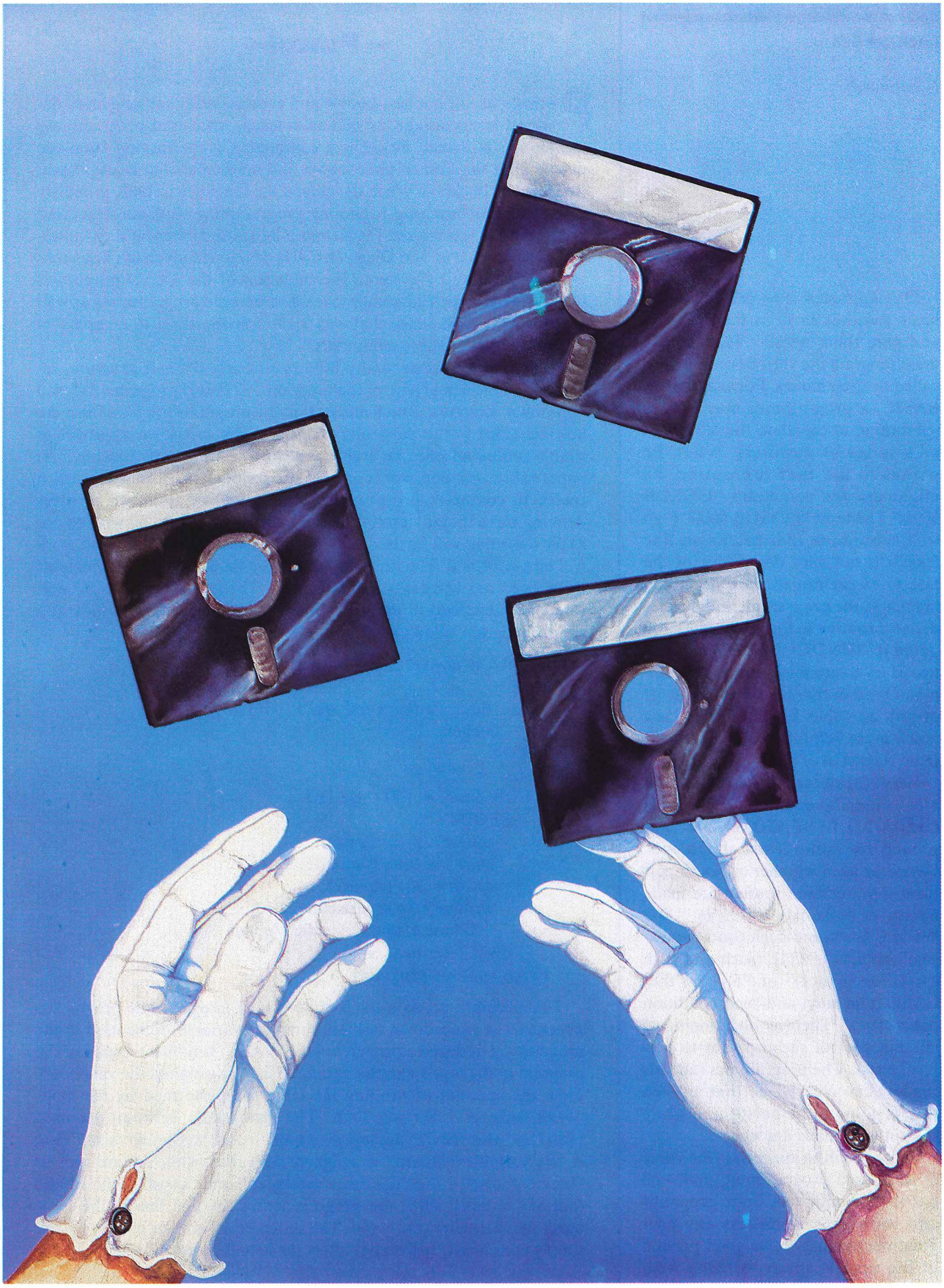

ILLUSTRATION BY ERIC MATTEI

One approach is to pre-define the basic routines early in the program and give them names. Then in the main program the various routines are called by their names. For example, in BASIC, a programmer may have a subroutine to calculate the cube root of a series of numbers. When he wishes to use that subroutine, he might use the command "GOSUB 5000." The term "GOSUB 5000" ("go to a subroutine that begins on line 5000") is not very descriptive of the task to be performed. In a structured language, the programmer might predefine a routine to find cube roots and name it "FINDCUBES". When it is necessary to use this routine, the command used in the structured language might be "DO FINDCUBES"—a much more helpful way to describe it than "GOSUB 5000."

Structured languages also offer many alternatives to the "IF?? THEN GOTO 100 ELSE GOTO 200" approach for conditional statements. Decisions as to whether or not to perform a pre-defined routine are made using commands such as "DO WHILE (such-and-such condition exists)" or "DO UNTIL (such-and-such condition is met)" or "DO (in the) CASE (that such-and-such condition holds true)." There is no jumping to another part of the program to perform a task. The programmer (and his reader) can clearly see that a given task is going to be performed while certain conditions are met.

It is difficult to appreciate the value of structured programming until one has to deal with very large programs and software systems. As any programmer will tell you, a good portion of his time is spent working with printed copies of existing programs to

—Pascal—

Perhaps one of the best-known and earliest computer languages designed to encourage, as well as to teach, structured programming techniques, is Pascal. Pascal is a compilable programming language named after the French philosopher and mathematician Blaise Pascal (1623–1662). Nicklaus Wirth developed the language in 1968, primarily as a means for teaching beginning programming students structured programming techniques. Dr. Kenneth Bolles and others at the University of California at San Diego (UCSD) developed a version known as UCSD Pascal and P-system. The intention of the UCSD group was twofold; to provide a language to teach structured programming as well as to provide a language that was easily transportable to a variety of otherwise incompatible computers.

