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PROFILES

The Magazine for Kaypro Users
July/August 1984

In Search of Adventure



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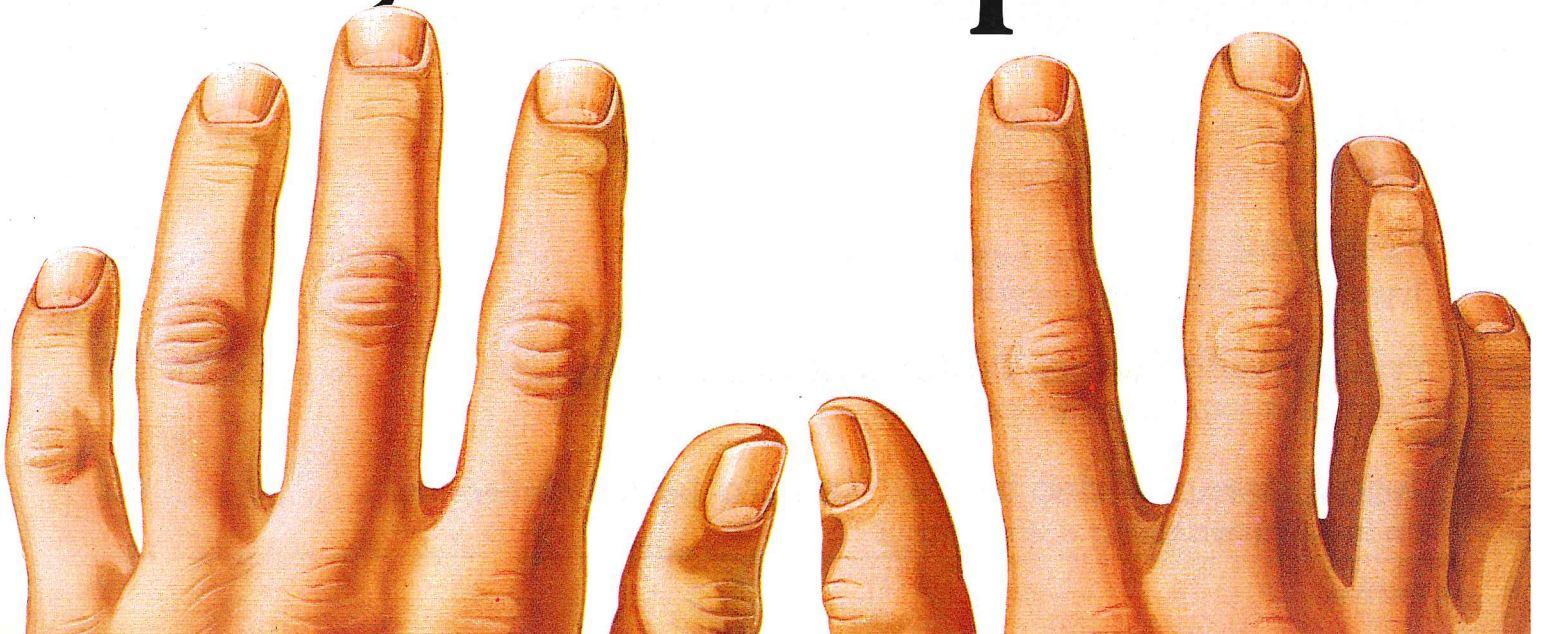
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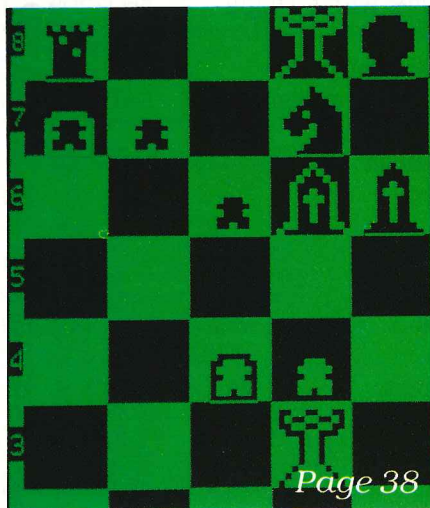


PROFILES

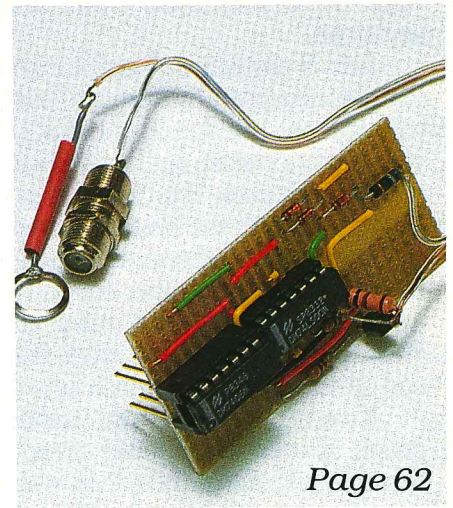
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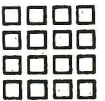
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| | |
|------------------------------|----------------------------------|
| REPORTS | PROGRAMS |
| Trial Balance | Master File Maintenance |
| Balance Sheet | Enter Transactions |
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| Department Income Statements | Generate Financial Reports |
| Comparative Balance Sheet | Accounting Transactions Transfer |
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| | |
|---------------------------|---------------------------|
| PROGRAMS | REPORTS |
| System Initialization | Customer Account Detail |
| Customer File Maintenance | Aging Report |
| Query Customer Activity | Transactions Report |
| Enter Transactions | Customer Accounts Listing |
| Invoice Generation | G/L Transactions Register |
| End-of-Period Processing | Invoices |
| | Statements |

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| | |
|--------------------------|-----------------------------|
| REPORTS | PROGRAMS |
| Vendor File List | Vendor File Maintenance |
| Open Vouchers | Enter Vouchers |
| Accounts Payable Aging | Enter Credits |
| Cash Requirements | Report Generation |
| Check Register | Decide Vouchers to Pay |
| Checks | Query Vendor Account Status |
| G/L Transaction Register | End-of-Period Processing |
| | General Utility Functions |

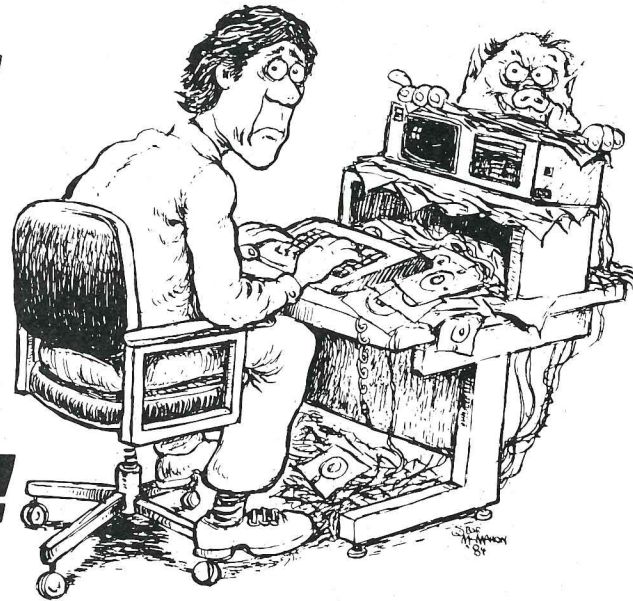
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This software package enables you to prepare the payroll quickly and accurately. It rejects erroneous input by using built-in cross checks that insure accuracy of calculations. Besides calculations, it automatically handles all check preparation and computation of federal reports. It prepares a payroll journal for directly posting to the books.

| | |
|---------------------------|---------------------------|
| REPORTS | PROGRAMS |
| Employee File List | New Period Initialization |
| Payroll Register | Calculate Payroll |
| Paychecks | Print Payroll Register |
| Monthly Summary | Print Checks |
| G/L Transactions Register | End-of-Month Processing |
| Unemployment Tax Data | End-of-Quarter Processing |
| Schedule 941-A | End-of-Year Processing |
| Form W-2 | Employee File Maintenance |
| | General Utility Functions |

BEWARE!!

There is evil lurking around your transportable!!

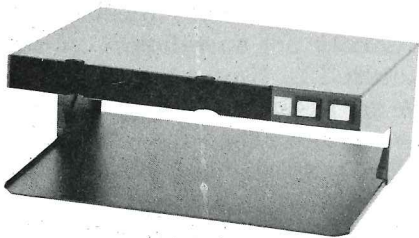


Porta-Enemy No. 1



D.M. aka Deskus Messus

His M.O. is to clutter your desk with diskettes and paper to the point where you can't find anything.

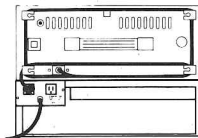


The **Porta-Micro Mate** also known as the P.M.M., can store up to 20 of your most commonly used disks and it also positions your transportable in a comfortable viewing position. The P.M.M. also has a perfect storage space for your keyboard.

Porta Enemy No. 2

S.C. aka Switchus Contortium

A dangerous M.O. in that everyday when you come in to turn on your transportable and peripherals, you must lean over in contortionistic fashion to find the switches for both units. S.C. could be very hazardous to your health.



Two rear mounted power sockets are available so you can plug in both your computer and printer. There are two push button switches on the front that allow you to turn on either unit or both at the same time!

Porta Enemy No. 3

S.G. aka Surgus Glitchem

The most dangerous of the three, S.G. can do more damage at the flick of a switch, that's because a spike of electricity can be sent across the line when you turn the system on.



Last but not least, the P.M.M. comes complete with a UL approved surge protection circuit that will detect any power spike and defeat it before it gets to your system.

Available in two models the P.M.M. comes standard as a stationary unit or mounted on a swivel base for 180 degree positioning.



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We're getting bigger

Beginning with the next issue, *PROFILES* is increasing from six to ten issues a year: 8 monthly issues and 2 bimonthly issues.

How to subscribe

Subscriptions are still available to everyone who purchases a Kaypro computer, or already owns one. The cost of a six-issue subscription is included in the price of your computer when bought in the United States.

For those in the United States, the situation is straight-forward: just send in your warranty card. Your subscription should begin within two months of sending in the card.

Your first issue

There is no way for us to know which copy of the magazine was packed with your computer. *Your subscription begins when you get your first issue in the mail, and has nothing to do with the complimentary issue packed with your machine.*

When things go wrong

If you've sent in your card and aren't receiving the magazine, please call or write to our Editorial Offices. (Our subscription number is 619-481-4353.) Remember to check the back of your machine for the serial number—we need that number to credit your account.

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If you are due to renew your subscription, please see the ad in this

issue on how to receive a special rate of \$21.00 per year. Our basic subscription rate is now \$25.00.

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Back issues are available for \$3.00 each, which includes postage and handling. *However, we only have the March/April and May/June '84 issues in stock.* Send requests to our Editorial Offices, 533 Stevens, Solana Beach, CA 92075, Attn. Back Issues.

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LOGO

FOR THE KAYPRO

ANOTHER COLOR GRAPHICS FABLE



The story of Adam and Eve (and Lisa and Logo)

Late one evening a cobbler, his son, and Kaypro were all sitting before the hearth, the flickering fire gently illuminating their faces. This was the time when stories were told, so it surprised no one when the cobbler put down his burl pipe and began relating a tale which had been handed down in his family for many generations.

Way back at the dawn of civilization two young humans named Adam and Eve found themselves in a beautiful garden. The trees and bushes were laden with fruit of every kind, and it just so happened that the two were sitting under an apple tree when along came a Turtle.

"Hi, folks," said the Turtle.

"Hi, Turt," said Eve.

"I'm having a closeout special on apples," said the Turtle, trying not to look too anxious.

At that moment, along came Lisa (one of Adam's children from a former marriage).



"Sure, I'd love an apple," said Lisa, picking a shiny new one with a color monitor. "Look at these colors, and it has Logo, and a turtle. I can get way ahead of my classmates!"

"So it wasn't Eve who got the first apple?" asked Kaypro.

"No, it was Lisa," mused the Cobbler. "And the sin of it all is that there were no Kaypros which could run Logo. It was a lowly apple or nothing."

"Fortunately, that's no longer true," noted Kaypro. "MicroSphere now has Logo for its color graphics board. It's a super powerful version of the language so I can create many turtles with the ease that made the fruit's Logo so popular."

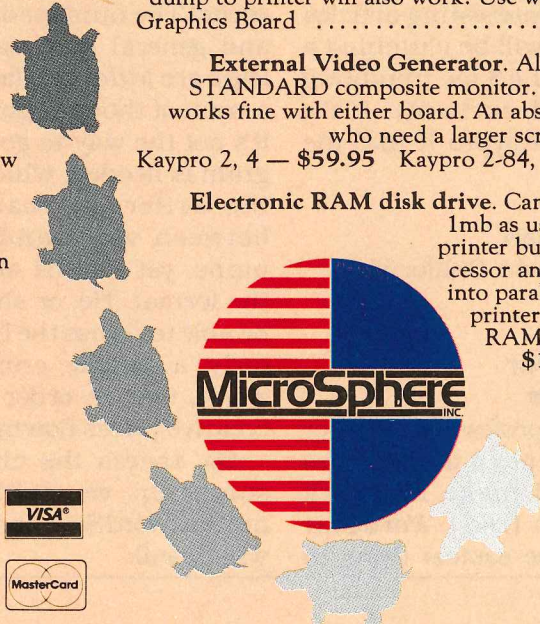
Up to this time, the Cobbler's son had been sitting quietly, but then in a flash, he scooped up Kaypro and headed for his room.

The Cobbler feigned surprise, but there was a twinkle in his eye.

"Don't keep Kaypro all evening," he called after the boy.

You see, the Cobbler wanted to try out another new MicroSphere program. This program creates sophisticated bar charts in full color from Perfect Calc data. It even dumps the results to a standard dot matrix printer.

COLOR GRAPHICS BOARD FOR KAYPRO 2, 4, 2-84, 4-84 & 10. 256x192 Pixel resolution, 16 color, 32 sprites. Software includes three editors, drivers, screen dump to printer and disk, six-month subscription to Micro Cornucopia and generates standard composite color. RF modulator is required for color TV operation. Plug in installation \$245.00



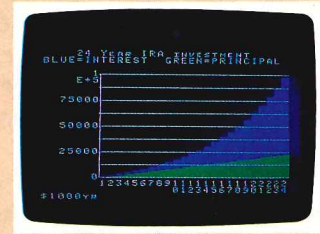
COLOR GRAPHICS BOARD SOFTWARE

TLC® LOGO featuring multiple turtles, multi-processing mode, fast, easy to use and easy to learn. This is the graphics language the schools like. There are many facets to TLC® LOGO including lisp commands, artificial intelligence algorithms, and vectors.

Standard version Kaypro 2-84, 4-84 and 10 using the internal screen only, 16,000 pixel resolution \$99.95

Deluxe version for all Kaypros with color graphics board installed, 49,152 pixel resolution, supports 16 colors and 32 sprites \$129.95

SPECIAL!!!! Color Board and Deluxe Version of LOGO \$299.95



INSTANT GRAPHER: allows bar charts directly from rows, columns and arrays of numbers. Usable from Perfect Calc, SuperCalc, or CalcStar files or a number array from a word processing file. Separate labels and titles can be added. The screen dump to printer will also work. Use with MicroSphere's Color Graphics Board \$30.00

External Video Generator. Allows the connection of a STANDARD composite monitor. An inexpensive monitor works fine with either board. An absolute necessity for those who need a larger screen or bigger characters. Kaypro 2, 4 — \$59.95 Kaypro 2-84, 4-84, and 10 — \$89.95

Electronic RAM disk drive. Can be used as from 64K to 1mb as user option. This includes printer buffer, separate micro-processor and sits external. Connects into parallel port using a standard printer cable. Socketed without RAM chips, Kaypro 2 & 4 — \$199.00. Call for price of stuffed board due to fluctuating RAM prices.



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Dealer inquiries invited

Letters

On writing and computers

Recently I took delivery of my new Kaypro word processing system—complete with 13 manuals and a copy of *PROFILES*. I was surprised to find that my computer had a fey sense of humor and that your magazine had a literary quality worthy of *The Atlantic Monthly*.

Wayne Howell's article on "Punctuation: The Lost Art" is the best I have seen on this subject and confirms what I have long known: that without a cadence pleasing to the ear, writing loses much of its effectiveness. The metronome which monitors such a cadence in writing is punctuation.

Clear, unambiguous communication may well be the key to survival of our planet. If so, word processing has a heavy role to play, enhancing the ability of people to write with precision and to punctuate with skill.

Keep those interesting articles coming, and I will be clutching a copy of *PROFILES* as, trembling with fear and curiosity, I am pulled by my Kaypro II into the 21st Century.

Mary K. Sturman
Rancho Bernardo, California

A challenge for programmers

As a full-time, professional writer I bought a Kaypro 4 in the hopes that it would make my work easier. Yes, it HAS! WordStar hasn't been the easiest thing in

the world to learn, but I'm getting the hang of it now. However, I've run into a real snag, which I'm reasonably certain could be solved by some Kaypro user out there who has some programming savvy (i.e., getting into WordStar to customize) and some sympathy for writers like myself who are faced at least once a month with the job of writing *slide-film scripts*.

As some readers know, a "slide-film" script uses a two-column format, one at the left for video, one at right for audio.

The writer must be able to work freely, back and forth between the two columns at will. Revising. Adding. Deleting. Using the flexibility of his computer to get it right before he prints. But the big problem is establishing a "semi-permeable" barrier at tab stop 35, which splits the screen. Sure, it can be done with WordStar—but for each and every scene! The number of commands and general re-formatting problems are *killers* as far as keeping a train of thought going! In brief, it's not the way to go! A new program is needed, which will allow the writer to "roam around," between video and audio columns, yet still be able to retain the format. He, or she has got to be able to "cross the barrier" with only a single command—at worst, two, in order to keep the creative juices flowing.

So, there's the challenge! To sum it up, we slidefilm writers need a WordStar-based program which will:

1. Format a true "right side, left side" script onscreen.

2. Allow the writer freedom to "roam around" without screwing things up while he or she is thinking in *both* audio and video terms. (With wordwrap on both sides!)

3. Allow for completely flexible editing, block moving, and perhaps numbering (and renumbering).

4. Free the writer from having to use more than three commands in order to get around. (Commands really block the flow of ideas!)

So there you have it, you Kaypro programming genies who are looking for a real challenge! Matter of fact, it's a new market, though admittedly, small. I'd be glad to hear from anyone who's interested in getting together on this—though I'm certainly not a programmer—just a frustrated writer.

Budd Blume
Matthews, North Carolina

Technicolor floppies

David Gerrold ("Up and Running", *May/June 1984*) makes several comments about Cen-Tech diskettes, "off brand", etc. Though my memory may be in error, I believe that CenTech told me a year ago that they used 3M media (definitely not off brand)

which they placed in their own jackets.

For over a year now, both my son and I have been using Centech diskettes because of their high quality, error-free, and silent performance . . . demonstrated in daily use. They are stiffer than most current diskettes and appear to take a much higher level of abuse, offering reinforced hubs, zero errors, 55% clipping, and less than 14% noise.

I have used their various jacket colors to expedite filing, using several different computer brands (mostly Radio Shack), and my son uses them almost exclusively for his Kaypro 2. At no time has one ever refused to format or backup. The problem you report must exist with the Kaypro 10 and the brand of drive it uses.

Tyler Sperry might just find that it is more a case of high IR reflectance from index sensor to write-protect sensor due to insufficient, or apparently unnecessary, shielding by manufacturers that use LED type sensors in both locations and do not expect their drives to be exposed to red and orange jackets.

Henry C. Gernhardt, Jr.
Huntington, West Virginia

While David will have more to say about the continuing mystery of colored diskettes in his column this month, there are a few points that should be cleared up now.

First, Mr. Gernhardt's faith in the quality of his Centech diskettes is probably well-founded. The original hypothesis of poor media quality was discounted in the Technical Forum of last issue, based on the fact that the troublesome diskettes worked fine on another brand of computer. Quite a few manufacturers get their stock from 3M these

days, and the danger of "off brand" diskettes screwing up is becoming a thing of the past.

As for the theory of interaction between the Index and Write-Protect sensors, there is in fact a simpler explanation detailed later in this issue.—TS

Coming attraction

Many people who have both Kaypro 2s and kids would like to find a way to run educational and game programs with graphics, and I would especially like to run LOGO. Which of the graphics add-ons, if any, will allow this? I think many people would appreciate an article reviewing the various hardware add-ons, or at least cataloging them and describing them in a few sentences each.

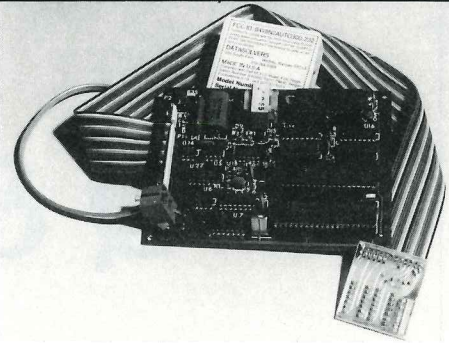
James Nash
Montclair, New Jersey

Strangely enough, our next issue (September) features education, and we already have an article slated to cover LOGO and the Kaypro.

Inner workings

I find your publication very well written and surprisingly objective for an "in-house" publication. I work for a publishing company as the director of our software development division. I use my Kaypro to help keep my programmers and customers from taking contracts out on each other (we do a lot of custom programming . . . that means lots of headaches caused by miscommunication between client and programmer). Unfortunately, I can't use it to actually develop programs on. We work with special battery operated portable computers that require programming in a rather

(continued on page 11)



DS1200SMT

INTERNAL MODEM FOR KAYPRO'S.

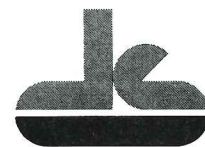
In 1983 we presented to you, the Kaypro user, the **DS300AD**, 300 baud, internal modem for 2's, 4's, and 10's. It became a success overnight with its included software, simple installation, and economical price (retail \$199.00). We sold hundreds of these auto-dial/auto-answer modems to you, (and continue to sell large numbers each month). Continually, however, we have had people say, "I love the idea of an internal modem package which I can install . . . one complete and priced right like yours, but . . . **HOW ABOUT 1200 BAUD, SMARTMODEM CAPABILITIES?**" To answer the obvious need for an internal Hayes compatible 300-1200 baud smartmodem, we developed the **DS1200SMT**.

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Let's face it, 300 baud is o.k., but 1200 baud is where it's really at! For only \$427.50 you can have the **DS1200SMT** along with (for a limited time) a \$50.00 credit on NewsNet, the new business information network. Both the **DS300AD** and the **DS1200SMT** are current in regards to shipping and both have a 180 day warranty.

If you have any questions give us a call, or contact your local Kaypro dealer. Datasolvers, Inc. . . . giving your Kaypro its inner voice . . . simply.

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Q & A

We welcome and read all your letters. Some of the letters are of general interest and are printed in the Letters column; others are pleas for technical help. Those questions that lend themselves to simple, concise answers are dealt with here, while the more advanced topics develop into articles or discussions in the Technical Forum.

Due to the volume of mail we receive, we simply can't respond personally to every request for assistance. For questions requiring an immediate reply, you can do what we often do: call Kaypro Technical Support at (619) 481-3920.

Footnote fiddling

I am working on a long scholarly paper with maybe 50 footnotes. When I get to the format/printing stage I find I'm getting "footnote wrap not handled properly" error messages.

Peopletalk's admirable manual suggests using a NEWPAGE command somewhere above the footnote to force its associated text onto the next page. That's easy enough, and it works most of the time, but it forces the rest of the text forward and, almost certainly pushed other footnotes into a position where they will generate error messages. The only logical way around this would seem to be to attack the problem one footnote at a time. I don't have the patience.

Is there no other way? Or should I buy WordStar and start

learning from scratch again?

Andrew Mack
Canberra, Australia

The patience to deal with one footnote at a time seems to be the only solution—unless you're willing to use end notes.

Changing to WordStar will not solve your problem directly either—although you can create 50 footnote files and read them into your document one at a time, which may be faster than using Perfect Writer since you can see what you're getting on the screen.

*If you do switch to WordStar and continue to use footnotes heavily, you could try the program called **Footnote** available at dealers or from Digital Marketing at (800) 826-2222.*

Filer vs. dBASE

Your articles on "Getting to Know Perfect Filer" have actually gotten me started with this program after a year of frustration. In the first article you said, "if your tasks include = trying to keep track of a multitude of serialized widgets, you'll probably want to look beyond Perfect Filer to a full-fledged data base management system." Will you please tell me what you mean by that?

Francis W. Pritchard
Los Gatos, California

Computers can help you manage information in a variety of

ways. Perfect Filer falls into the category of a list manager—that is it was designed to deal with lists of information. Although it has the ability to sort through a list on up to 5 keyfields, it can do so only one field at a time. For instance, if you had a membership list keeping track of name, address, phone number, and date joined, you could list all the members in a certain zip code OR all the members who joined after Jan. 1984.

A true data base management system, (also known as a DBMS) such as dBase II, would allow you to list all the members in one zip code area that joined after January 1984—in one operation. If your data record contained the information, you could list all those red-headed, left-handed members, in a particular zip code that joined after 1983. You could go further, and have the DBMS count the number of members in the group you chose because it's capable of doing arithmetic. In fact, a DBMS can be pushed to do accounting functions.

List managers are certainly better than 3 x 5 cards, or type-written rosters but a DBMS offers much more flexibility. — AW

Tracking down software

Kaypro Corporation has just published the mammoth *Kaypro Software Directory*, which has over 600 pages of information submitted by software vendors across the country. Included is an index of applications arranged by topic, an index arranged by program name and a summary of software vendors with brief descriptions of what they offer.

If you're curious or only need one or two packages, you can probably look at the copy your dealer has. But if you're in a position to make recommendations about software, you may want your own copy. It can be purchased at your dealer for a suggested retail price of \$25. □

LETTERS

(continued from page 9)

esoteric dialect of FORTH which precludes using any machine for development other than the (choke..gasp!) Apple II or a suitable clone. Still, I couldn't adequately generate program specifications or documentation without my trusty "Old Blue."

One parting comment on the content of your magazine: it would be very helpful to see a column included that is more oriented toward those of us out here that want to delve into the Kaypro's inner working more fully. Items like how can the Kaypro 2's CP/M be altered to allow access to User 0 programs from other User areas. The Kaypro 10 handles this nicely and it would be nice to have the same information on the smaller models as well.

Thanks for a fine publication!

David J. Thompson
Indianapolis, Indiana

One of the problems with the constant upgrading of the Kaypro computer line is that this month's improvement sometimes leaves last month's purchaser behind. In this case, the newer K 2's include just this feature.

Though an article of the sort you suggest would be too involved and technical for most of our readers, you do have another option. There are a number of products aimed at making CP/M easier to use. The prices range from free (ZCPR, which is in the public domain) to a little over \$100, and we'll have a review of some of these packages in an upcoming issue.
—TS

Subscription addressed

On page 100 of your May/June issue, you have provisions for 6 free issues to a Kaypro owner who

hasn't been receiving his free subscription. You also have provisions for non-owners to subscribe. But how do owners who have received their 6 issues already? Do we have to request another 6 free issues? Do we have to subscribe as though we didn't own a Kaypro? Sounds like my favorite kind of logical loop-hole for ugly programs.

Hector E. French
Wakefield, Massachusetts

You should find your answer on page 33 of this issue.

Cool it

Regarding the letter from Gil Contreas on page 19 of the March/April issue: Gil asked whether there was a fan available for cooling the Kaypro 2. We may have the perfect one—The Dragonfly Fan. The design of this fan I think makes it suited to cool the Kaypro because it could be mounted on the inside roof of the computer so that it blows air out through the left-side ventilating holes. However, we have not actually tested it, so please don't expect mounting instructions. The cost is \$19.00.

Lucas Ford, Dragonfly Software
Philadelphia, Pennsylvania

PROFILES welcomes your views on the magazine and other topics. Letters should be sent to:

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Foreword

Some words about our sponsors

by Tyler Sperry

I am used to complaints about the magazine. Virtually everyone I meet with an opinion thinks the magazine is great, except for this one little thing . . . Depending on the article or column involved, the amount of midnight oil burned the night before, the phase of the moon, and other more exotic editorial criteria, I might even agree with the reader. Accepting "constructive criticism" is part of the joy of being editor of the magazine. (Or so they told me when I started on the magazine.)

I am also used to a smaller number of complaints about our advertisers. These complaints generally consist of a misunderstanding between the customer and the advertiser, and usually these problems are easily corrected. There are occasionally valid complaints about an advertiser's business practices, and when we can substantiate the complaint we do what we can to make sure our readers are protected. In a few cases, the only thing we could do is stop running the advertisement, months after the first damage had been done. Handling these cases is part of joy of being the publisher. (Something they *didn't* tell me when I started on the magazine.)

Who's paying the bills?

All this gets a bit sticky when you consider the funding of the magazine. So far, the advertisers have been paying the major portion of the bills, with Kaypro Corporation covering startup costs and

overhead. Since the editorial slant of the magazine is to aid our readers, and *not* cheerleading for the Corporation—our readers already know what a good deal they got—there have been relatively few conflicts between the corporate sponsor and the advertisers. But every now and then I get a phone call . . .

Most recently, it was a dealer on the phone. He was *very* upset about an ad we were running for a software package. It seems the product was competing with an optional software package available from—you guessed it—Kaypro Corporation. The dealer saw this advertiser as competition and wanted to know why in the world we were running the ad.

I thought a bit, and then asked Mr. Dealer if he had heard any complaints about the software. No. Hmmm . . . Had any customers complained to him about unethical or fraudulent business practices from the advertiser? Not a one. I thought a bit more, and finally asked the dealer why in the world we *shouldn't* run the ad.

We went back and forth like that for a while, until the dealer asked if I would accept advertising from Osborne. I had to confess I had never even considered the idea. (Advertising Osborne computers to people who have just bought Kaypros strikes me as being close to lunacy.) In thinking about it, I had an obvious reluctance to accept such an ad, but I couldn't state any policy that precluded the possibility.



ILLUSTRATION BY JOYCE KITCHELL

The dealer strongly suggested that I take up the matter with Kaypro VP David Kay the next time we met. The dealer was certain I would see (his) point.

(David Kay and I had an entertaining conversation on this a couple days later. We quickly agreed that if a competitor was willing to give us part of their advertising budget in addition to a share of their market, we should have the good grace to accept their advertising.)

The fallout

So here we are, a month later, and what has changed? We're still running the advertisement and paying the bills. The advertiser is still making money. And the dealer? The dealer claims that all he can do to compete with the package is to take *PROFILES* off his store shelves and out of the computer boxes before his customers see the ad.

Now I could offer this dealer some advice and suggest he try some alternative to stealing the
(Continued on page 100)

Answer: Smith-Corona

Question: What company offers a new daisy wheel printer, three dot matrix printers and a combination printer-typewriter, with suggested retail pricing of \$395 to \$795?

Question: What printer company offers print quality that challenges printers costing hundreds of dollars more?

Question: What printer company offers dual interfaces for all five of its printer models?

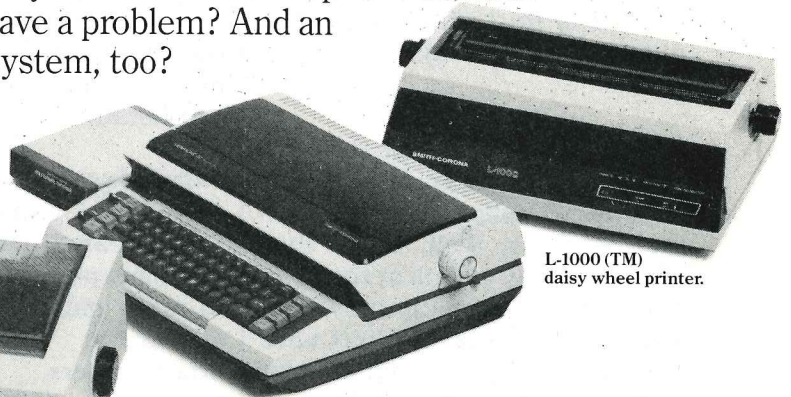
Question: What printer company offers removable and adjustable tractor feeds as standard equipment on all of its dot matrix models?

Question: What printer company has a toll-free telephone number to call if you ever have a problem? And an extensive service system, too?

D-300 (TM) dot matrix printer.



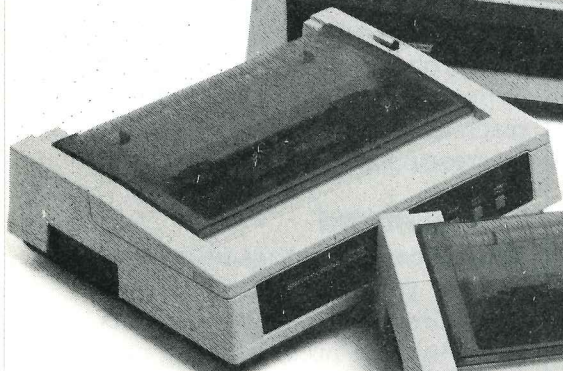
L-1000 (TM) daisy wheel printer.



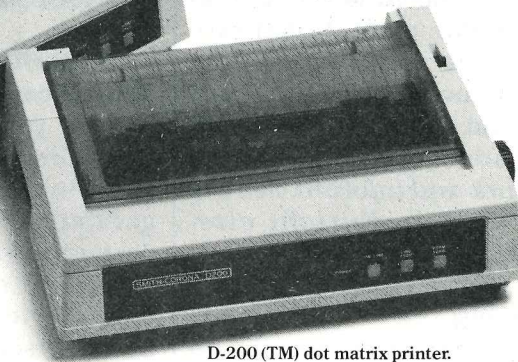
Ultrasonic III Messenger (TM) portable typewriter with optional Messenger Module.