A Pascal program generally follows a clearly defined structure, regardless of the actual goal of the program. All Pascal programs follow a 'top-down' structure, which means that the programs progress from the abstract (top) to the particular (bottom). The top-down approach is simple common sense. An architect begins a building by drawing it on paper (abstract), and works toward the particulars (how much will it cost?). In computer programming, the top-down approach involves defining three major steps in the program: 1) what is to be worked on, 2) the tools that will be used to perform the work, and 3) how the work will be performed. The things to be worked on are variables. The tools to be used are constants and functions. The actual work to be performed is described in the main body of the program. Let's look at a simple program as an example.

```
PROGRAM powers (input,output);
  VAR
    size, base, square, cube, quad
      : integer;
  BEGIN
    size := 5;
    FOR base := 1 TO size DO
      BEGIN
        square := sqr (base);
        cube := base * square;
        quad:= sqr (square);
        writeln(base,square,cube,quad,
          1/base,1/square,1/cube,1/quad)
      END { for base := }
  END. {powers program}
```

This program prints a table of powers of integers. The program is structured in a top-down fashion. First, the variables to be used in the program are declared as integers in the "VAR" (variables) section of the program at the top. Next, the variable "size" is assigned the value of 5. Then the specifics of printing the table are performed by the loop; "FOR base:= 1 TO size DO." The statements between the next "BEGIN" and "END" are repeated until "base" is equal to "size." That is, the variable "square" is assigned the value of the square root of "base." "Cube" is the base times the square, and "quad" is the square root of "square." Then the program writes the first line of the table using the "writeln" command. The statements between braces, {}, are simply comments, and do not affect the actual program itself.

—C—

C is a language designed by programmers for programmers. Its name comes from its predecessor, B, which got its name, in turn, from yet an earlier language named BCPL. C was originally designed by Dennis Ritchie at Bell Laboratories. It is closely associated with the UNIX™ operating system (which is written in C). C is a somewhat "low level" compilable language. That is, it more closely resembles the way a computer operates than the way in which people think. C was originally designed for writing "systems-level" software (operating systems in particular), and is not a language for beginning programmers. However, C is now being used to write the many of the popular programs used on microcomputers, and is quickly becoming one of the most popular languages among professional programmers.

The popularity of C stems primarily from its transportability from machine to machine. Since C is a small language, compilers for C can be developed on new computers in a relatively short period of time (Oddly enough, C compilers are written in C themselves.). Also, since it is a low-level language, much of a pre-existing C compiler can be transported to the new computer, and one merely needs to make modifications for the new compiler rather than rewriting one from scratch.

A C program's structure is similar to a Pascal program's structure. Here is a C program which prints a table of Fahrenheit temperatures and their Celsius equivalents, from Fahrenheit 0 to 300 degrees:

```
/*Program to Print Fahrenheit-Celsius table*/
main()
{
  int lower, upper, step;
  float fahr, celsius;
  lower = 0;        /* lowest fahr. temperature */
  upper = 300;      /* highest fahr. temperature */
  step = 20;        /* step size in degrees */
  fahr = lower;
  while (fahr <= upper) {
    celsius = (5.0/9.0) * (fahr-32.0);
    printf("%4.0f %6.1f\n",fahr,celsius);
    fahr = fahr + step;
  }
}
```

Even though this program performs a different task, its structure is similar to the Pascal program. Note that near the top of the program, the variables "lower", "upper", and "step" are declared as integers, and the variables "fahr" and "celsius" are declared as floating point (real) numbers. In the next section of the program, the variables "lower", "upper", and "step" are given their initial values (0, 300, 20). Then, "fahr" is set equal to "lower". The main body of the program begins with a loop ("while") which keeps processing until "fahr" is greater than the variable "upper". The body of the while loop is contained within the braces {}. Within the loop, celsius is calculated using the formula "(5/9) (fahr-32)". Then one line of the table is printed using the "printf" function. The Fahrenheit temperature is printed in a column four spaces wide with no decimal point "(%4.0f)", while the Celsius temperature is printed in a column six spaces wide, with one decimal place "(%6.1f)". The "\n" means "send a line feed" ', so that the next line of the report is printed on a new line.

modify or debug them. If the printed program follows clearly defined rules of structure, this task is much easier, because the programmer knows where to look for problems.

For the beginning programmer, sometimes just getting a program to work at all is sufficiently challenging, and imposing additional rules of structure and style might be a bit overwhelming. Also, compilable languages (languages that convert the entire program to machine language in one shot) do not give the immediate feedback that the interpretive (one line at a time) languages do, so learning may be a bit slower.

But then again, the compilable languages do run much faster, and the additional structure imposed by languages like C, Pascal, and Topaz Labs' SBASIC speed up the testing and debugging phases of programming. And who's to say that learning to program in an organized fashion, right from the start, is a bad thing?

There are numerous C and Pascal compilers available for CP/M-based microcomputers, far too many to list here. For the curious who just wish to practice and learn, however, there are two very inexpensive versions of these compilers available. For Pascal, there is JRT Pascal, available for $29.95 from JRT systems, 45 Camino Alto, Mill Valley, CA 94941. The Software Toolworks puts out a C compiler for $49.95. They are at 15233 Ventura Blvd., Suite 1118, Sherman Oaks, CA 91403. SBASIC by Topaz Labs, a BASIC language that resembles Pascal in structure, is available from your Kaypro dealer.

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C O M M E N T

Women and computers

Computers hold great promise for reshaping society, but unless we watch what we're doing, women will wind up as underdogs once again.

by Terian Tyre

Much has been made of the alleged "reluctance" of women to confront the computer revolution. While it's true that something like 95% of the buyers of "personal" and "home" computer systems *are* men, it is *not* true that women as a group have either avoided or ignored computers.