D-100 (TM) dot matrix printer.



D-200 (TM) dot matrix printer.



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The Cottage Computerist

Writing games is an adventure

by David Thompson

Though he lay there exhausted, he found himself squinting, narrowing his eyes to keep them from reflecting the grey moonlight.

The master was already searching for him, he could feel it. By now no doubt, the absence had been discovered.

He listened again, carefully sifting the night sounds. Then he heard it, the slow pulsating whistle of taut skin wings. The master was coming.

Many writers see the computer as an ideal way to translate fantasies into manuscripts. Well, that's certainly one way to look at the computer, but it's not the only way. You see, the fantasies don't have to be cast in type and laid to rest forever on the pulp of innocent trees.

Rather, the dreams can be translated into code so that the reader becomes a participant, sharing the creation.

Now was the time to bring forth the mushrooms he had happened upon only an hour before. Without looking, he gulped down the iridescent blue orbs. Then, as he pulled his crude staff from his belt and prepared to make a final stand against the oncoming evil, he noticed

that his staff had taken on a pale blue glow. Soon his hands, his arms, his whole body were enveloped by an ever-brighter light.

And at this point, the player saved the game, turned off the computer and turned in. Tomorrow the hobbyist would be fresh for the battle to come, its outcome determined by chance, by magic, and by combat skill. In one respect, the player would be teaming with the author to create the fantasy but in another, the player and the author were combatants.

Adventures

Adventure games are simply sophisticated novels which people can explore in their own ways. In many games, the authors act as both novelists and programmers.

Before you write off games as a waste of time and go back to working on your Great American Novel, you should be aware that Zork I by Infocom is the second most popular recreational program in the world right now. Though I haven't played ZORK, I understand that it is an adventurer's adventure. (For more about Zork and Infocom, see the article by Tom Enright elsewhere in this issue.—TS)

A following

Writing a game, especially an adventure type game, is a lot dif-



ILLUSTRATION BY JOYCE KITCHELL

ferent than writing, say, an accounting program. If you write a very good accounting program, the people who get it and are happy with it aren't going to be beating down your door for a second accounting program. The one they have is just fine.

However, if you write a really good game, your audience isn't going to be satisfied with just one. They are going to badger you into producing a second game, and so on. The primary relationship between games and accounting programs is that you will probably need a very good accounting program to keep track of your income if you write interesting games.

Getting started

This, of course, brings us around to how you get started in this field. First of all, not everyone has skills in both programming and gaming. If your strong suit is designing the game, then team up with a compatible programmer, or vice versa. Either way, there are some ways to get off to a fast start.

Using the public domain

Get a public domain game with source code, if possible, and use it as a base for your own variations.

Don't assume that source is always available even though the author has released the running program. After all, players could figure out a complex adventure game in mere weeks (rather than the usual months or years) simply by reading through the program's source. That's no fun for the author since the game is usually a battle of wits between the author and the player and the author would like to win a few.

However, a really terrific game, even without source, is a good generator of ideas. Just don't get locked into following someone else's lead. The kinds of games available are only limited by the people who create them and the systems they run on.

Good games

You've got to be good to do really well in this field. But if you are good, you can clean up because there is a real lack of quality games.

In the public domain area, for instance, there is only a limited number of good games. We've been searching through many, many public domain libraries and through many original works by Micro C readers in order to find good new games for the Kaypro. It's hard. There are a lot of games out there that don't hold our interest or that simply don't work. And most of them weren't worth cleaning up. (How many ways do you want to play tic-tac-toe?)

On the other hand, there are a few very good ones. The 550 point adventure is a mind-boggler. Othello is very sophisticated. Aliens, Pacman, and Castle are not bad either—not bad at all.

Feedback

Many programmers currently working on commercial games cut their eye-teeth in the public domain. They wrote things, put their names and phone numbers in them, tossed them out and waited to get the reaction. Based on what they learned from the writing and the response, they began designing commercial packages. If their public domain games were popular, they found that the popularity created sales for the commercial versions.

So, for games particularly, the public domain has contributed much to the development of a commercial market.

No limit

As I mentioned earlier, games are usually limited only by the imagination of the author and the computer. You get the whole gamut here.

For instance, every programmer strives for clarity and ease of use. Every programmer, that is except the gamer. Where else will people happily pay to be befuddled, antagonized, lied to, and ignored by a piece of software? (OK, OK, I know, half the compilers on the market easily fit in this category. The only explanation I have is that their authors intended them to be games.)

But games aren't entirely simple idiotic pleasure. There are games that teach touch-typing (some very fun games by the way), as well as math, English, reading, role playing, history, and more. And if you don't think there is a market for such games, you haven't been in your local computer store, book store, school, or library lately.

Needed, a typing trainer

Here's a hot tip for you! The first person (and the first three or four who follow) who comes up with a

really fun typing training package for the Kaypro will probably make a bundle! It has to be fun for kids as well as adults. It has to be a game. It has to get progressively more difficult as the user's skills improve. It has to let the user know how he or she is progressing. And it has to be easy enough for the very beginningest beginner.

There is a very nice typing training program on the Apple that the schools just love. I tried it, I like it too. And that one program sells a lot of Apples (and a lot of copies of the program).

The program puts alien ships at the corners of the screen and a word in the corner next to each ship. The word starts out as a single letter and then progresses to longer and longer real words. Anyway, the words appear, and the enemy ships all start moving toward your base station in the center. As you type each word correctly, its associated alien ship disappears and then starts again at the corner (with a new word). You have to type all four words before any of the ships reach the center or you lose, and you have to continue correctly typing all the words (and wiping out their corresponding ships) until you are finished with the exercise. It's exciting! You get a score at the end showing the number of alien ships you destroyed (hopefully all of them), the difficulty rating of the words, and the typing speed.

There are a number of views on how the keyboard should be introduced. Some educators feel that the home row (a s d f j k l ;) should be introduced first followed by index finger reaches. Others feel that the index fingers (f r t g b v j u y h n m) should be introduced first followed by the third fingers (e d c i k) and so on.

(continued on page 19)

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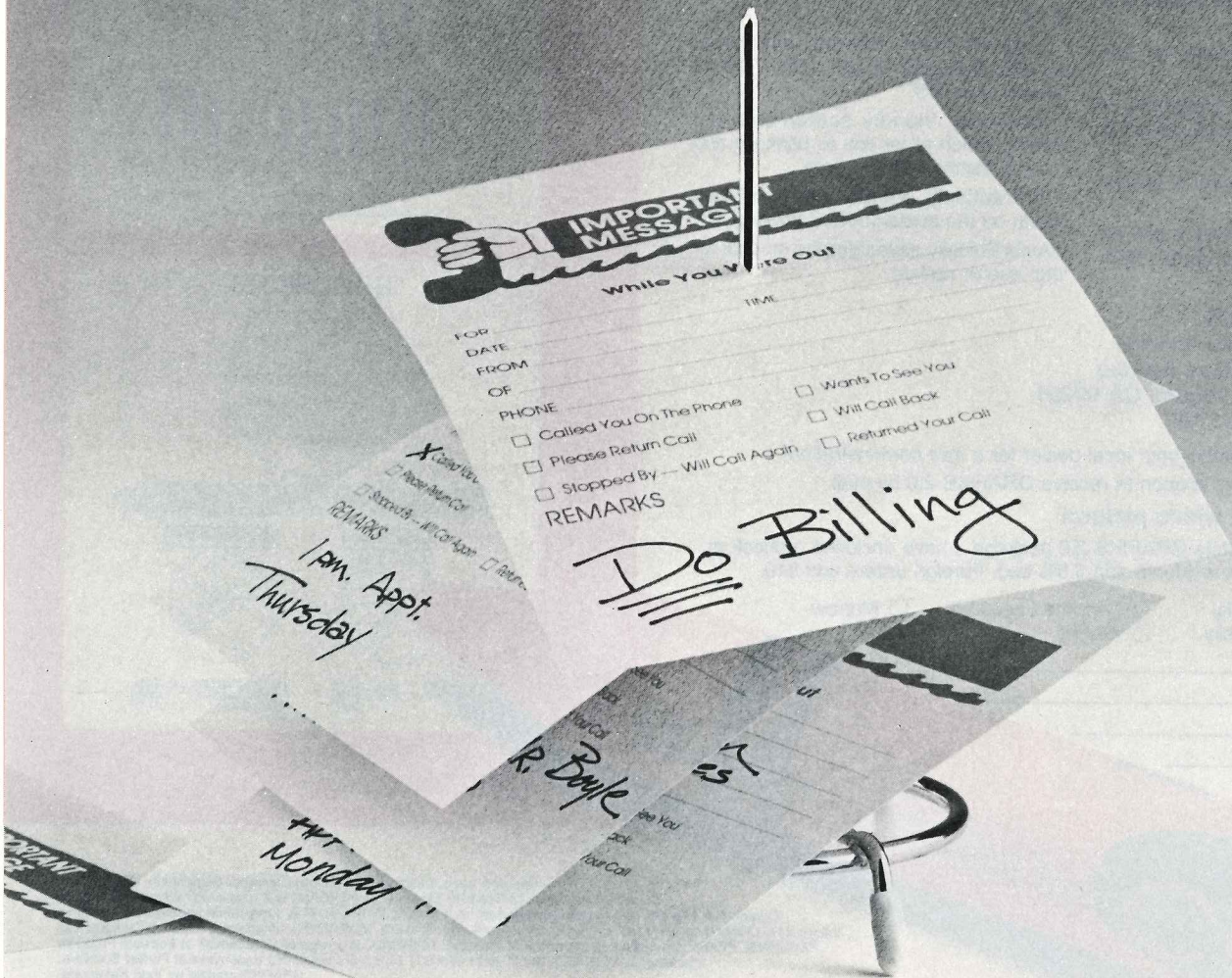
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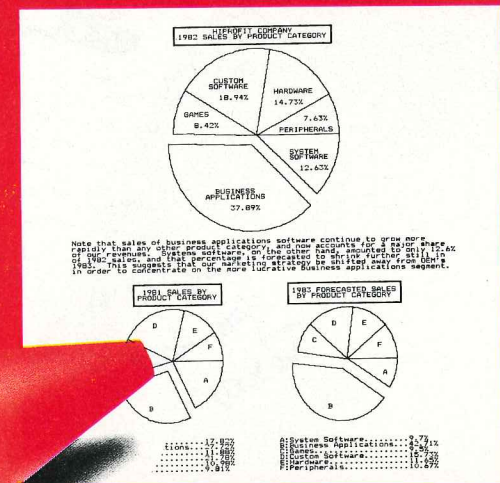
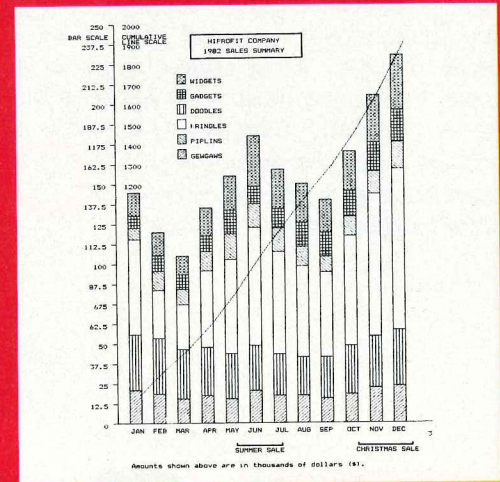
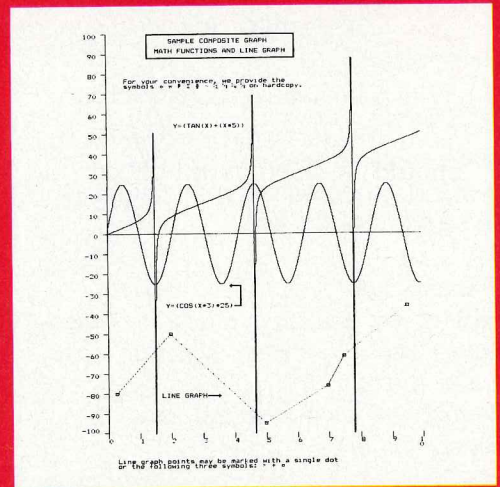
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Yes! I want to see the whole picture!

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GRAFIKS 2.0

Part of the business express series from Robonics

Both groups believe whole words should be used as much and as soon as possible. Really good typists don't think in letters, they think in prefixes, suffixes, syllables, and even complete words.

As long as your going to write educational games, your second game should teach accounting, algebra, or assembly language programming. I mean, why not go for the gusto?

Artificial intelligence

I know you're all waiting for me to make some kind of crack about this subject, but I won't—though I've yet to find anything very artificial about intelligence (the main problem is finding any intelligence, at all).

Artificial intelligence (AI for short) is an incredibly interesting field of study and if you are at all interested in being at the forefront of technology, it's a wide-open spot.

The idea is simple, the computer tries things and gets feedback about its success. Eventually, the computer will have

mal and the animal it guessed. The next time, if it gets in the same spot, it will ask your question and if the answer is appropriate then it will guess your new animal.

Some final thoughts

The biggest problems with the games I see submitted to Micro C is that they:

- ▶ Are more interesting to write than to play.
- ▶ Are difficult to play (or unbeatable.)
- ▶ Are too easy to play, or too predictable.
- ▶ Put down the player unfairly.
- ▶ Don't work.

For some reason, games seem to attract beginning programmers and beginners often have the wrong goal in mind. Beginners are tickled to get something (anything) to run. They forget all about ease of use, challenging the

gram, you had to enter a complete five-letter word, then it told you whether your entry was correct or not. After you had guessed incorrectly seven times, it hung you—told you the correct word—and then called you a dummy! At the very least he should have provided the answer before the hanging (only fair) and as for someone being a dummy . . .

The game was, of course, unbeatable (until you peeked at the small list of words in its vocabulary—which it went faithfully through in the same order, each time you played). I will always remember this game vividly because it is the shortest piece of code I have seen that was able to break 99% of the rules of good gamesmanship.

Meanwhile there are many, many games yet to be created. Perhaps you would like to be one of the masters, born swiftly over the barren ground on taut skin wings. It is you who provided the mushrooms and the staff, and it is you the sleeping player will fight. You already know what he will face tomorrow. □

The best adventure writers are masters of consistent inconsistency.

tried practically every possibility and will have a pretty good idea (I used that term loosely) what to do the next time it tries the same thing.

One of the early examples of AI is a game called Animals. All the versions of this game I've seen have bugs, but basically it asks you yes/no questions about the animal you are thinking of. When the program has no more questions to ask, it guesses the animal. If it guesses wrong, it asks you for a question it can ask to differentiate between your ani-

player's mental or physical abilities, and other such niceties. They also forget about consistency. The best adventure writers are masters of consistent inconsistency.

I can still recall a particularly gruesome hangman game we received a few years ago. It was the author's first attempt at graphics and it sorta' looked like something was getting strung up (or coming unstrung). Unfortunately, he forgot that it was a game.

The way he set up the pro-

Up and Running

Travel tips, colored disks and books for dBASE II.

by David Gerrold

The Kaypro machines are not what exactly you would consider portable—but they are “transportable”, meaning you can pick one up and carry it. (Just how far depends on the size of your biceps.) Personally, I have some misgivings about transporting *any* computer, (especially one with a built-in hard disk,) so it was with some trepidation that I decided to test the “transportability” of the K-10 by taking it with me to a Chicago science fiction convention.

I am pleased to report that the K-10 travels very well—much better in fact than United Airlines Champagne. (Well, let's face it; those 747's aren't famous for their wine cellars.)

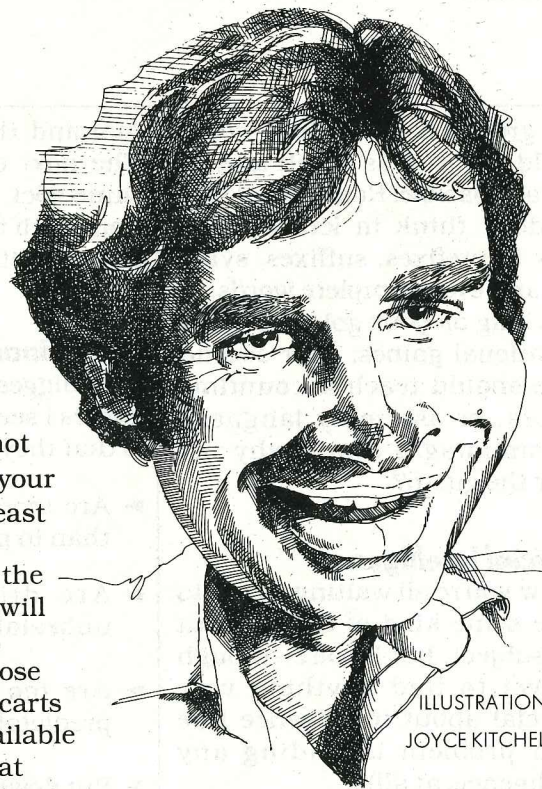
If you are going to travel with your Kaypro, I suggest you pick up two items: the first is a traveling case. There are at least two available that I've seen. I ordered mine through my dealer, but it is not the “official” Kaypro traveling bag. It's more of a *generic* case; it fits the Compaq and other like-size machines as well as the Kaypro. (As a matter of fact, it fits the Kaypro better than the official Kaypro case.) It's thick, it's silvery, it has a classy look to it, and it has a pocket on the inside for books or disks. It seals with four Velcro fasteners and has two handles for carrying and a shoulder strap for wearing—but this

latter procedure is not recommended unless your nickname is Bull or Beast or Mongo.

Which brings me to the second accessory you will want if you travel with your Kaypro: one of those little foldable luggage carts on wheels. They're available in the sundries shops at most big airports for about \$15. If you're going to travel with your machine regularly, *buy one*. The Kaypro fits on it as if the two were designed for each other. And you can even stack your luggage on top of it! (If you do plan to stack luggage on top of your machine you'd be well advised to spend a little extra for a heavy-duty cart. My \$15 economy model was just right for a 30-pound computer, but did not survive a subsequent trip with a 200-pound overnight bag.)

The cart and the case make it possible to take your machine anywhere with a minimum of pain and worry. I did not allow my machine to be passed through a metal detector or one of those X-ray scanners, so I can't tell you what risks you might be taking if you do. I suggest you don't. Ask the security guards to hand inspect your machine, as well as any film, tape or disks you might be carrying.

The aisles of a 747 are too narrow for you to wheel your Kaypro to your seat, so you will have to carry it. (Or drag it, if your name is not Bull or Beast or Mongo.) Don't worry if the plane's closets



are full. The K-10 and the folded cart will both—I am very happy to report—fit under the standard airline seat in a jumbo jet. If you want leg room, however, take the computer to the back of the plane and put it under one of the last seats in the section. A lot of stewardesses are fairly well experienced with the foibles of traveling computer owners by now, so they'll help you put the machine away. You won't even have to explain why you refused to check the machine with the rest of your baggage. If you do need to explain, tell them that checking a Kaypro as baggage is considered “abuse of the computer” and automatically voids the warranty. I am told this is actually true. Can anyone confirm it?

(Incidentally, several years ago I took my IBM Selectric with me for an extended stay in England and Ireland. The clerk at the checkout counter told me that I absolutely had to check the machine as luggage. I asked her if the airline was willing to cover the costs of any repairs to the machine if it was damaged in transit or replace it. At that time,

an IBM Selectric was about \$750. She handed me back my machine and told me to have a nice trip. Nowadays, an intransigent clerk can be handled even more easily: "No problem. Where's the American Airlines ticket counter? They'll let me carry my Kaypro aboard and they'll even honor this ticket . . .")

The first thing I did on arrival (both going and coming) was to run the FINDBAD program. No bad sectors were found on the hard disk. I won't tell you that the K-10 is rugged because I took great pains not to bang it around. I will tell you that I feel a lot better about traveling with it now.

Colored disk update

You will remember that last time around I reported that I had purchased two boxes of Centech technicolor disks. The red, the orange and the green disks all refused to format.

At first we thought that these three batches of colors were simply defective, but the disks formatted easily on an IBM PC, so it was not the disks themselves. More likely, there was some kind of synergistic incompatibility between this Kaypro-10 and these three colors of disks.

The answer was simple: the Centech disks do not meet ANSI standards for light transmission. This is not a problem for most computers, but . . . the Kaypro-10 is built with disk drives from five different suppliers. Machines with Tandon drives can read and write Centech disks with no problem; but my machine has a Toshiba drive *which uses a red LED just to read the presence of a disk in the drive*. If the LED were positioned so it intersected the actual disk, the drive would be able to detect the presence of any disk, whether it was jacketed or not; but this is not the case. The LED is positioned so that it

only intersects the lower-right hand corner of the disk jacket. If the jacket does not meet ANSI standards for opacity, the light will pass right through it and the computer will assume there is no disk at all in the drive—and will hang up.

The solution? Take the colored disk, lay it flat on the table with the label facing you and the write-protect notch on the upper right side. Now paste a write-protect tab on the lower-right corner of the disk. (You may have to experiment a little bit.) Now you can use the disk. The write-protect tab will definitely interrupt the beam from the LED. The com-

little time-bombs for the companies they deal with and ultimately for the consumer. Remember, it's always the customers who end up paying.

The point is that, for some users at least, Centech's technicolor floppies are an idea whose time has not yet come.

dBASE II arrives

You may or may not have heard by now, but the Kaypro company has decided to drop the Perfect line of software from the package (Perfect Writer/Speller, Perfect Filer and Perfect Calc). Instead, new users will be receiving a larger package of MicroPro soft-

Manufacturers who arbitrarily disregard a standard are planting little time-bombs for the consumer.

puter should now be able to read and write the disk without problem.

Alternate solution: Don't buy colored disks. At least not until Centech upgrades the jackets. Colored disks may be useful, but you may not be able to afford the problems . . .

Example: two days after we solved the problem with the technicolor floppies, the latest issue of *BASIC-K Magazine* arrived . . . on a bright red Centech disk. And no, it wouldn't run—at least not at first. I smugly pasted a brand new write-protect tab in the lower-right corner of the disk and it ran perfectly. But I wonder how many other subscribers returned their disks to the magazine in annoyance and frustration? (And who's going to pick up the bill for replacement disks and postage?)

Now you know why industry standards are so important. The manufacturers who arbitrarily disregard a standard are planting

ware and dBASE II, the standard against which all other database handlers are measured. (*dBASE II isn't currently bundled with the Kaypro 2 —TS*) For my money, that makes a Kaypro computer an even more attractive deal. I've been playing with dBASE II for a couple of weeks now and I'm beginning to understand why so many people like it.

I haven't actually seen a dBASE II manual yet, so I can't say how useful it is. Instead, I've been learning from Alan Simpson's book, *Understanding dBase II*, published by Sybex. (About \$23, but I found it at one of those discount bookstores for \$17.95.) I highly recommend this book. I wish I had this kind of documentation for all the rest of my software. The author takes you through the program step by easy step. Each chapter is a tutorial in how to do a specific task, and you end up not only
(continued on page 22)

knowing how to do the job, but also knowing how to use each command. By the time you finish the third chapter, you're already setting up your own mailing list and adding names to it. By the time you're halfway through the book, you're writing programs to generate reports and labels. I won't say that you'll be a master by the time you finish the book, but this book is certainly one of the most valuable references on dBASE II that you can put on your shelf.

The important thing is that Alan Simpson makes learning dBASE II fun! I have lots of software on my shelves that I have not bothered to get into yet, sim-

Osborne/McGraw-Hill, and *dBase II for the Programmer* by Nelson T. Dinerstein, published by Scott Foresman and Company. Both of these books put more emphasis on using dBASE II as a programming language, with lots of examples. This is where the real power lies in dBASE II—in its programmability. This is why it's considered a programming language as much as a database manager. (An additional bonus is that dBASE II is so widely used that it's become a de facto standard. There are lots of specialty programs already available for it, and many of the computer magazines frequently run articles on how to use dBASE II to

candy bars, ball point pens, paper clips, erasers, cassette tapes, extra disks, and even once in a while a manual.

I didn't realize how much I'd come to depend on the Vu-Mor until my recent trip to Chicago when I took the computer and left the Vu-Mor behind. I couldn't figure out why the computer looked so incomplete until I realized I had no place to put my calculator, my spare batteries, candy bars, ball point pens, paper clips, erasers, cassette tapes, and extra disks.

In fact, the only thing wrong with the Vu-Mor is that it doesn't have a way to hold a thick manual open to the right page. (Well, I guess I can always weight it down with a calculator, some batteries, cassette tapes, etc.) The only other drawback to the Vu-Mor is that you have to take it off if you want to put the dust cover on the machine at night. If you're like me (lazy) you'll probably leave the Vu-Mor on and the dustcover in the drawer . . .

All in all, a rack for the top of the computer is such a good idea it makes me wonder why Kaypro doesn't just build one in? It doesn't seem that it would be that much trouble to add a rack to the top of the machine, hinged so it could fold flat for traveling. (But then, what do I know about computer engineering?)

Never mind—the Vu-Mor does the job. And melted candy bars clean up off it very nicely.

The micro-revolution staggers on . . . □

It doesn't matter how good a program is if you can't learn how to use it.

ply because the documentation is so dull and/or intimidating. It doesn't matter how good a program is if you can't learn how to use it. The learning should encourage you to *enjoy* the work, not merely endure it.

The punch line: I realized how much I liked dBASE II when I ran out of names to add to my mailing list. I was actually *disappointed* that I was finished. I wanted to keep adding. I wanted to keep indexing. I wanted to keep generating lists on this key field or that to see how many writers I knew who lived in New York who owned Z80-based computers. I wanted to see how many Christmas cards I would be sending to Australia this December. I wanted to see how many gay, *est*-graduates I'd met at the last *Star Trek* convention. (Well . . . not quite, but you get the idea.)

Two other books I also recommend are *Using dBase II*, by Carl Townsend, published by

accomplish this or that function.)

Tyler Sperry (ye kindly editor) tells me that there will be an upgrade package available for Kaypro owners who want to add dBASE II to their libraries. If the information is available by the time this goes to press, he will probably add a nice little note in parentheses immediately following this paragraph . . .

Racking it up

Shortly after I bought my Kaypro, I ordered a Vu-Mor rack (\$19.95) for the machine from Bee Mor Enterprises. (22 182nd Ave. East, Sumner, WA 98390) It's a large piece of sturdy black plastic that slides onto the upper edge of the Kaypro frame to become a very roomy reading rack. It's about an inch taller than an 8.5x11 inch page and it's as wide as the computer itself.

I use mine to hold rough drafts, outgoing mail, and occasionally calculators, spare batteries,

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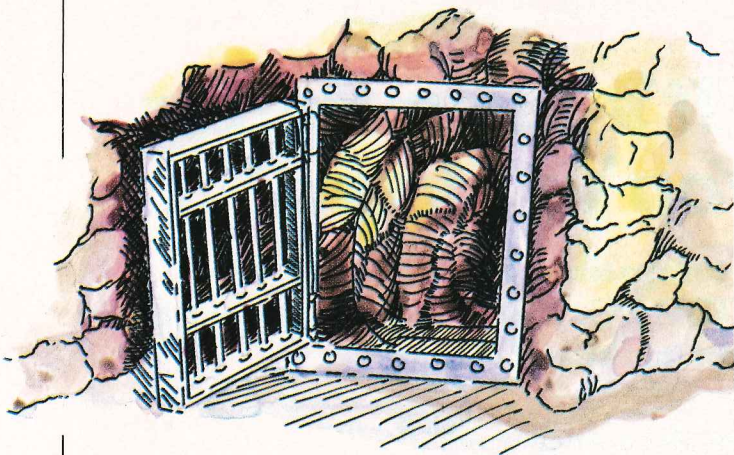
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Adventures in Computing

A game that's pure fantasy fun also lets you explore the valuable treasures of the trade.

by Walt Bilofsky



Has anyone managed to stay involved in personal computing for more than a short time without getting trapped into the game of Adventure? (If some of you haven't, cancel all your appointments for a couple weeks and order up a copy.) Adventure has captured the imagination of both computing amateurs and professionals alike, and has inspired imitation like nothing since the invention of programming.

In Adventure, you explore a cave containing treasures, obstacles, magic spells, and danger. You type commands to the computer such as "go north" and "take lamp." There are puzzles which require you to figure out the right thing to do, and then discover how to command the program to do it. The stated object is to gather all the treasures, but the player soon finds that the real reward is in exploring the cave, and acquiring the knowledge and power to roam it at will.

But it's not just a game. To make my point, I'll ask you to read the following statement:

It's frustrating. If you don't type exactly the right thing, it won't do anything. Or it does something else and gets you completely confused. The

instructions don't give you nearly enough information; you have to keep trying things, one after the other, until you hit on the right commands.

After a while, though, you get the feel of what it's expecting from you. You develop an instinct, so that when you get into an area you've never explored before, or even start using other, similar programs, you can quickly begin doing things.

And it's rewarding. Sure, when you type a wrong command, it says something dumb, sarcastic, or incomprehensible. But when you get past the obstacles and can go where you want, do what you want, there's a great feeling of accomplishment and power.

Is that a statement about Adventure? Sure sounds like it. But read it again, thinking not only about the game, but also about learning to use CP/M, BASIC, word processing, a general ledger package, or any other operating system and programs you have on your computer.

In a review for the Houston Users' Group newsletter, SCALL, C.E. Moore wrote: "I find a definite correlation between the CP/M manual and the game Adventure."

Sure, he was criticizing the manual. But playing Adventure gave him confidence that the manual

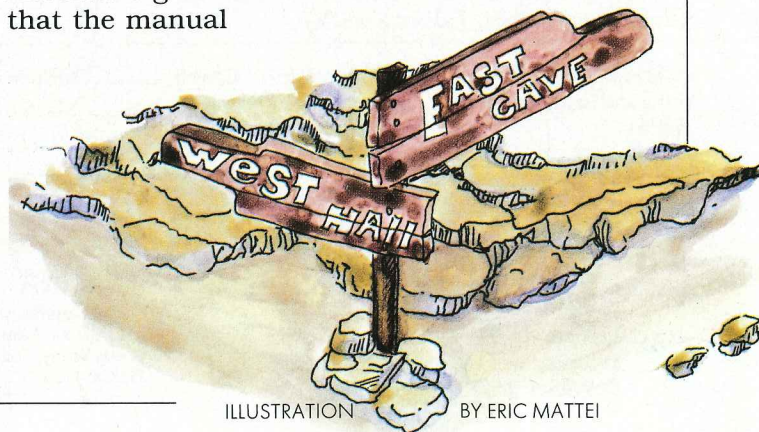


ILLUSTRATION BY ERIC MATTEI

could be deciphered, and some instinct for how to go about it.

Adventure comes on like a game, but it teaches you how to deal with computers and programs in general. As you play, by trial and error, you learn the unwritten rules:

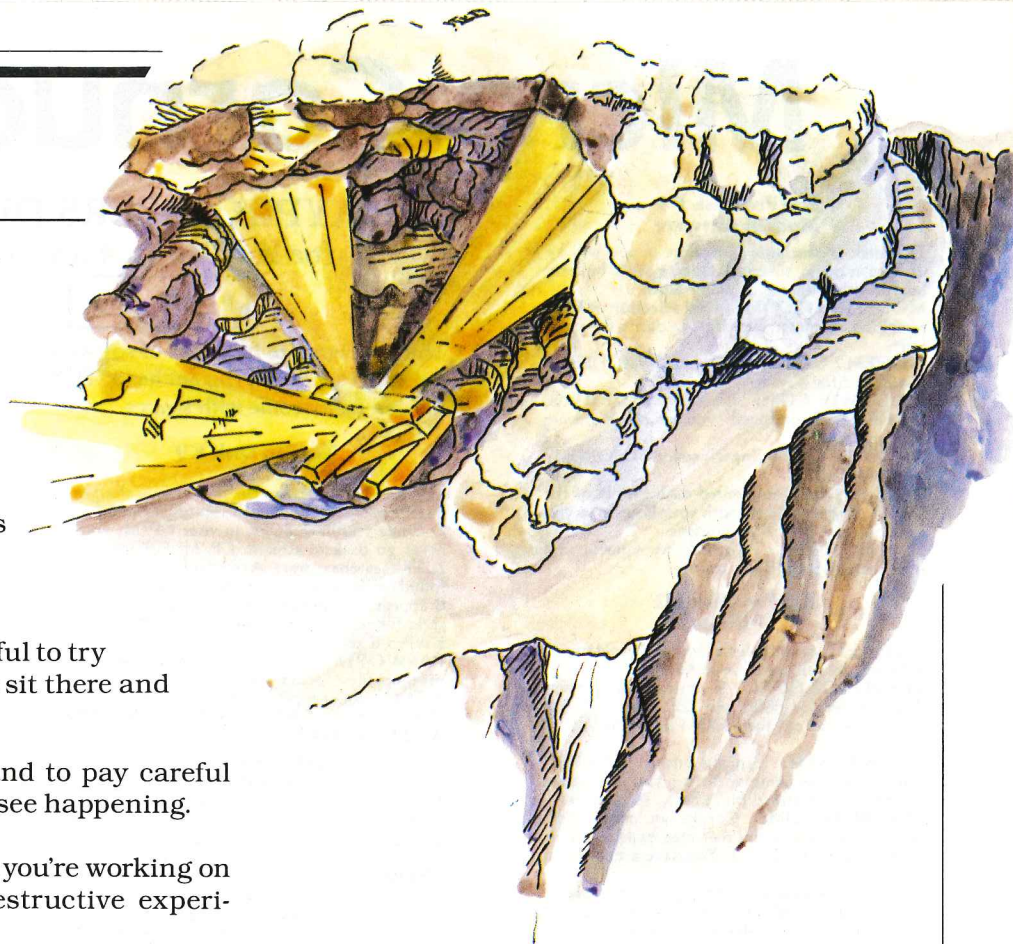
- ▶ The instructions don't always help—or tell the truth—or describe all the features.
- ▶ When stuck, it's generally useful to try anything you can think of. Don't sit there and wonder; try it.
- ▶ It helps to search for clues, and to pay careful attention to exactly what you see happening.
- ▶ You can and should save what you're working on before you try potentially destructive experiments.
- ▶ When all else fails, it helps to sleep on the problem.