Let's look at the facts. Though there is no doubt that the gradual incursion of computers into all facets of modern life has been dictated (for the most part) by men in administrative and management positions, women have shouldered an equal (if not greater) share of the burden of implementing those decisions. Women are the secretaries who have had to learn word processing. Women are the clerks who have had to enter the data that feeds the computer banks, first as keypunch operators, then with terminals. Women are the customer service reps who call up client files at utilities and financial institutions across the nation. Women are the agents who handle computerized travel reservations. Women are the teachers responsible for supervising the introduction of computers into our school systems. Women are the librarians and the social workers and the nurses who use computers to tame otherwise unmanageable masses of bureaucratic red tape. Women are the research assistants and graduate students who apply computer analysis in the statistical studies being conducted in most academic disciplines. And so on.

But all this doesn't mean that the nature of the relationship between women and machines is either simple or predictable; there are major questions yet to be answered about how computers will affect the role of women in our society. Many futurists would have us believe that computing will open the doors of opportunity to many social groups that have been denied any real power in the Establishment structure, among them women, but recent trends seem to indicate that there may be some very disturbing developments in the offing.

The computer's power to simplify office paperwork has made female clerical workers the "front line" of the working public to be exposed to the new order. Confronted with a machine that can both make their jobs incredibly easier and completely usurp them causes some natural ambivalence. When there is little attempt to smooth the transition, the initial reactions of many women is understandably cool (though this is more of a learned response than a deep dislike; once they've had a chance to become familiar with the benefits of computerization, most women take to data processing like fish to water.).

Economic factors are playing a major role in women's acceptance of computers. As a result of all the press attention—and the realities of the employment marketplace—women are striving to become computer literate for one simple reason—they can earn more money. There are countless tales of women who have learned by doing—"sink or swim." After they have learned to swim, they suddenly find that they have acquired valuable skills enabling them to move up in the company—or out into better positions. And many of them have used their new abilities to start whole new careers or to create their own business—a path for which computers are particularly suited.

A study done by one of the major clerical help firms, Kelly Services, Inc., of Troy, MI, illustrates the benefits of computer skills. A whopping 90% of office workers interviewed said that the new skills have opened up av-

(Continued)

enues for advancement within their own companies; 75% responded that they felt greater responsibility and decision-making power; and fully half, 50%, have received salary increases because of their training.

But there is a flip side to the new "informatics revolution." Heather Menzies discusses possible dangers to clerical workers from computer technology in her book **Women and the Chip**. She has two main concerns: 1.) that there will be fewer jobs for women without the technical skills in informatics and 2.) that there will be a degraded quality of working life for women who continue in clerical jobs. Menzies has based these predictions on two areas of analysis.

Women's participation in the paid labor force is projected to increase into the 1990's, an extension of the growth trends begun in the 1950's. During most of this period, two-thirds of the clerical jobs will have been held by women, providing a steady source of employment.

Menzies examined a series of case studies on the impact of the new technology on a corporation, a major insurance company, chartered banks, and supermarkets. There was a significant increase in the productivity of each clerical worker, due to the increased volume of work which can be done with the aid of computers. But there was also an overall decline in the actual number of clerical jobs. This was not accompanied by a parallel decline in employment because workers found other positions; some were promoted, others transferred. The study revealed many unforeseen problems in trying to reorganize offices. Some positions were enriched, but the majority of workers found less variety, responsibility, and challenge to their jobs.

Based on her findings, Menzies forecast a period of considerable disruption for women as participation rates increase while the availability and/or quality of work declines. So everything is not as rosy and sure-fire as it might first appear. Women will be faced with a certain amount of structural unemployment, perhaps as early as 1985.

Computers at home

The advertising scenario of a computer as a necessity in every modern household is already beginning to catch on. An independent research firm, International Resource Development, Inc., states that the quest for computer literacy is and will continue to be the main impetus behind meteoric home computer sales. It estimates that 50 to 80 million units will be sold this decade for the sole purpose of self-education.

Dealers report that it is still very much a male-oriented business. The women who do buy personal computers are writers, educators, professionals, and independent business owners. The homemaker is not yet an ordinary customer. This could be starting to change, however. A variety of software applications just now being introduced cater to the home-use market. Subjects such as home birth and pregnancy, nutrition and food inventory, budgeting, menu-planning with recipes, plumbing and small appliance

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repair are being explored. As women's impact continues to grow, even more relevant applications may become available. And this doesn't even get into the "cottage industries" women might create.

But as long as advertising is directed at men, in magazines written for men, the opportunities for women to recognize the potential of personal computing will remain scarce.

In the industry

The influence of women in the computer field itself is only now just beginning to be felt. Data processing was first developed in the 1940's and 50's for accounting and financial applications. Money management jobs were held by men in those days, and as in other male-dominated areas, the old-boy network flourished in the computer industry. Women have had a late entry, but they are trying to make up for it now, even using networking tactics themselves.

The National Science Foundation estimates that over 90,000 women were employed as computer specialists in 1980, a 44% increase from 1978. Of the total number of computer specialists, however, women make up only 26%. While better than the statistics in other male-dominated professions, the ratio still reads as three to one. The pay scales are equally imbalanced; a 1983 study shows that women computer professionals are making 66 cents to their male counterpart's dollar. The majority of computer system design jobs belong to men, and women are concentrated in programming or data entry positions. You can guess who makes up the management sphere.

Educational trends

If women are to have a place in the sun in a new world shaped by computers, they must have access to high-quality computer education. And while such training is becoming more available with each passing day, it is not working to women's advantage.