These rules can be valuable not only in computer games, but also in dealing with many an unfamiliar software package or programming situation.

Adventure was always grounded firmly in reality. Will Crowther, the original author, was a co-worker of mine at Bolt, Beranek and Newman, Inc., the Cambridge, Mass., research firm which built such projects as the ARPANET and the TENEX operating system. Will used to drive down to Kentucky monthly to join other amateur spelunkers in exploring Colossal Cave, an actual huge cavern. Topographical data was stored in BBN's computers and was used to produce maps of the cave. It's not surprising that Adventure's Colossal Cave, at least up to a point (or down to a point) is the same as the one in Kentucky, and the description and geology of the first few levels are consistent and accurate.

Adventure has been extended and imitated, sometimes well, sometimes poorly. If you want to write a good version, use the following rules:

- ▶ Be consistent. Similar commands should produce similar responses unless there's a good reason. Similar phrases in messages and descriptions should mean similar things.
- ▶ Be informative. Especially, make sure that when the user types a meaningless or incorrect com-



mand, he gets a message that makes sense, and receives some hint about the proper command.

- ▶ Be rewarding. When the user figures out how to do something, make sure he is rewarded with smooth, reasonable, and productive behavior from the program.

These rules are not just for Adventure authors. Take them to heart if you're writing any program for other people to use. They are especially important for operating systems. UNIX generally follows the above rules, which helps explain its popularity. CP/M doesn't, which explains a lot!

In eighteen years of programming, I've never made a distinction between playing with computers and working with them. Adventure shows just how close the two are. See you in the computer room—or in the cave. □



Micro Cornucopia . .

KayPro Disk K1 Modem software

This disk is absolutely priceless if you will be using a modem to communicate with bulletin boards, other micros or mainframes.

MODEMPAT.COM: Menu selection of baud rate, bits/character, stop bits, & parity for serial port.

MODEM7.COM: Very popular MODEM 7 configured for KayPro.

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

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

TERM.MAC: Commented disassembly of the TERM program you get with your KayPro so you can configure it for any interface.

SQ/USQ.COM: Programs to squeeze and unsqueeze files for faster transfer.

KayPro Disk K2 Utilities

Really oodles of spiffy little (and big) programs to help you get full use of your KayPro.

ZESOURCE.COM: A true Zilog format disassembler for 8080 and Z80 object(.COM) files. Now you can turn .COM files into .MAC files.

UNERA.COM: Simply enter "UNERA" followed by the name of the file you just erased and presto, the erased file is back! A lifesaver.

FINDBD54.COM: Checks an entire disk, reports bad sectors, and then creates a special file containing those sectors. You save a bundle on disks.

CAT2: This a group of programs which create and maintain a single directory of all the programs you have on all your disks. Even keeps track of which programs are backed up and which aren't.

UNSPPOOL.COM: Use your KayPro II and print files at the same time. Doesn't slow down system response!

DUMPX, DU-77, COMPARE, SUPERSUB, FORMFEED, DIR-DUMP, . . . and all have documentation on disk.

KayPro Disk K3 Games

PACMAN.COM: Despite the KayPro's lack of graphics, this one looks and plays amazingly like the real thing! Keep it hidden.

ZCHESS.COM: Chess with a 1-6 level look ahead.

OTHELLO.COM: You learn it in minutes, master it in years.

BIO.COM: Generates custom graphic biorhythm.

MM.COM: Master Mind.

WUMPUS.COM: Classic wumpus hunting.

KayPro Disk K4 Adventure

This disk contains one 191K game, Adventure.

ADV.COM: This is the latest, greatest, most cussed adventure ever devised by half-mortals. This is the 550-point version so the cave is greatly expanded and the creatures are much smarter.

KayPro Disk K5 MX-80 Graphics

A complete MX-80 graphics package including example files.

KayPro Disk K6 Word Processing Utilities

A powerful line oriented text editor that looks like Unix's EX, plus a scad of text utilities written in C which handles pretty printing, shortening a file, multiple space output, add tabs, remove trailing whitespace, and more. Also includes **ROFF.COM** a very neat text formatter.

KayPro Disk K7 Small C Version 2 Compiler

This is a greatly extended version of Ron Cain's Small C compiler. Version 2 has more expressions and larger library, true subset of Unix C. Disk contains compiler, documentation, and library — everything you need.

KayPro Disk K8 Small C Version 2 Source

This disk contains the source (written in Small C) of the Small C version 2 compiler. Get K8 if you want to try extending the compiler. (You must have K7.)

KAYPRO USERS DISKS for KayPro II, 4 and 10

\$12⁰⁰ each

The following are full disks of software assembled for the KayPro. Each program has a .DOC (documentation) file and many come with source.

KayPro Disk K9 ZCPR

ZCPR: The big news on this disk is the 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. Works on KayPro II and 4.

PASSWORD: Lets you encrypt and decrypt your precious files. Includes source.

EX14: a super replacement for SUBMIT. Plus many more: **TREK, FIX, FIND, SNOOPY ALIENS** and **DIF2**.

KayPro Disk K10 Assemblers

We've received a lot of requests for a Z80 assembler. So Dana put in some long hours getting the Crowe Z80 assembler to run on the KayPro (and every other Z80 machine).

CROWCEPM: This is a first class Z80 assembler. We use this assembler daily (and we included its source). Takes standard Zilog mnemonics.

LASM: This is a more powerful version of the ASM assembler you received with the KayPro. This will link multiple programs together at assembly time.

PRINTPRN: This program makes it easy to print the listing files generated by the Crowe assembler.

KayPro Disk K11

Library & Checkbook Programs

CHECKS: This has been a very popular group of programs. Categorizes checks so you can keep track which are tax deductible and which get charged to which projects. Includes source and excellent example check files. Very powerful.

LIBR: This is a complete set of library routines which let you group files into a single file called a library. Then CP/M sees them as a single program, but with the library routines, you can list them out separately, run them separately, or divide them up again. Almost like a unix environment.

DISPLAY, VLIST, PGLST: Additional screen and print utilities.

KayPro Disk K12 FORTH

Yep, this is FORTH, one of the most unique, most extendable languages known, and for a paltry \$12.00. This disk contains not just one FORTH, but two, along with an editor, decompiler and 8080 assembler! The editor even uses the cursor control keys.

FORTH: This is true fig-FORTH.

KFORTH: A very nicely extended version of fig-FORTH.

PLUS, all the rest of the FORTH goodies. (Forth Heaven!)

KayPro Disk K13 Source of fig-FORTH

All this disk contains is the 40K ASM source of fig-FORTH with the hooks in place for the KayPro. This disk is for FORTH hackers who just can't leave anything alone. (Look, you probably have faults, too.) The source of FORTH is here because there isn't room on K12. This is the only disk that isn't stuffed.

KayPro Disk K14 Smartmodem Programs

This is the disk for you if you have a Smartmodem compatible modem.

SMODEMK: Smartmodem program set up for the KayPro (and source).

XMODEM: Lets you remotely control your KayPro from a distant computer.

KAYTERM: This is the information you need to run or write modem software on the KayPro.



KayPro Disk K15 Hard Disk Utilities

This disk is for the KayPro 10 or any KayPro with a Winchester drive. With these routines you can not only backup files (with printed directories of the backup disks), you can also break up large files. The backed-up files are not encoded (as they are with KayPro's backup routine) so you can access them on any system.

KayPro Disk K16 Pascal Compiler

This is a real Pascal compiler. It supports only a subset of the language (no records, pointers, booleans, reals or complex) but it generates a real .COM file. Everything is on this disk: the compiler, its source, example programs and documentation.

KayPro Disk K17 Z80 Tools

This is for those of you who are into Z80 assembly language.

XLATE.COM: A very good 8080 to Z80 translation routine.

DASM.COM: An easier to use version of Z80SOURCE (the Z80 disassembler). This full disk includes source and documentation for both routines.

KayPro Disk K18 System Diagnostics

Just as we finished editing the routines on this disk, we received a copy of KayPro's diagnostic disk. The memory test, drive exercise, and drive alignment routines on this disk are more powerful than KayPro's versions. (Plus, it's only \$12!) Setup for KayPro II and 4.

KayPro Disk K19 Prowriter Graphics

This is a complete Prowriter graphics package written by the same Micro C subscriber who wrote the MX-80 graphics package. Plot points, lines, circles, boxes, and more. Examples, documentation, and more.

KayPro Disk K20 Color Graphics Routines

PACMAN.COM: This is a deluxe version of pacman for MicroSphere's color graphics board.

PIE.COM: Pie chart generator.

SKETCH.COM: An easy way to sketch color graphic designs. You can even use a joystick with this software (see Micro C issue #15 for joystick interface).

Kaypro Disk K21 SBASIC Routines & Screen Dump

SBASIC: Finally a disk of SBASIC software. There are some good examples of structured programming on this disk (including one program written both ways so you can see the difference).

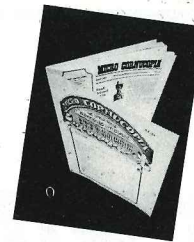
SCREEN DUMP: This is a screen dump for all Kaypros new and old. You can buy a similar package elsewhere for \$60.

Kaypro Disk K22 ZCPR (Again)

This disk is filled with ZPCR files. You get ZPCR for the Kaypro II, Kaypro 4, and the Kaypro 10. This version is fixed so that you can pass control characters (such as cntl-P) to the system and you can choose to have it recognize the semi-colon for drive select (as well as the colon). So you can enter "B;" or "B:" to select drive B. Super neat!

ZPCR, for those of you who don't know, makes CP/M a lot friendlier. It searches drive A for any .COM file it doesn't find on the current drive, the TYPE command scrolls text 24 lines at a time, and a new LIST command outputs a file to the printer.

Something special for your Kaypro!



NEW!

Kaypro Disk K23

Fast Terminal Software & New BYE

This disk contains interrupt-driven terminal programs for all Kaypros. If you are tired of being limited to 1200 baud when you use your Kaypro as a terminal then take heart. With these programs, your Kaypro can outrun the big boys by receiving and sending up to 19,200 baud without dropping a single character!

Also, a new version of BYE that not only lets you run your Kaypro remotely, but also figures out whether you have a 63K or 64K system so it will run with any Kaypro using an external modem.

Kaypro Disk K24 MBASIC Games & Keyboard Translator

NEW!

We sifted through many, many games before coming up with these gems. All will work on any Kaypro and all come in MBASIC source.

USOPEN shows you the fairway on the screen. You select the club and direction for each stroke. After you reach the green the display shifts to show details of the green and flag. For one to four players.

DUCK is an offshoot of aliens (pardon the pun). Hunter tries to shoot down ducks while ducks try to bomb the hunter. (Much fairer than real life.)

CASTLE is an adventure in which you select your attributes (strength, dexterity, and intelligence) and you get to purchase arms and protection. Great documentation and very interesting game.

KSTROKES is a keyboard translator similar to Smartkey. Bill Forbes did an excellent job creating this program. You can create and save translation files on disk. The program even includes a table which generates WordStar commands from the Kaypro's keypad! You can define 8 keystrokes at up to 63 characters each.

Kaypro Disk K25 Z80 Macro Assembler

NEW!

This is a real Z80 macro assembler! Syntax closely follows RMAC and MAC. Also includes pseudops to support conditional assembly etc. No phase or relocatable code.

Kaypro Disk K26 EPROM Programmer & Character Editor

NEW!

This is the software for the Kaypro EPROM programmer written up in Issue #18. This software and the programmer turn your Kaypro into a very powerful development system. You can read ROMs, write ROMs, save data on disk and restore data from disk.

Plus, you get a character editor which will help you design custom character ROMs for the non-graphic Kaypros!

Kaypro II Schematic Package

This is a complete schematic of the Kaypro, logically laid out on a single 24"x36" sheet — no more searching to see where a signal goes or comes from. Even the unused gates are shown.

It's drawn in positive logic, lines are labeled, and we've tossed in hours and hours of careful checking for accuracy. Then we added a **Theory of Operation** that's keyed to the schematic.

\$2000

Micro Cornucopia Magazine

Want to speed up your Kaypro? Want to find out what's going on under the Kaypro's hood? Want to know who's selling good products and providing good support (and who isn't)? Want to find really inexpensive software? Then you're in the right place.

Micro Cornucopia (Micro C) is the friendly journal for those of you who want to stay abreast of the latest information on Kaypros and other single board systems, or want to upgrade your Kaypro yourself without paying an arm and a leg. We have regular columns on Pascal, C, S-BASIC, FORTH as well as the popular "On Your Own" feature for those of you who plan to make the Kaypro your ticket to independence.

You can get all this and more when you order the special \$2.00 sample copy. In fact, you'll even find out how to turn a Kaypro II into a Kaypro 4 (or Kaypro 8).

Edited and published by David Thompson

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The PRO-8 package from Micro Cornucopia upgrades your Kaypro 4 to a Kaypro 8 with 784K bytes (96 directory entries) per Tandon 100-4 (or equivalent) quad-density drive. Plus, you can select your own cursor character (and change it at will).

The package includes the new PRO-8 monitor ROM, a disk of formatters and copiers, and printed instructions. (We even tell you how to turn your Kaypro II into a Kaypro 4.) All you add is one or two double-sided double-density (390K), or double-sided quad-density (784K) drives. You get over 1.5 Megabytes on a two-drive quad-density system!

This new system can read, write, and format Kaypro II and Kaypro 4 disks as well as Kaypro 8 disks. And it recognizes each disk type automatically!

All this for only \$49⁹⁵!

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Call or write for information on the other Kaypro II and 4 ROMS from Micro Cornucopia.

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With this nifty little plug-in board, your Pro-8 ROM can access up to four 5 1/4" drives. You just plug a four-drive 34-pin cable into this board and you can add up to two additional drives.

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The Plus-4 Decoder Board for only \$39⁹⁵

Watch for 4-84 and 10-84 compatible ROMs coming soon.

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A CP/M Inventory

Your CP/M master diskette needn't be a mystery.

by Anne Wayman

Each time you turn on your computer you're presented with `A>`, otherwise known as the CP/M prompt. (If you have a newer Kaypro with the Master Menu program you have to type the ESCape key to find it.) Usually you simply enter the name of your favorite program and begin to work. If, however, you call up the directory you will be presented with a bewildering variety of arcane file names. Most of these files are operating system utilities from Digital Research, Inc.; a few are programs written by Kaypro. The more you use your computer, the more valuable these programs become. This brief overview will help you discover which will fit your needs.

What's an operating system?

Kaypro computers use the CP/M (Control Program for Microcomputers) operating system. This is the program which takes care of the details of operating your whole computer system. You may think of your Kaypro simply as a computer, but from a technical point of view, it is a system made up of components: the keyboard (an input device), the screen (an output device), and your disk drives (input/output devices.) You may also have a printer which, like your screen or terminal, is an output device. Modems, graphics tablets, bar code readers and any number of other gadgets which plug into your Kaypro are also forms of input/output (I/O) devices.

Information or data must be transferred between these devices for you to do any work. The physical operation of each device must also be controlled. It is this physical control and exchange of information that is managed by CP/M.

Keeping house

CP/M, however, can go much further than simply ordering the exchange of information and turning peripherals on and off at the right time. For the

beginning user, housekeeping chores are probably its most obvious use.

In computer jargon, housekeeping refers not to keeping the top of your Kaypro dust free, but to the way you arrange and maintain your files. Floppy or hard disks get full, usually with files that are outdated, or that could be combined with files on other diskettes. Erasing and moving files is an integral part of housekeeping. Other chores include renaming files, checking to see just what a file contains, saving information, making backup copies and preparing new diskettes.

Of course, all of these chores except preparing new diskettes can be performed with your word processor. It's often more efficient, however to do them all at one time using CP/M.

The good news is you've already used some of these housekeeping utilities. You used `FORMAT` to prepare blank diskettes, creating magnetic tracks and sectors that your Kaypro understands. Next you used `COPY` to make working copies of your master diskettes. You also used `SYSGEN` (which stands for `SYStem GENerator`) so your working copies would "boot" or run without a CP/M diskette in place.

This is probably the best place to note that your CP/M diskette may not have everything listed in this article, or it may have more. For instance, on newer Kaypros the formatting, copying and `sysgen` procedures are all handled within the `COPY` program.

Incidentally, when you look at the directory of your CP/M diskette you may notice that some files have `COM` as a second name. (`PIP.COM`, for example.) This indicates that the program has been stored as a `COM`mand file. To use these programs you need only to enter the name that comes before the period and press `RETURN`.

PIP

The Peripheral Interchange Program, more often simply called PIP, received extensive treatment in a previous issue (*September/October '83*) issue. Most people find it helpful for making back-up copies of files. Basically, what PIP does is copy one or more files from one place or disk to another.

The basic form of the command is this:

```
PIP filename=filename
```

followed by a return.

The key to using PIP is remembering that your destination, the place you want your information to end up, is the first name used while the source of the information comes second. Thus:

```
PIP B:ARTICLE.TXT=A:ARTICLE.TXT
```

would copy the file, ARTICLE.TXT from drive A to drive B. You would now have the file on both drives.

You can check the chapter on PIP in your CP/M manual if you want to know how to use PIP with printers, to strip parity bits, set tab stops at particular columns and other, more technical jobs.

STAT

Another useful utility for the beginner is STAT, which is short for STATistics. This program gives you information about the files you have on disk. It not only tells you how much room, in kilobytes, a file takes, but how much room you have left on the entire disk in question. STAT also notifies you if a file is read-only (R/O), meaning you cannot erase it with the ERase command or write new information on it. An R/O designation is added protection from accidental erasure or change. It can be assigned to a file with the STAT utility.

If a file has read/write (R/W) status it does not have this additional protection, and may be erased or written on. Most of your files will be R/W files.

STAT is not limited to statistics about files, but will also give you information on the various peripherals. Details are in your CP/M manual.

Wild cards

CP/M has provided certain shortcuts. One of the most useful is the wild card. Signified by an asterisk, it simply means you can avoid re-entering certain items. For example, if you wanted to STAT the entire contents of the disk in drive B:, at the prompt you would enter:

```
STAT B:*. *
```

The entire contents of the disk would be presented.

If you had a series of .TXT files and wanted to know how much room they occupied, the command would be:

```
STAT B:*.TXT
```

The result would be a listing of all the files using TXT as a second name. On the other hand, if you had several files that started with ARTICLE but had different last names, the entry would be:

```
STAT B:ARTICLE.*
```

This time, all files beginning with ARTICLE would show up—including:

```
ARTICLE.PRO  
ARTICLE.TXT  
ARTICLE8.TXT  
ARTICLE9.TXT
```

The wild card function will work on many CP/M utilities including STAT and PIP.

Wild cards let you avoid re-entering certain items.

ERase

When you discover you're about out of disks and want to avoid buying more, ERase can be handy. It is CP/M's utility for ERAsing files. Using the wild card function can make ERase more efficient.

REName

Occasionally you will decide you want to change some of your file names. REName is the utility that accomplishes this. The program requires that the new name precede the old, like this:

```
REN new filename=old filename
```

So that REN ARTICLE.PRO=ARTICLE.TXT would change our original file name to ARTICLE.PRO.

TYPE

After you've put off your housekeeping for awhile you may find you've forgotten the contents of a particular file. The command:

```
TYPE B:ARTICLE.TXT
```

(Continued on page 32)

Choose Your Quest

There's more to text adventures than fighting dragons.

by Thomas Enright

Arcade games are okay, for a while. But how long can you keep feeding quarters into one of those blasted things? Most of us just don't have that much money to throw away. Anyway, in case you didn't know it, arcade games are designed to take your money and then kill you off in a hurry. Of course they make it look like just an accident that you can avoid with the next quarter. Bet you don't! You do have an alternative to those quarter-eating monstrosities though, something called *text adventures*.

You're the hero

Playing a text adventure is like reading a good mystery, only better. Much better. Have you ever read a book and thought the hero should have done something a little differently? Well here is your chance.

In all text adventures the hero only does what you tell him to do, nothing else. If the hero—you really—is standing on the edge of a cliff and you type JUMP, the jump will be made. Who knows, maybe that bush halfway down offers salvation. From there perhaps you can sneak over to the cave just to the left of the bush. There can be some very interesting things found in caves you know.

Even in the best of arcade games that same bush and cave would look pretty crude. In fact, the most advanced arcade game, *Dragon's Lair*, which uses a laser disk, is really a series of cartoon pictures. The order that you see them in depends on what you do with the little joy stick on the front of the machine. In most of the other games you have to settle for some pretty crude pictures. Take a look at some of them the next time you pass an arcade. When you're wrapped up in playing a game you don't notice little things like that.

The graphics of your mind

Text adventures however, aren't limited by the graphics display of a CRT or television. They work through the most vivid graphics system ever created, your own mind. Your brain can supply the most detailed and varied graphic images in the world. All it takes is a little help from a skilled author to set the stage with some well-written text.

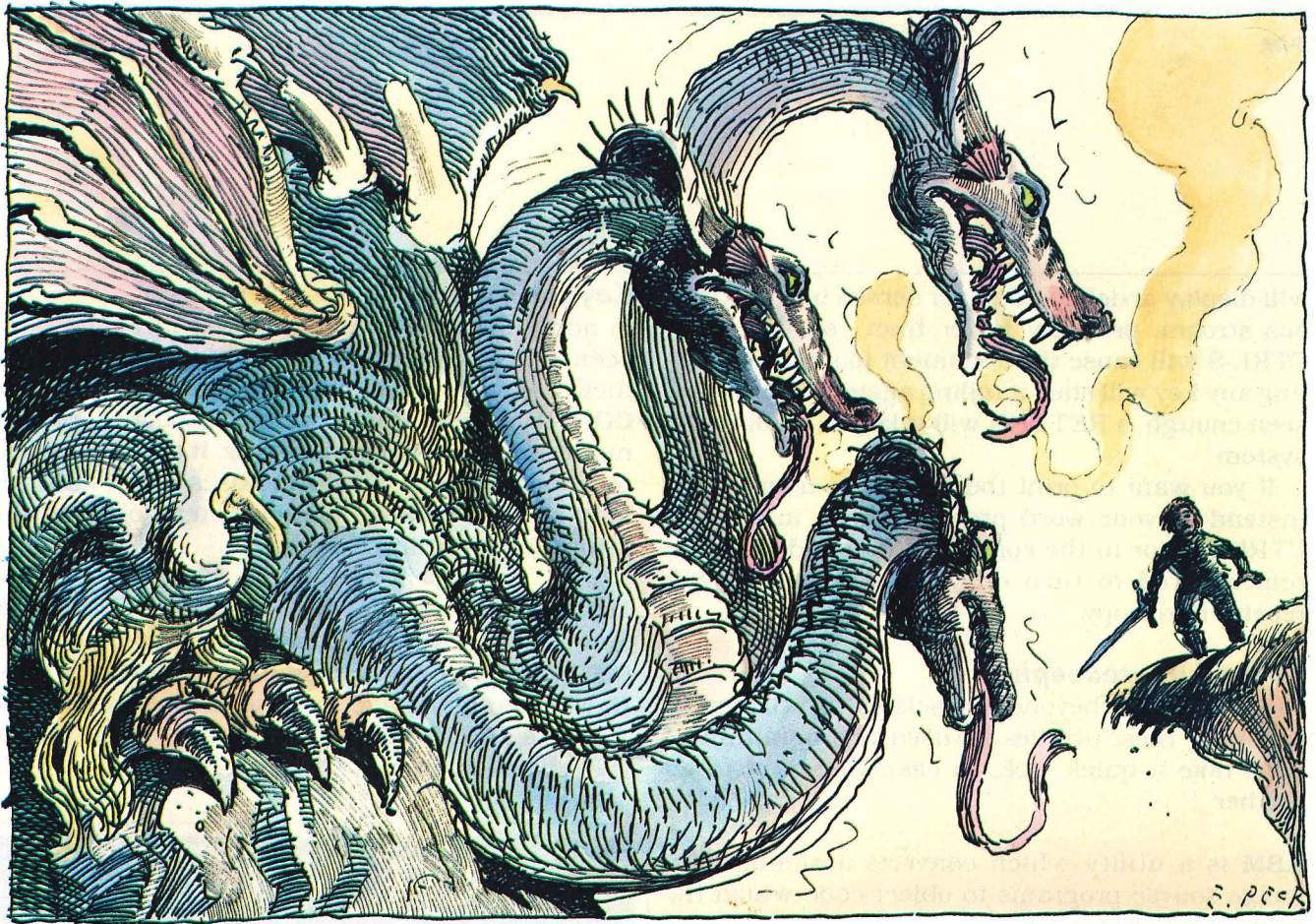
The original text adventure was developed on mainframe computers by Will Crowther and Don Woods back around 1975. There are now many adventure games available for microcomputers. The Software Toolworks, for example, publishes a version quite similar to the original called, oddly enough, *Original Adventure*. In the public domain (read "free"), Mike Goetz is credited with a greatly expanded version available in virtually any CP/M format.

This public domain version is titled simply *Adventure* and can be found through user's groups and BBS's. It starts out: *You are standing at the end of a road before a small brick building. A small stream flows out of the building and down a gully.*

From here you have the task of finding your way into the underground caverns.

In these caverns you will encounter various objects and "beings" that will either help and hinder you in your quest to find the treasures hidden there. Each time you solve a problem or manage to take one of the treasures, you get a few points. The number of points you receive depends on the difficulty of what you did. Should you manage to get the treasures out of the cave and back to the brick building a few more points are earned.

There are two classes of objects in *Adventure*: treasures and useful items. Useful objects help you



get the treasures. An example would be the lamp. The lamp is not a treasure, but it is a useful object to have in a dark underground cave. Without the lamp you can't see where you're going. You could fall into a hole, breaking every bone in your poor tender little body.

You'll also discover that some treasures have other uses. Sometimes the possession of one treasure is the key to finding some other treasure.

You'll even find other people in these caverns. There seems to be an inexhaustible supply of dwarfs who take great exception to your presence. Their usual reaction to humans is to throw an axe or knife at them. They're trying to kill you; you'd rather they didn't. There is even a pirate wandering through the maze of passages, stealing whatever he can find. It is rather curious that the pirate will not steal anything unless it is in your possession. I guess that even pirates have scruples.

Two word commands vs . . .

Of course you have to have some way of moving around in order to find the treasures so the pirate can have something to steal. Adventure accepts two word commands made up of a subject and a verb. Commands such as GO NORTH or TAKE DIAMONDS soon become almost second nature. Adventure also accepts abbreviations for often used commands: "N" for GO NORTH or "D" for DOWN. Accomplishing a specific goal using only

two word commands can be rather challenging. This two word command structure is the major limitation, and criticism, of Adventure.

Multiple word commands

INFOCOM Inc., of Garden City, New York, produces a whole series of text adventures that understand adjectives, adverbs, and multiple commands on a single line. Suppose you are in a room that contains a red book, a blue book, a sword, a rope, and three blind mice. The INFOCOM games will accept instructions like TAKE THE RED BOOK, SWORD AND THE ROPE as one command. You can even string several commands together by separating them with a period or the keyword THEN. Entering a line such as—GO NORTH. TAKE THE BAG. GO SOUTH. GO EAST THEN TAKE THE GARLIC OUT OF THE BAG THEN DROP THE BAG. OPEN THE DOOR. TURN OFF THE LAMP—all as one command line is entirely acceptable.

Unlike Adventure, each of the games from INFOCOM comes with a documentation package to explain the adventure's scenario. Also included in each package are instructions on the vocabulary of words the adventure understands. If there is any one common thread shared between all of the INFOCOM games, it is this vocabulary.

In each of INFOCOM's adventures, except Suspended, you would be well advised to draw a map of
(continued on page 34)

will display `article.txt` on your screen in a continuous stream, probably faster than you can read. CTRL-S will cause the document to stop, and hitting any key will start it rolling again. When you've seen enough, a RETURN will take you back to the system.

If you want to print the document using CP/M instead of your word processor, you may enter CTRL-P prior to the command line and, if you've remembered to turn on your printer, you will receive hard copy.

Beyond housekeeping

CP/M goes far beyond housekeeping. Generally speaking, these utilities are used by programmers. Let's take a quick look, in case you want to go further.

ASM is a utility which converts assembly language source programs to object code which the computer can execute.

DDT, short for Dynamic Debugging Tool, is used to test and debug machine language programs.

DUMP will display or print the contents of a file in hexadecimal notation.

DUMP.ASM is the assembly language source file for the DUMP program.

ED is a text editor. Until sophisticated word processors were developed, programmers used ED to write new programs.

LOAD is a single purpose program that takes a file, (created by ASM) and turns it into a COM file so it can be executed by your Kaypro.

MOVCPM originally came ready to be used on a computer with 16 or 24K of memory. MOVCPM is a program that changes the amount of memory CP/M can use for programs. Your CP/M disk is already configured to expect 64K.

SUBMIT lets you write a mini-program that will allow you to execute a series of CP/M commands at one time.

XSUB may be used with SUBMIT files to allow user input while a SUBMIT program is running.

Kaypro's own

In addition to the standard CP/M fare, you have been provided with several Kaypro-specific utilities. Beginning users will be most interested in **CONFIG** which lets you change the purpose of your numeric keypad and arrow keys. It also allows you to change device assignments so you can, for instance, use a serial printer instead of a parallel printer. Other utilities include:

BAUD allows you to adjust the speed, or baud rate, at which your Kaypro sends information to serial (RS-232C) peripherals like modems and printers. Newer models have two separate programs, **BAUDM** and **BAUDP**, to adjust the baud rates of the modem and serial printer ports. □

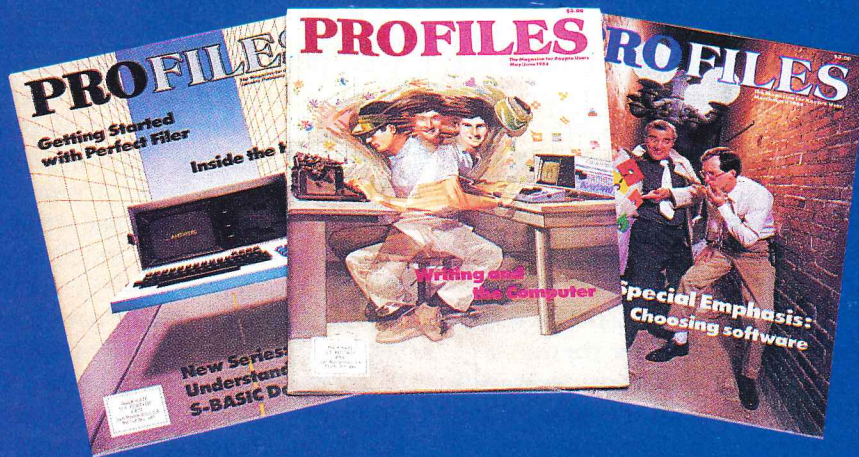
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the game area as you explore it. The game areas are far too complex to be committed to memory until you've been over the territory quite a few times. Even then it's very easy to overlook some small clue given in the description of a room. These descriptions contain clues to solving problems encountered in other areas of the game. Some of them are even of help in other INFOCOM games! Many of the clues are hidden or veiled in innocuous ways, but they are there. You just have to look for them.

Each and every INFOCOM game understands the word INVENTORY, or the abbreviation "I", to mean a list of whatever you're carrying is to be printed on the screen. Should you try to take more objects than you can carry, the game will tell you "your load is too heavy." Larger objects are heavier than small ones, so you can carry fewer of them.

Another useful command is the "L" or LOOK command. This gets you a description of the room that is your present location. No matter where you are in an INFOCOM game, it is considered a room. Unless you tell the game otherwise, with the VERBOSE command, you get an automatic description of a room only when you enter it for the first time.

Like Adventure, the INFOCOM games use com-

pass points when giving movement commands. You can GO NORTH but you cannot GO LEFT. The concept of containment is fully exploited by the INFOCOM games. Some objects may contain other objects. If you do not open or look inside of the first object, you will never see what it contains. There is also a limit to how much a container can hold. Simple concepts? You'd be surprised how hard that is to do in a computer game, and how many other adventure games totally ignore both concepts.

In the course of the games you will get descriptions of the area, or find objects that have writing on them. Reading descriptions, or anything that can be read, may result in useful hints for the adventurer. Hints can sometimes be very oblique and obscure, but they will always be there.

In all three of the Zork series, for instance, many descriptions of places and things make more sense if you have read Tolkiens' *Trilogy of the Ring*. The behavior of the sword throughout the Zork trilogy is one example, your starting location in Zork 2 for another.

The Zork trilogy is intended to be played in succession. The first two games are a training ground for the last adventure of the trilogy. The series can

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be likened to the Junior College, College, and Graduate School of the *Dungeons and Dragons* clan. While *Zork 2* or *Zork 3* can be tackled without the others, it is not recommended. Besides, you'll be missing half, or two thirds, of the challenge.

Zork 1

The first of the INFOCOM games and the most adventure-like of the series is "The Great Underground Empire," *Zork 1*. Like adventure, you must find your way into the underground caverns before the game really begins. From that point on, similarities to the original adventure are approximate and, occasionally, even deliberately misleading.

Once you have found your way into the underground empire, you discover you can't get out the same way you entered. Now your very survival depends upon sharpness of mind and courage. Your goal is to stay alive, find all of the treasures and return them to the trophy case in the living room of the cottage. Along the way you have to deal with the thief, an annoying fellow who keeps stealing your treasures.