There is discouraging news on this front from a study by Far West Labo-

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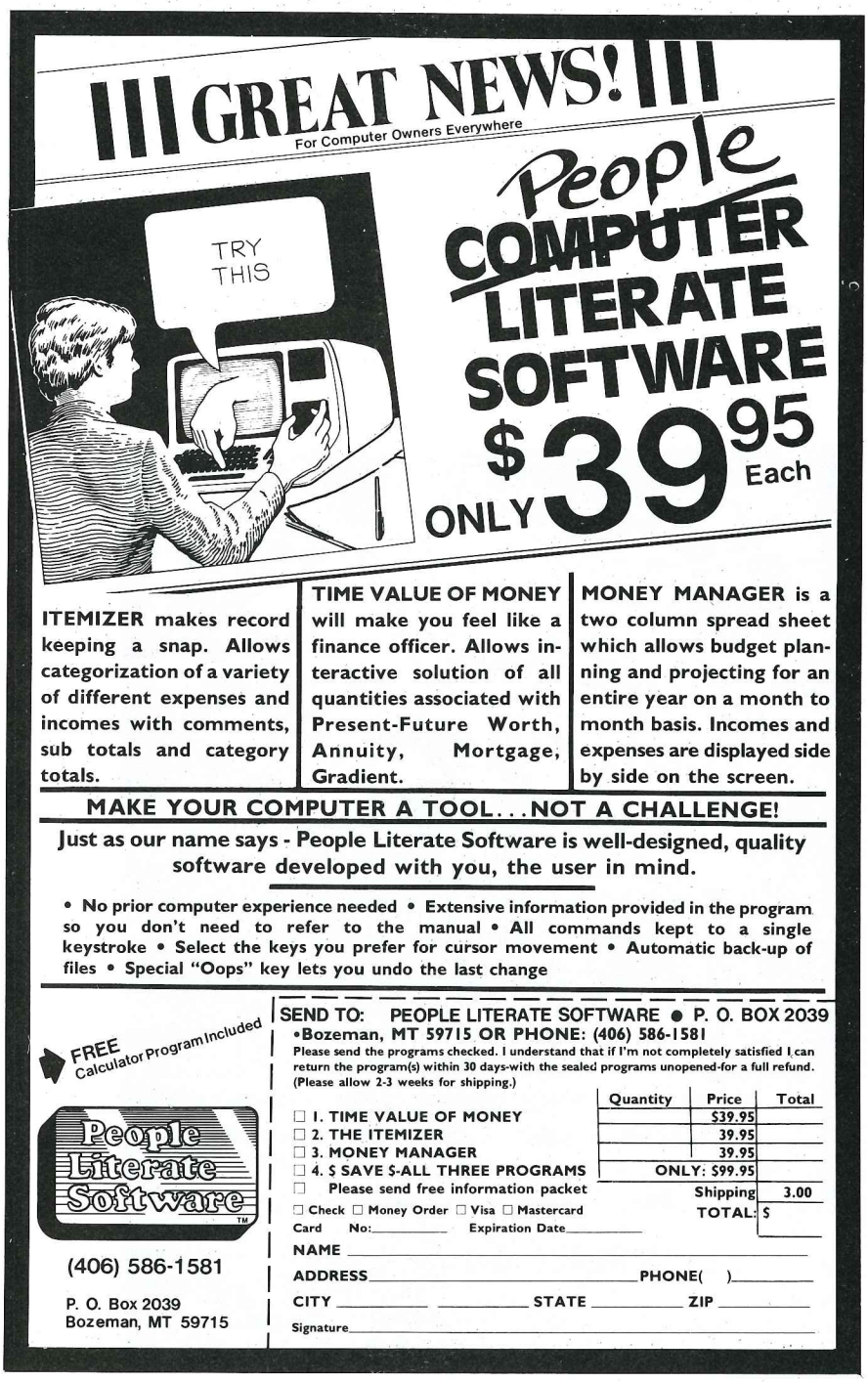

ratories of San Francisco. Girls are dropping out of computer courses the same way, and for very much the same reasons, that they drop out of math and science courses. At the elementary school level, the participation rate of women to men is about equal. This drops to 37% in junior high school, and drops still farther to 23% by the college level.

Some of the causes are the same as they always have been—peer pressure, parental expectations, and societal assumptions of what girls and boys need to learn. Additionally, media depiction of the typical "whiz kid" is not particularly attractive to girls. He's usually pictured as 9 to 13 years old, a programming hacker with thick glasses and ghostly skin. He doesn't play outside or have many friends. A little girl's reaction is "I don't want to grow up to be a nerd!"

Other reasons are not as obvious. According to Jan Zimmerman, co-owner of Two-Bit Software and an adjunct faculty member at San Diego State University, simple boredom plays a large part. Much of the imagery used in programs is unenticing to girls. The rewards used in almost all computer games (including those designed to be educational) is often aggressive, if not overtly violent. "In a subtle way, but a definite way," says Zimmerman, "this is unappealing."

For example, an application used to teach fractions to young children shows an arrow piercing a floating balloon when the student gets the correct answer. The boys were stimulated by this graphic and played the game well. The girls were not particularly interested in popping balloons, and thus did not perform well. When the reward image was changed to a little puppy appearing with a smile, girls' scores rose significantly.

Games are important because they serve as the friendliest introduction to computers for both children and adults. Adult games suffer relevancy problems with women. "Most games written by men deal with abstract space," explains Zimmerman. "Women prefer real-time space. Women are very concrete." Even the prose adventure type doesn't interest women very much. Why would they want to fight dragons and get lost in frustrating mazes?

Zimmerman's company has developed some alternatives. One is called "Working Mother's Dilemma." The goal is not to accumulate treasure or vanquish dragons, but simply to make it through the day with enough time to put one's feet up for a rest. In another game, "Mad Dash," the object of the game is to run an obstacle course of phones, kids, and repairmen, and simply make it to the bathroom. These games are played in exactly the same manner as the conquest-oriented ones, but they apply the adventure formula in a different—and more realistic—way.

But attempts like Zimmerman's have limited impact at best, and by the time *all* educational programs have been restructured in non-sexist ways, a whole generation of women may have been left behind.

The future

This is a pivotal point for society. Yoneji Masuda, computer pioneer and architect of Japan's "Plan for an Information Society," predicts a bloom of human intellectual creativity as we shift from an industrial economy to an information economy. In his book, **The Information Society**, he explains that the industrial age has been mainly concerned with consumption of material goods and mobility. In the society of the near future, the creation and manipulation of information will supersede passive consumption, and "cause creativity to flourish among the people."

The promised land is in sight. It will, however, take a diligent and concentrated effort by women and men working together to bring it within reach.

If we are, in fact, to have a society that does not duplicate the mistakes and lost talent of the present system, we must be careful not to let ourselves slide into the same old patterns. Brave new worlds are not easily built, and never in a day. But think of the possibilities they hold. □

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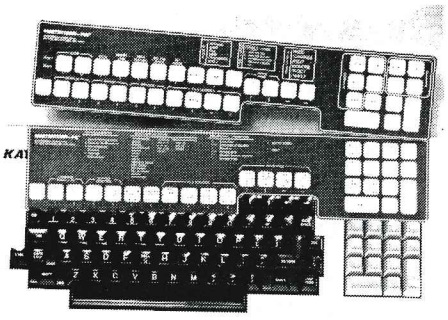

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Users' groups

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Users' groups are non-profit membership organizations comprised of people interested in exchanging information about computers. A certain proportion of their activities are purely social, but a major component of most groups' functions are educational in nature. Many of them run training seminars, hold regular speakers meetings, publish newsletters, and so on.

If you're a new computer owner, a users' group is the ideal place for you to learn about your machine, and about the applications that matter to you. Chances are you'll meet someone who is using his computer to perform tasks similar to those you have in mind, and who'll be willing to show you the ropes. Either one-on-one coaching or group training sessions may provide you with the insights you need for a running start.

As you develop into a more advanced computer user, the chance to bounce your ideas off other experienced users may prove invaluable. And outside speakers and regular newsletters can be a precious source of tips and useful information.

If you're still in the process of making those critical decisions about hardware and software, there's no better place to go for unbiased opinions. Unlike certain vendors, other users have no vested interest in profiting from your ignorance.

If there's no group in your area, starting a group is usually as easy as placing an ad in the computer column in your local Sunday newspaper classifieds. List a time, a meeting place, and a phone number for further information. You'll probably be amazed at the response. You might also do well to let Kaypro dealers in your region know about your plans for a group. They'll let their customers know, and many retailers will volunteer to provide various forms of assistance—meeting space, speakers, technical advice, newsletter printing, discounts to group members, etc. Friendly cooperation at all levels will eventually lead to larger membership for groups, more sales for dealers, and increased services for owners—and everyone will profit, one way or another.

Keeping a group going will depend on the individual members. The amount of time and initiative necessary to maintain a group can be surprising; don't underestimate the amount of work required. Try to involve as many people as you can in actual operations—that way you may avoid having all the work fall on one or two active members—the most common pitfall of new groups. A good committee structure seems essential; some suggestions for working teams are Newsletter, Finances, Meetings and Speakers, Training and Education, Manufacturer Liaison, Software Development, etc. One of the key things to remember as you get into developing a users' group is to keep sight of your goals; don't let organizational megalomania distort your perception of the group. Increasing membership is not an end unto itself, particularly if it defeats the original aim of sociable information exchange. If all your group ever does is pull a dozen people together once a month to eat some pizza, drink some beer, and gossip about computers, what's wrong with that?

Kaypro users' groups have no official relationship with Kaypro Corporation, manufacturers of the Kaypro line of portable computers. Therefore, we can take no responsibility for the accuracy of the information in the list below, nor for the activities of the groups themselves.

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Kaypro Users' Group
P.O. Box 100
Malverne, NY 11565