Obtaining at least one of the treasures hinges on an ancient exorcism ritual found in classical literature. Even references to the *Illiad* are found in some portions of the game. (It isn't necessary to be intimately familiar with travels of Ulysses, however, to solve the riddles.) The same clues are given elsewhere in the game. If you are familiar with some classical literature, the clues make sense a little sooner, that's all.

It takes 350 points, and probably several weeks, or months, to finish *Zork 1*.

Zork 2

In the second game of the *Zork* trilogy, "The Wizard of Froboz," your starting location puts you in an underground barrow. A barrow, in Tolkien terminology, is the abode of the Barrow Wright, who are villainous creatures indeed. Now is this barrow inhabited? Is this Barrow Wright friendly or evil? Does it matter? You'll have to answer these questions on your own.

Here you must deal with the somewhat eccentric Wizard of Froboz in addition to the more complex and difficult problems found in the underground itself. It seems that the Wizard has a penchant for F-words (all in good taste), which have unusual effects upon the poor adventurer.

A total of 400 points, and several more weeks, are needed to complete this phase of the trilogy.

Zork 3

"Dungeon Master" is your final examination. Only

7 possible points exist in this last of the underground series. When ready, the adventurer may face the Shadowy Figure who will pose questions that must be answered before the game is complete.

Although the points needed to complete the third portion of the trilogy are few, the weeks tend to mount up.

Starcross

Here you find yourself in space aboard a ship that hunts for black holes. Your ship is equipped with a computer that you can talk to, although you may not always like the answers that it gives, and a mass detector for detecting objects in space. Your mass detector reports a large object nearby—an alien space ship.

This game seems to be loosely based on *Rendezvous With Rama* by Arthur C. Clarke. Once the alien ship has been located, you will find you cannot leave until it is repaired. Unfortunately the life support system of the alien ship has sustained some damage and the breathable oxygen is limited. There are also several lower forms of alien life aboard, some hostile, some not.

A sum of 400 points are required to complete repairs to the ship.

*Hints can sometimes be
very oblique and obscure,
but they will always be there.*

Suspended

In this adventure you have been chosen to spend the next 500 years in cryogenic suspension, unless something goes wrong. Murphy's Law prevails.

While in the suspension chamber you have responsibility for all repairs to the Planetary Environmental Control Complex. Since you're immobilized, all communication and operations must be conducted through six repair robots. Each robot has certain sensors that make it different from the other robots. One could almost say these robots have personalities.

This game differs from the others in that you are provided with a map from the very beginning; you are also given a marker to represent each of the robots. The markers can be moved around on the map to keep track of the location of each robot at any time.

As the adventure begins, you are awakened from suspension by the sound of alarm bells. Damage

has occurred to the complex. Your job is to direct your robotic friends into the area, ascertain the extent of damage, and effect repairs. Naturally it's not quite that easy. But I wouldn't want to spoil it for you.

Scoring points in Suspended works a little differently than in the other games. Here each move you

Deadline takes place in contemporary times and the plot is murder.

make counts as a specific period of time. Each time period that elapses during a repair operation means the deaths of a certain number of planetary inhabitants. It is hoped that all repairs can be made while the planet still has a population.

Deadline

This game is a departure from the typical adventure because it doesn't take place in an underground fantasyland or the deepest reaches of space. Instead, Deadline is located in contempo-

rary times and the plot is a murder mystery. You are the detective in charge of the investigation.

Mr. Marshall Robner has been found dead in his library. The autopsy report indicates that he died from an overdose of Ebullion. Was it murder or suicide? Only 12 hours, as time is kept is by the program, are allowed to discover the answer.

You have printed copies of the preliminary reports from the first officers on the scene. During your investigation you may question people in the house, send evidence to the crime lab for examination, and explore the Robner mansion or its surrounding grounds. Sending an object to the lab uses up more time than examining it yourself, but can reveal things that you cannot detect without help.

When you think you have enough evidence, you can ACCUSE someone of the crime or declare that it was suicide. Remember, however, if you accuse someone falsely, you can be sent to jail yourself.

Planetfall

Anyone who has read *Hitchhiker's Guide to the Galaxy* will recognize several of the objects and situations found in this game. That won't help you very much though, or will it?

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The start of this adventure finds you as a lowly Ensign Seventh Class assigned to the Stellar Patrol Ship Feinstein. Just what does a "boot" Ensign do in the Stellar Patrol? He scrubs the deck and tries to avoid the wrath of Senior Ensign Blather.

But even paradise doesn't last forever. You soon find that your ship has been blasted out from under you. Assuming that you are quick-witted enough to make it to an escape pod and survive the landing, you find yourself marooned on a deserted planet—deserted but not empty. The ruins of a strange and scientifically advanced complex cover the small island you are on. In the distance you can see another small island dominated by buildings of unusual architecture.

Planetfall indicates that text adventures are undergoing a maturation process.

Your assignment, should you choose to accept it, is to discover the purpose behind the existence of the Kalamontee and Lawanda complexes.

The ending of Planetfall reveals this adventure was written with a sequel in mind. Some of the problems posed in the game cannot be solved; they are reserved for the next game. In order to complete this game only 80 points are needed.

Planetfall indicates the genre of text adventures is undergoing a process of maturation. There isn't any magic or sorcery involved in this adventure. The problems and objects dealt with are more logical and believable, at least to science fiction buffs.

Future games from INFOCOM will, hopefully, continue this evolution to more logically believable situations and less witchcraft.

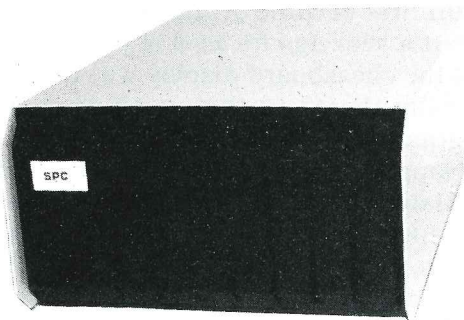
Enchanter

Enchanter places you in a mythical time of wizards, warlocks and sorcery. You, a lowly apprentice enchanter, have been chosen by the Elders of the Circle of Enchanters to defeat Krill, the evil warlock.

Krill is too strong for the Elder Enchanters to handle. He can detect their aura of power before they could act against him. This was foreseen by the founders of the Enchanters Guild who left a scroll advising that only an apprentice, with a

(continued on page 42)

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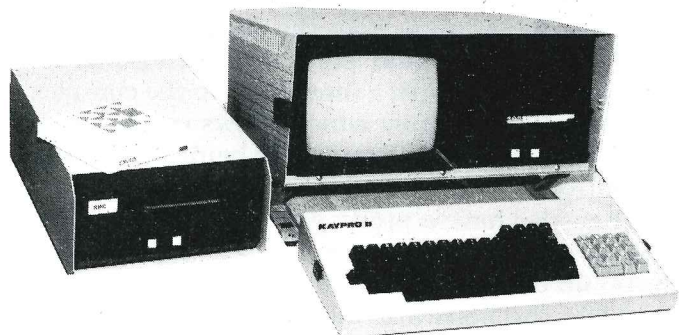
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How About a Nice Game of Chess?

This version uses graphics

by Tyler Sperry

I used to play Adventure with other people around, but I gave it up. Inevitably, when I was pondering what to do next, some "friend" would lean over and start hinting at the solution. And if I didn't react to the first, (relatively) subtle hints, then my friend would start getting more explicit until finally I would cry, "Throw axe!" and clap my hands over my ears. Eventually, they (or I) would lose interest in that particular session of Adventure; after several months of interruptions I gave up the attempts.

None of this means I've given up on games, of course. I've just given up on games that either require several weeks of siege effort, or can be spoiled by hints. Once you eliminate the text adventures and puzzle games, there are still many ways to waste an afternoon. And even when you add the stipulation that the game must be excellent in quality but inexpensive (less than \$40) you haven't whittled the field down much.

The people at The Software Toolworks have several games in this category (Good and Cheap.) Their products range from the simple and addictive *Word Wiggle* that plays something like an crossword puzzle with a time limit, to the complex (and addictive) *Airport* which allows you to simulate all the fun and excitement of being an air traffic controller.

(They also have a pretty good version of Adventure. Granted, it will never compete in price with the public domain version that's *free*, but when you complete the Software Toolworks version you do get a genuine "Certificate of Wizardness" signed by the original authors of Adventure—Crowther and Woods. Put in that light, and compared to the cost of a public domain disk, \$19.95 doesn't seem exorbitant.)

And then there's chess

When you consider the various games available for the Kaypro, it is often frustrating to think of the games you can't run because of the limited graphics ability of the machine. The Kaypro 10, with its "business graphics" of 160 by 100 pixels, started some people thinking, though. Now that all Kaypros sold have the same graphics capability, we are beginning to see some programmers use graphics in games for the Kaypro.

The Software Toolworks chess program, *MYCHESS*, is a perfect example. When the program first became available in the Kaypro format about a year ago its level of play was competitive, but the chessboard display was distracting. (Realistically, there isn't that much you can do with the original Kaypro II's screen.)

Happily, there is now a new version of *MYCHESS* available for the Kaypro that takes advantage of the graphics mode. Susan Hayes at The Software Toolworks has designed new chess pieces that allow you to play the game without spending time deciphering which piece is which. And even more happily, the program only costs \$34.95.

It plays chess, but how well?

This one question must be asked about any chess program. In the case of *MYCHESS*, the answer is "Well enough to give the average player a good game"—a more accurate answer will depend on the player's skill. Under tournament time limits, the program has a United States Chess Federation rating of 1568.

David Kittinger, the author of *MYCHESS*, says he designed it to "play a good, fast game of chess." As a result, tournament chess players will not be over-

whelmed with the deep strategic planning of the program, but the rest of us can enjoy a good, challenging slugfest at a reasonable pace.

Other aspects

MYCHESS has most of the features that you would expect from a good chess program, and a few more:

- ▶ An adjustable skill/speed level that gives a fighting chance to beginners as well as experienced players.
- ▶ The ability to choose which side (White or Black) you want at the beginning of the game, as well as the option of switching sides in the middle of the game.
- ▶ A "setup" mode where you can recreate a position from a book or previous game.
- ▶ The option of playing your game under tournament (clocked) conditions.
- ▶ The ability to save a game to disk in the middle of play, and resume play later.
- ▶ MYCHESS offers the ability, on your quitting, to make a printed listing of the moves. This can be a very useful aid to less experienced players for studying where they went wrong.

- ▶ For those who have Kaypro IIs or 4s without graphics, there is a configuration program you can use to change the display to the earlier version.

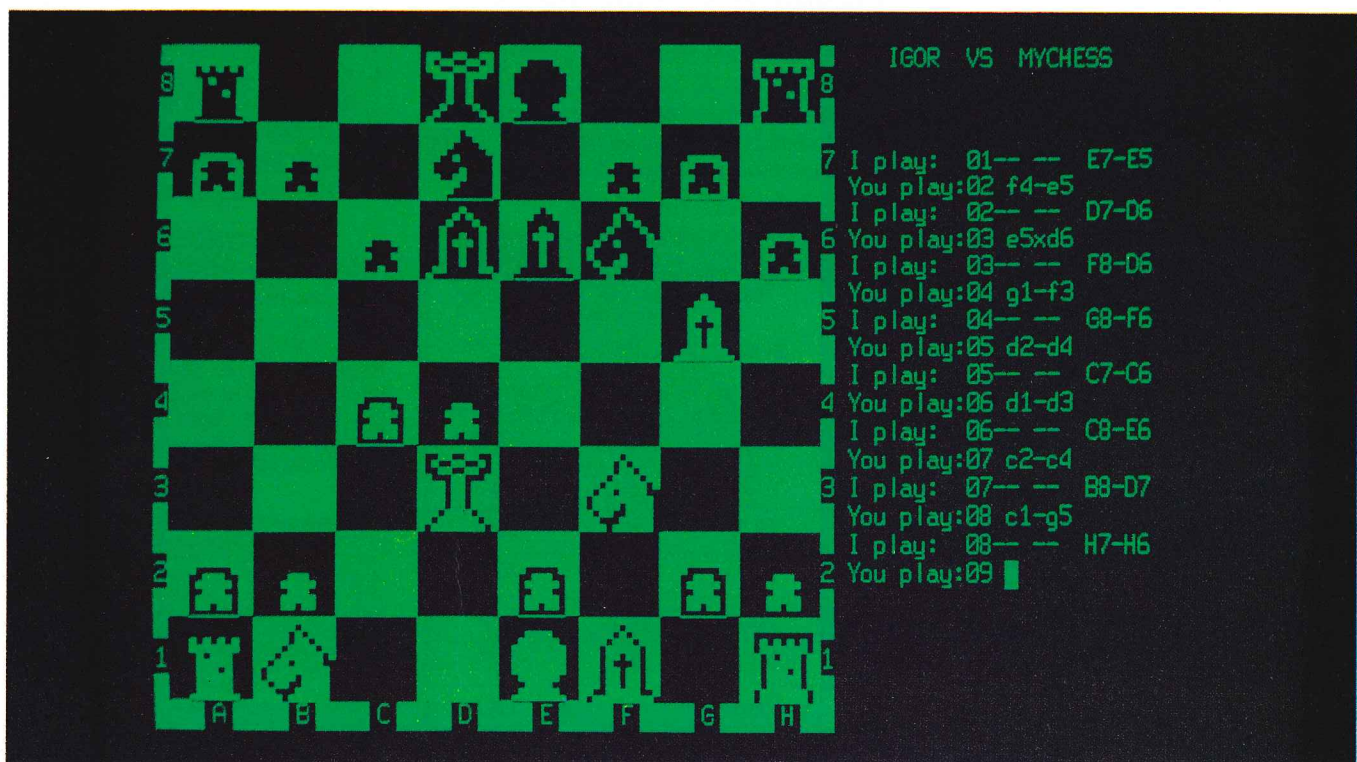
In summary

Of course, there are a few aspects of the program that are less than perfect. One example is the inability of the program to deal with more than queen per color; this forces you to promote your pawns to less powerful pieces, and greatly limits the usefulness of the program for studying chess puzzles or composed endgames. For most players, this will be a minor annoyance.

On the whole, the problems with this program are minor, and won't be significant to the majority of players. The program plays a strong enough game that the average player will get a good, fast game of chess. And that's what it was designed to do. □

MYCHESS is available through dealers, or directly from:

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| Ready-to-Run | | YES | YES | YES | YES | YES |
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small aura, would have any chance of defeating the Evil One.

As an apprentice enchanter you are armed only with your wits and a book of magic spells. The oath you swore upon entering the Order of Enchanters forbids you the use of physical weapons or armour. Since you're an apprentice, your spell book contains only four magic spells. As you pursue your quest, you'll have plenty of opportunity to add to your repertoire of magic.

Your quest begins as the Circle of Enchanters deposits you at a lonely crossroads. Your first problem is discover where you are and secure the means of food and drink. (Apprentices don't have the power to conjure sustenance at will.) Your next task is to find your way to the Castle Largoneth. There the Evil One chants incantations to the powers of darkness. Krill seeks to find the last link in his chain of evil. Once he finds that link, Krill will triumph.

You must find the Castle and explore it. Along the way you will find new spells to add to your powers. It is hoped you'll be able to defeat Krill before he can bind himself to the evil hidden deep within the castle. But take care! Not only may you be captured by Krill, but you might accidentally free that which Krill seeks. Should that happen, you must act quickly else all is lost!

To complete Enchanter you need to accumulate 400 points and die several unpleasant deaths. Success entitles you to join the Circle of Enchanters; failure earns only death.

Infidel

Interested in exploring a previously unknown Egyptian pyramid? That's the theme of *Infidel*, one of INFOCOM's recent text adventure games.

You have come into possession of a map and notes from an expedition made in the early 1920's. Fortunately for you, the leader of that party died on the preliminary exploration. He had uncovered evidence of an unexplored tomb in the Egyptian desert. When King Tut's tomb was discovered in the same area, the heirs to the map figured it was the pyramid on their map. The lone holdout is a 65 year old woman and can't travel. She has asked you to find the pyramid and confirm her father's claim.

You awaken from a drugged sleep in the middle of the Egyptian desert. All your workers have deserted you. (You must have offended them when you interrupted that religious ceremony they were conducting.) They leave only a canteen, one piece of dried meat, and your map. Fortunately the nearby Nile River provides water, as well as crocodiles. While you take stock of what is left, a plane

parachutes a navigation box to you. Assuming your brain isn't baked into plum pudding by the desert heat, you should now be able to find the pyramid. You don't need all those workers anyway. Finding the pyramid isn't that difficult, getting inside is.

Once you are inside the pyramid, the real fun begins. The old Egyptians were a suspicious bunch and didn't like anyone snooping around their tombs. You can be sure that traps and puzzles abound for the unwary. I hope you are fond of small furry friends, i.e., rats.

You'll find painting and hieroglyphs all over the walls inside the pyramid. They may be important clues or only directions to the nearest slaves' recreation room. The ancient ones were fond of diabolical traps to ensnare grave robbers while allowing themselves to pass unharmed. Can you solve the riddle of the closing doors? The architect of this pyramid had a real fetish about triggering his traps with doors. HINT—throwing a fit has absolutely no effect.