ALASKA

ANKOR
1705 Bartlett Dr.
Anchorage, AK 99507

ARIZONA

Tucson KUG
P.O. Box 120083
Tucson, AZ 85732

CALIFORNIA

Sacramento KUG
7001 Brookcrest Way
Citrus Heights, CA 95610

KUG—North San Gabriel Valley
1416 N. Indian Hill Blvd.
Claremont, CA 91711

K-West
2790 Harbor Blvd.
Costa Mesa, CA 92626

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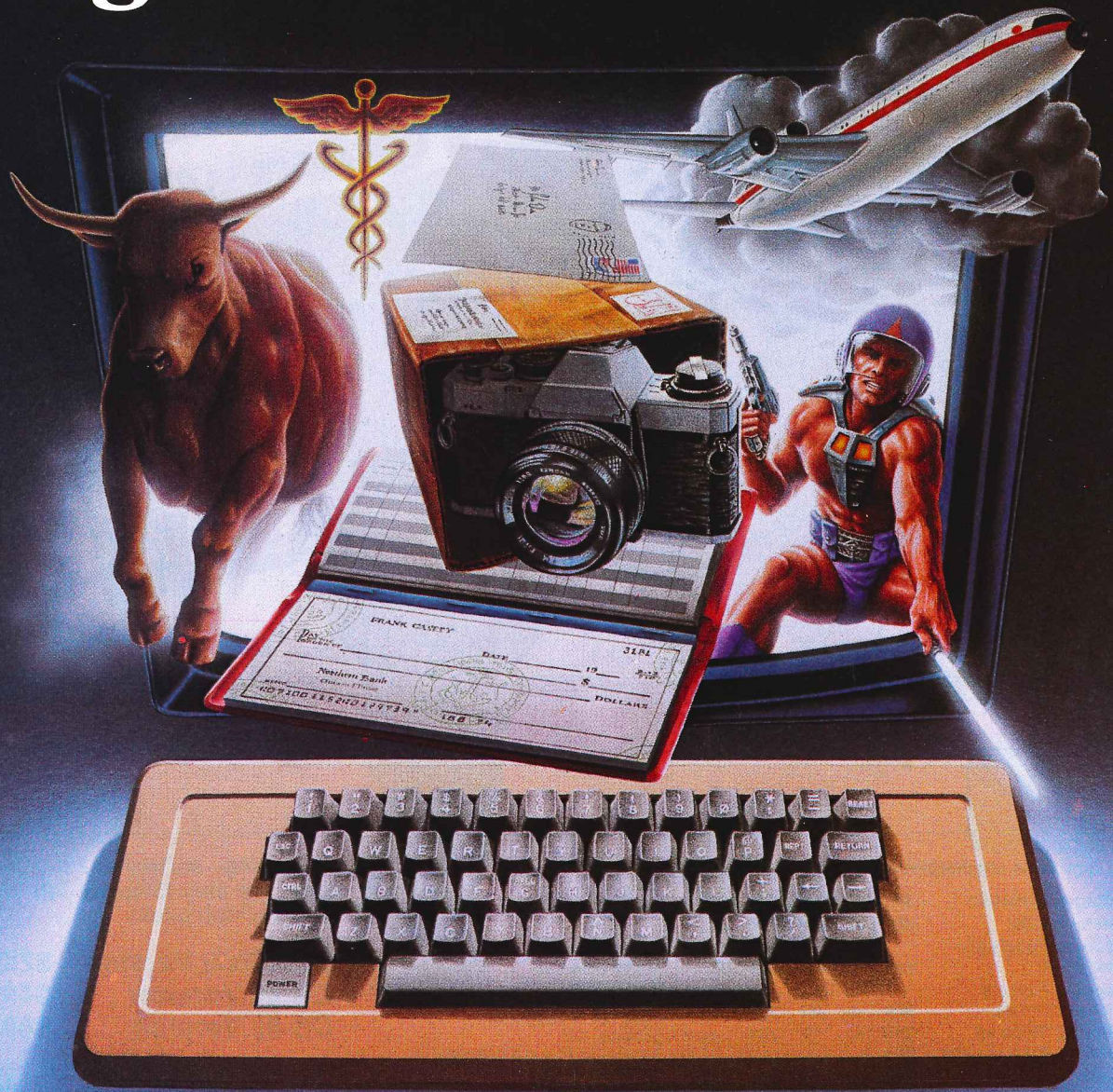

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KUG—South Orange County
25601 Raymond Way
El Toro, CA 92630

LA-KUG
c/o Wordmovers
15818 Hawthorne Blvd.
Lawndale, CA 90260

UCLA/USC KUG
Richard Baum
Political Science Dept., UCLA
Los Angeles, CA 90024

BAK-UP
P.O. Box 20181
Oakland, CA 94620

Kaypro Special Interest Group
North Orange County Computer Club
P.O. Box 3616
Orange, CA 92665

Kaypro SIG
San Diego Computer Society
c/o Kendall Business Services
P.O. Box 28571
San Diego, CA 92128

North Bay KUG
1266 Kerney St.
Santa Rosa, CA 95401

Santa Cruz KUG
1005 Cedar St.
Santa Cruz, CA 95060

KUG-San Fernando Valley
c/o Unicom Inc.
18639 Ventura Blvd.
Tarzana, CA 91356

TUG—Tehachapi Users' Group
21176 Old Town Rd.
Tehachapi, CA 93561

North San Diego County KUG
171 Unity Way
Vista, CA 92083

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- *Software availability and reviews*
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- *Library and programs by members*
- *Information on peripherals compatible with the Kaypro*
- *Up-dates from Non-Linear regarding the Kaypro line*
- *Special Kug Bulletin Board for all members*
- *Local chapter information*

The above is represented in our bi-monthly newsletter that is received by all members. Annual membership is **$12.00** (USA).

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Please make checks payable to **KUG** and mail with your name, address and telephone number to:

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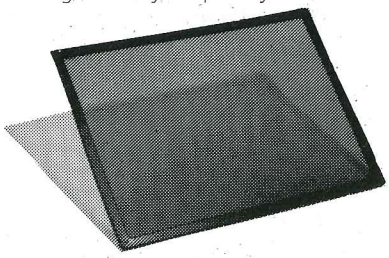

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Aspen, CO 81611

Denver Kaypro Association
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Aurora, CO 80013

Kaypro User's Association of Fort Collins
P.O. Box 1089
Fort Collins, CO 80522

CONNECTICUT

KUG of Southern Connecticut
340 McKinley Ave.
New Haven, CT 06515

D.C.

Capital KUG
P.O. Box 5506
McLean, VA 22103

FLORIDA

KAPPA
P.O. Box 1563
Gulf Breeze, FLA 32561

HAWAII

HPCUG
c/o Computer Market
578 Ala Moana Blvd.
Honolulu, Hawaii 96813

ILLINOIS

KOOC–Kaypro Operators of Chicago
433 Elder Lane
Glenview, IL 60025

Central Illinois KUG
P.O. Box 2487
Springfield, IL 62705

Champaign/Urbana KUG
602 W. Stoughton
Urbana, IL 61801

IOWA

Iowa KUG
Box 1250
Ames, IA 50010

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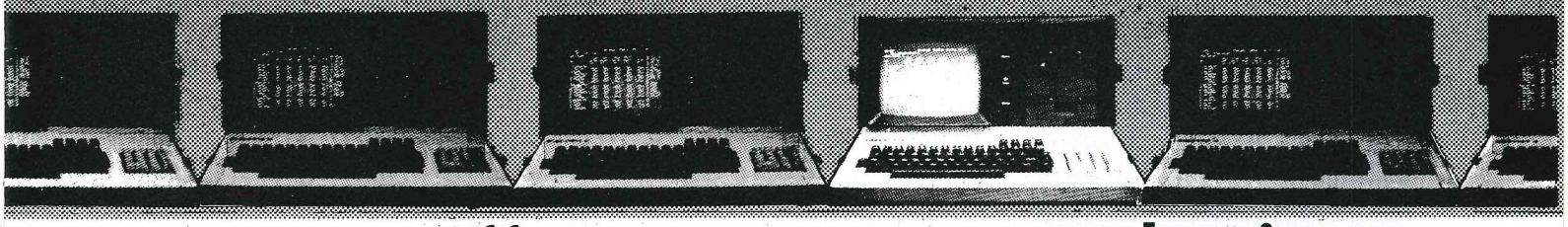

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☐ **KAYPRO 400KB Upgrade Kits***

KAYPRO 4 upgrade kit consists of a simple EPROM change and about 15 minutes to complete the installation. This will upgrade your standard KAYPRO II (which is 200KB capacity per drive) to 400 KB capacity per drive. Price $118.00

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☐ **Multi-Fonts Video Graphics**

This field installable hardware peripheral allows for high resolution (640 by 256) bit mapped graphics on the KAYPRO II. Firmware for drawing line vectors, arcs, circles, rectangles and point markers as well as down line loadable character sets are standard features. Application programs may draw patterned lines, filling rectangles with a pattern, blanking the display either dark or light and complementing all or portions of the display. Price $572.00

☐ **CPU Hop Up Kit**

The Hop Up Kit will increase your KAYPRO's calculation speed up to 60%. In electronic language this translates into an increase from the standard 2.5 MHz to a 5 MHz. Price $118.00

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☐ **EPROM Upgrade** $41.00
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☐ **Semi Conductor Disk**

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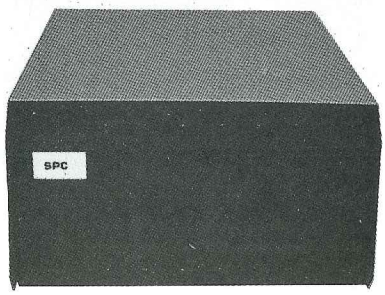

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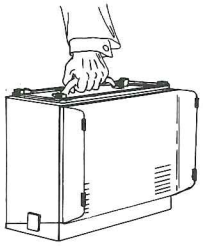

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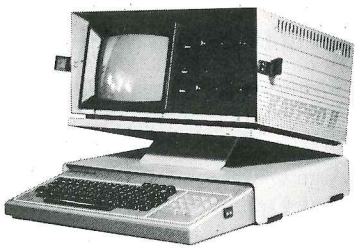

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Lexington, KY 40503

MASSACHUSETTS

Cambridge KUG
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Prudential Center Station
Boston, MA 02199

Boston KUG
27 Howland Rd.
West Newton, MA 02165

MICHIGAN

Detroit Metropolitan Area KUG
4900 Leafdale
Royal Oak, MI 90608

NEVADA

Three-State Kaypro
1350 Davidson Way
Reno, Nevada 89509

NEW JERSEY

KUG of New Jersey
6 Bonnie Brae Path
Atlantic Highlands, NJ 08857

NEW YORK

Buffalo KUG
66 Russell Ave.
Buffalo, NY 14214

Kaypro SIG
New York Amateur Computer Club
P.O. Box 106
Church St. Station
New York, NY 10008

Long Island KUG
90 Jericho Turnpike
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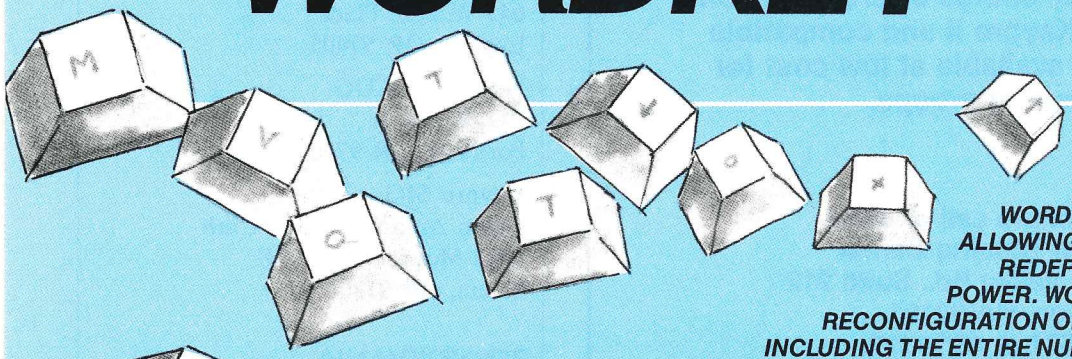
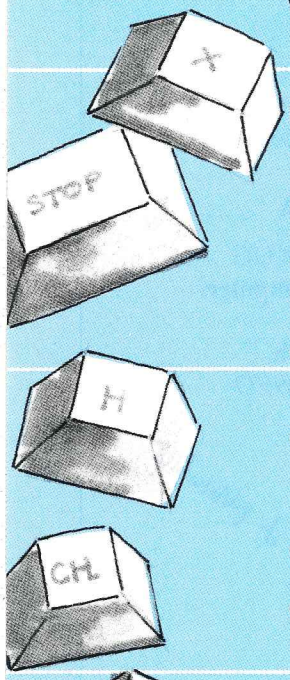


WORDKEY® IS UNIQUE IN ALLOWING YOU TO EXPAND AND REDEFINE YOUR KAYPRO POWER. WORDKEY® ALLOWS FULL RECONFIGURATION OF 18 OF THE KAYPRO KEYS INCLUDING THE ENTIRE NUMERIC PAD AND THE CURSOR KEYS FOR A TOTAL OF 35 POSSIBLE COMMAND STRINGS.



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WordTechSystems

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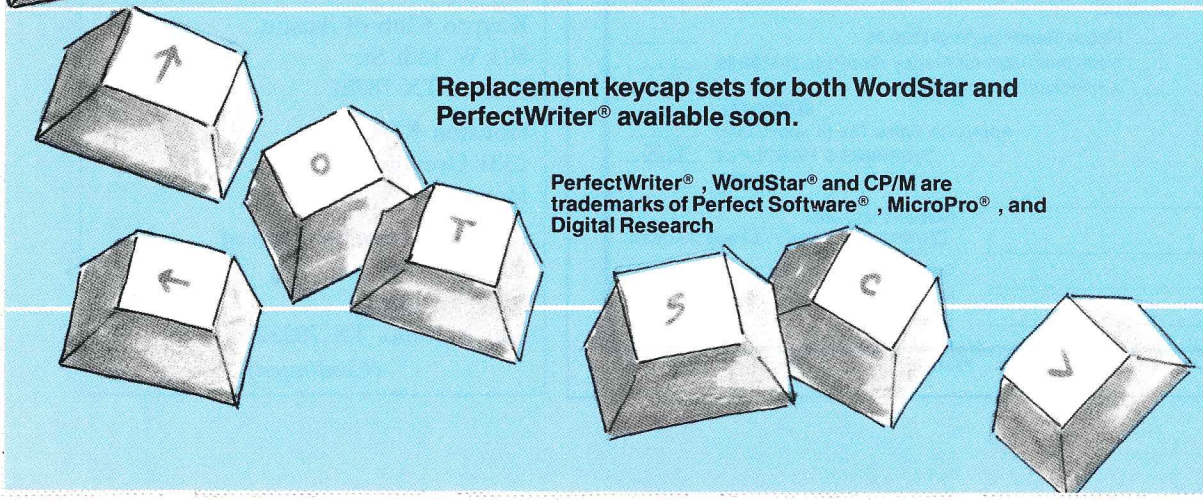

Replacement keycap sets for both WordStar and PerfectWriter® available soon.

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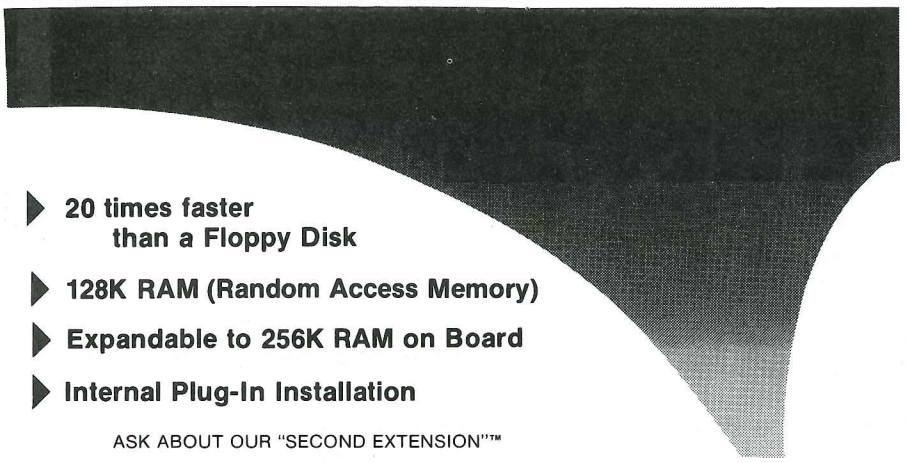

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KAYBUG—Cleveland area
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Maple Heights, Ohio 44137

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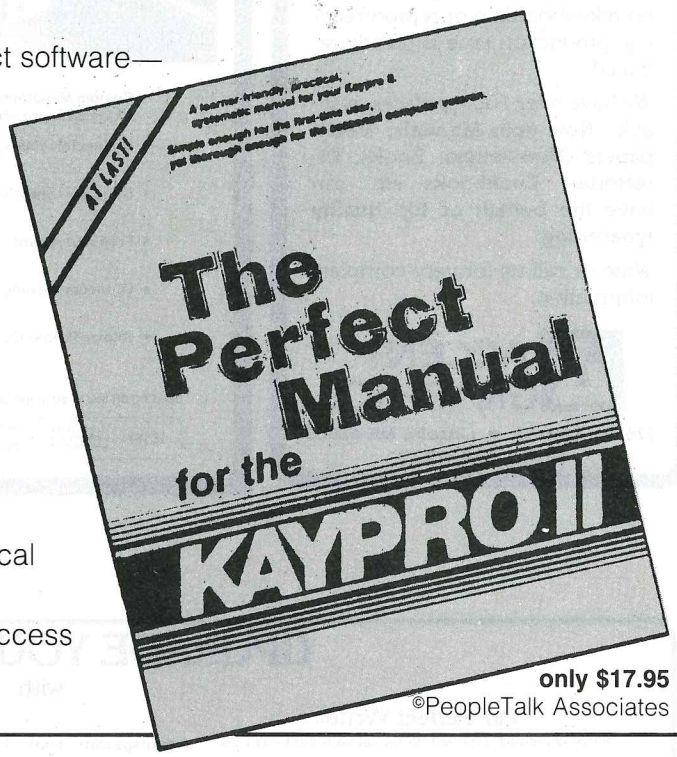

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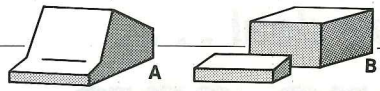

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