As an apprentice enchanter you're armed with your wits and a book of magic spells.

For the persistent and quick-witted, treasure is to be found here: gold, silver and glory. The glory of being the discoverer of an untouched tomb is one thing; but, the gold and silver will keep you warm in your old age. Or will it?

This is not a short game, 400 points are needed to find all the treasures.

Witness

Witness is another game in the style of *Deadline*. It's a murder mystery set in the Los Angeles of 1938. You are a detective on the Cabezaplana Police Force near Los Angeles.

This morning you received a telegram from a Mr. Freeman Linder claiming that his life is in danger. Mr. Linder believes someone by the name of Stiles will try to kill him. He asks you to come to his home at 8:00 this evening.

When you arrive at the Linder home, you're greeted at the door by the oriental butler. He shows you to the living room where Mr. Linder is having a conversation with his daughter, Monica. Shortly both you and Linder retire to the home office of Linder's company to discuss his problem. Unfortunately you are interrupted when Linder jumps up

and yells "Stiles!" Just as Linder yells, a bullet shatters the window and kills him.

How's that for service? The murder was committed right in front of your face. This crime should be a piece of cake. Was it really Stiles that Linder saw at the window, or someone else? Linder didn't seem to get along with his daughter very well from what you saw earlier in the living room. Later you may find out that the butler felt Linder was holding him back from participating in the business. This business involves imports from all over the orient.

Then there is the question of time. Remember this is 1938, just before World War II. Linder is heavily involved in oriental trade, and is rumored to have hired out as a mercenary in Hong Kong several years ago. That and the fact that he is known to be a friend of Emperor Hirohito may mean there is more here than immediately meets the eye. Could Linder be involved in a spy ring for the Imperial Japanese Government?

There is another possibility for the untimely demise of Freeman Linder. His wife recently committed suicide, shortly after he found out she was having an affair with this Stiles character. When the rest of your men arrive at the Linder home, Stiles is found lurking around. This is sure a mixed-up can of worms.

The documentation package provides some of these clues. Along with a matchbook, a detective magazine, and the telegram, you'll find the front page of a newspaper. The newspaper is dated Feb. 1, 1938. Mixed in with what appear to be real articles are several clues to the game. Two articles concern the Linder family. Others are on the subject the local Japanese population, Japanese fishermen, and political unrest in the orient. They may or may not have anything to do with the murder. That's for you to figure out.

Like *Deadline*, *Witness* has a twelve-hour time limit. Normally, one minute elapses for each move or action you take. When you do something CAREFULLY, four minutes will pass. When you've got enough evidence, you can ARREST someone and they will go to trial. The trial is based only on evidence you've uncovered so it doesn't do any good to make quick arrests. You'll need enough hard evidence to assure a conviction. Mike Hammer fans will love this one!

Installation

By the time this article is in print, all INFOCOM's games will be available in Kaypro 2 format. This means you don't have to fool around getting them downloaded to your kind of diskettes. If any software dealer tells you different, he's simply incor-

rect. The Kaypro 2 versions of the games that I saw will run right out of the package. INFOCOM was kind enough to send preliminary copies of their games on the Kaypro format they will be using. The only problem I found was when running the games on a Kaypro 10 or the new Kaypro 4. These machines have a slightly different character set so the status line, at the top of the screen, came out as graphics characters. The people at INFOCOM assure me that this problem will be corrected before any diskettes are sent out to dealers.

The only time you might want to buy the generic CP/M version of a game would be to get a copy of SDEFAULT.ASM. This is the assembly language installation program to modify the game for the characteristics of your terminal. This way, if you understand assembly language, you can have the status line in reverse video on Kaypro computers that have that characteristic. The normal status line is regular characters which can merge in with messages from the game. With reverse video it stands out nicely. WARNING: mucking about in the installation program is for assembly language hackers only!

Late additions

True adventurers are always looking for more, eager for another problem to solve. Naturally, game designers are happy to oblige. It's not surprising, therefore, that two new games have surfaced just in the last month. **Sorcerer** is a continuation of the *Enchanter* story. No longer an apprentice, you go in search of the Wizard of Belboz. In **Seastalker**, you play a young inventor whose mission is to rescue an underwater research station from attack.

Seastalker is the first of what INFOCOM terms "junior-level" adventures. Designed for newcomers, they are supposed to help people ease into the logic demanded by text adventures. These games also contain a more sophisticated "parser" able to understand the variety of garbled commands entered by beginners.

The introduction of junior-level games plus an ever-expanding line of interactive murder mysteries, science fiction and other adventures demonstrates the overwhelming popularity of this kind of software.

The only thing left to do now is lock the family in a convenient closet (so they won't disturb you) and let the games begin. □

INFOCOM Inc.
P.O. Box 855
Garden City, N.Y. 11538

ALL **KAYPROS** ARE NOT CREATED EQUAL

KAYPRO 400/800KB UPGRADE KIT-

The KAYPRO II uses the Tandon 100-1 single sided double density diskette drives (40 tracks 48 TPI). Each diskette is capable of storing 200KB per drive. The Legacy 800KB upgrade kit expands the storage capability of the KAYPRO II to 800KB per drive utilizing the TEAC 55F-double sided quad density diskette drives (80 tracks 96 TPI). The kit may be purchased with or without the drives. Once installed, the KAYPLUS 800 will store four times the amount of data as the standard KAYPRO II. Data integrity is maintained, as the KAYPLUS 800 will still read and write the standard KAYPRO II format (as well as the KAYPLUS 400 format). The kit comes complete with an enhanced format program that asks if you wish to format the disk as (S)ingle or (D)ouble sided as well as prompting the user to determine if the format is for 40 or 80 tracks. Installation of the kit requires a simple EPROM change, the addition of a 14 pin socket (with appropriate integrated circuit), cutting of two circuit traces, the attachment of 6 wires and the replacement of the diskette drives. The use of this enhancement is predicated on replacement of the standard drives with only the TEAC drives. No TEAC compatible drives will suffice. A speed increase of 12-18% could be expected with the installation of this kit, as the track access time is greatly enhanced over the standard drives. Also, the read/write heads of the TEAC drives only come into contact with the surface of the diskette when transfer of data occurs, at all other times, the heads lift off the surface of the diskette.

*118.

CPU HOP UP KIT-

The KAYPRO II utilizes the Zilog Z80 microprocessor. The internal calculation speed of this processor is 2.5 MHz (megahertz). In that the entire KAYPRO computer system is designed around the Z80 CPU (and associated chip set), to upgrade the computer to execute at a faster rate would require a major overhaul of the mainboard and the replacement of numerous components. Legacy offers an alternative of the 2.5 MHz clock speed. The CPU hop up kit doubles the calculation speed of the Z80 to 5 MHz with the use of the Zilog Z80B micro processor. All calculations performed will be done at a 5 MHz rate and any I/O performed will be done at the normal (KAYPRO designed) rate of 2.5 MHz (during which time, the CPU is put to sleep in a wait state). The effective increase is about 40%. Installation is completed within minutes. One simply removes the old Z80 CPU and one supportive chip, plug in our hop up kit and place one of the chips removed back onto the Legacy board.

*Also available for new 184 board runs at 4/8 MHZ.

*118.

REAL TIME CLOCK-This kit is most unique for those applications that require the data and/or timestamping of data on the KAYPRO computer systems. The Legacy real-time clock allows for setting and/or getting the date and time to the second. A nicad battery is used for power backup (to insure failsafe operation) and is charged while you use your KAYPRO. The kit is installed by simply removing the Z80 PIO (parallel I/O chip), plugging in the real-time clock board and replacing the PIO chip back onto the Legacy piggy back board. Included in this kit are two different COM files (complete with commented ASM source files) to set or get the date and time as well as MBASIC and assembly routines so you can access the clock with your own software.

*118.

8088 16 BIT CO-PROCESSOR-

The co-processor uses the Intel 8088 micro-processor with up to 256K of RAM thereby allowing IBM compatibility to nearly any Z80 CP/M micro-computer system. The product gets its name from the co-processor relationship between the 8088 and the host computer. The processor communicates in an interrupt driven mode. This method does not take up much of either processors time in the back and forth communication cycle. The co-processor runs faster than the IBM-PC because its clock speed is faster (not being restricted by the PC bus transfer rate). The communication of the computers is done through a specialized port provided on a daughter board included with the kit. Power requirements are small at about 750 milliamps of + volts. The product is delivered with both MS-DOS and CP/M 86 operating systems, equipped with 128k RAM and is field upgradable to 256k as an optional feature. When the computer system is being used as an 8 bit Z80 based machine the memory of the 8088 co-processor board may be used as a semiconductor disk (RAM disk). Programs can be run, compiled and copied to or from the RAM disk using PIP.

*600.

EXTERNAL DRIVES C&D-This product allows the addition of two more drives to the KAYPRO computer system. These additional drives (designated C&D) must be of the same recording type and density as the existing drives (A&B). KAYPRO II computers require SSDD (single sided, double density) drives. KAYPRO 4 units use DSDD (double sided, double density). The Legacy KAYPLUS 400/800 upgrades allow 4 half height drives mounted internal to the chassis.

This kit consists of a single printed circuit board (drive multiplexer), BIOS EPROM, cables and illustrated instructions.

*118.

MULTI-FONTS VIDEO GRAPHICS BOARD-

The standard KAYPRO II/4 computer system does not have any graphic attributes. This field installable hardware peripheral utilizes the standard KII/4 CRT screen and is designed around the powerful NEC 7220 graphic display controller. The graphics option comes complete with firmware for drawing line vectors, arcs, circles, rectangles and point markers as well as downline loadable character sets. Other standard features include routines for filling rectangles with a pattern, blanking the display either dark or light and complementing all or portions of the display. The multi-fonts board also has panning (ability to pinpoint any section of the screen) and zooming (1 to 16 times the normal size).

*612.

DIAGNOSTIC DISKETTE-An array of programs to assist in the diagnosis of hardware related problems. Programs are provided for the complete testing of Memory, Serial port & related components, Parallel port output, Disk drive read operation. Additional programs are provided for assisting in the alignment of diskette drives as well as screen adjustment.

*41.

EXTERNAL VIDEO MONITOR ADAPTER-

Our video monitor adapter allows the attachment of from 1 to 16 external monitors (attached in series) to a KAYPRO computer system. The kits installation requires the insertion of a composite video jack through the cooling vents in the rear of the cabinet. The video adapter comes complete with a horizontal sync alignment potentiometer (in case the monitor does not have a horizontal adjustment mechanism).

*118.

EPROM UPGRADE-

Upgrades of both EPROMs (programmable read only memory.) as well as the Character generation PROM have been greatly enhanced. This upgrade removes most of the BIOS errors thereby reducing the possibilities of BDOS errors. The character generation ROM has a new character set with enhanced character definition.

*41.

MULTI-FONTS VIDEO GRAPHICS BOARD

This field installable hardware peripheral utilizes the standard KAYPRO CRT screen and is designed around the powerful NEC 7220 graphic display controller (Resolution of 512 x 256 bit mapped graphics). The graphics option comes complete with firmware for drawing line vectors, arcs, circles, rectangles and point markers as well as downline loadable character sets. Other standard features include routines for filling rectangles with a pattern, blanking the display either dark or light and complementing all or portions of the display. The multi-fonts board also has panning (ability to pinpoint any section of the screen) and zooming (1 to 16 times the normal size).

*612.

SURGE PROTECTORS

SS120/2 - Duplex receptical model with standard three prong plug. Simply plug this Panamax surge suppressor into a standard 120 volt wall outlet and plug the equipment you want protected into it.

*89.

SS120/4LCS - Four receptical model, with convenient, illuminated, master ON/OFF switch, and 6 ft. line cord with standard three prong plug. This model provides you with the opportunity to protect multiple, separate computers and peripherals, with just one unit.

*107.

SS120/16LCS - Six receptical model, with convenient, illuminated, master ON/OFF switch, and 6 ft. line cord with standard three prong plug. Simply plug this Panamax surge suppressor into a standard 120 volt outlet and plug the equipment to be protected into it. This model provides you with the opportunity to protect word processing centers and entire computer systems, all with just this one unit.

*119.

TALISMAN - is a terminal translation program that enables your computer to function the same as any terminal. Fundamentally, Talisman performs two different functions. First, it lets you re-map your keyboard into any configuration. Therefore, a single keystroke can produce the effect of several keystrokes pressed in sequence (from two keystrokes to 256). You can pre-program special keyboard overlays and save them on disk, using the keyboard overlay editor; or you can perform such programming "ON THE FLY" while you're actually running an application (word processor, spreadsheet, etc.) without disturbing the work in progress. Next, Talisman allows the screen mapping of virtually any terminal for emulation purposes. For example, you may wish to select one of the over 55 different terminals already pre-defined or you may wish to utilize the built-in terminal identifier to create your own terminal definitions. Emulation is still active during the MSDOS/CPM86 simulation modes if you have an 8088 installed in your system.

*125.

PRINTER BUFFER The Buffer is an internal auxiliary device designed to work with almost any KAYPRO Computer and Centronics-compatible parallel printer.

Most computers are able to send data to the printer at very high speeds—usually much faster than it can be printed. The Buffer receives print data sent at a high speed; holds it if necessary; then sends it to the printer at the printer's correct speed. Once a document to be printed has been sent to the Buffer, you and your computer are free to go back to work.

Besides saving valuable computer time, the Buffer has advanced features which allow you to continue sending new files to the Buffer while copies of another document are being printed.

The Buffer is easy to install, simple to operate, and offers a wide range of flexibility through the use of its advanced features.

*249.

The **PROGRAMMER/4+** is an affordable computer-controlled EPROM programmer easy for anyone to use. Using an ordinary modem cable, it plugs onto the RS-232 (serial) port of the Kaypro (or other CP/M systems).

Menu-driven software makes it simple to read and program EPROMs to and from memory or disk. An EPROM's contents can be saved to disk and that disk file modified for programming custom EPROMs. Data can be displayed on the screen in hex and ASCII. EPROMs may be tested for erasure.

A direct interface menu is included for more experienced users. Fully commented source code is also on the disk. The detailed owner's manual includes complete schematics.

The Programmer/4+ reads and programs the five most common types of EPROMs: 2716 (2K), 2732 (4K), 2732A, 2764 (8K), and 27128 (16K). **\$199.**

SCREEN SAVER-Many people leave their computers on all day or all night. Although your Kaypro will never get tired, displaying a page of text, spreadsheet, etc, for long periods of time it accelerates screen damage. The characters you see on the screen are formed by streams of electrons striking the phosphor coating on the inside of the picture tube, causing individual dots to glow. Bombarding the same dots for long periods of time will eventually wear out the phosphor at those points, giving you a burned-out striped-looking screen such as you might see on an old TV set. This easy to install (no soldering) upgrade automatically dims your Kaypro's screen after three minutes without keyboard input. Touching any key immediately restores the display. An adjustment on the screen saver allows you to choose the degree of dimness. **\$118.**

BUILT-IN 0-300/1200 BAUD MODEM-This kit provides modulator, demodulator, filters, phone line connection, and TTL level interface to the KAYPRO computer system. It measures 4" by 5" and is easily incorporated into the computer system by mounting beneath the main board. The modem connects directly to the power supply of the KAYPRO thereby eliminating the need for any external power source. The connection to the public telephone network is via a standard RJ11 phone jack. The LEGACY modem is Hayes smart-modem compatible (Bell 103/212A). Auto-dial, auto-answer with automatic line speed detection (0-300/1200 baud) are all standard features. **\$429.**

8 INCH DRIVE ADAPTOR-For those users who desire the ability of down-line loading software from a standard 8 inch IBM formatted diskette. This unit attaches to the drive multiplexer and enables the attachment of a single 8 inch floppy diskette drive to a KAYPRO II/4as drive C. Once enabled (software controlled) the user may PIP (or transfer using virtually any CP/M software) data between the 8 inch drive "C" and the normal 5 1/4 drives "A or B" **\$240.**

About Legacy's Upgrade Kits

The LEGACY upgrade kits are not really kits in the proper sense of the word, (you don't get a bag of chips & resistors with some hand scribbled notes on how to build the unit). All of these field installable products are fully tested, professionally manufactured, printed circuit modules designed with exacting precision in accordance with the computer manufacturers' specifications. None of the kits require any drilling or modification to the exterior of the computer, as each product is housed within the computer's cabinet. None of the kits (or any kits in the combination) require the replacement of the standard power supply. Each kit is provided with a complete structured set of illustrated instructions detailing every procedure to be performed.

| | KAYPRO II | KAYPRO 4 | KAYPRO 10 | 2/84 BOARD | 4/84 BOARD | 10/84 BOARD | ROBIE | Future Technology |
|--------------------------|-----------|----------|-----------|------------|------------|-------------|-------|-------------------|
| 400KB UPGRADE KIT | ● | ● | ● | | | | | |
| 800KB UPGRADE KIT | ● | ● | ● | ● | | | | |
| CPU HOP UP KIT (5MHZ) | ● | ● | | | | | | |
| CPU HOP UP KIT (8MHZ) | | | ● | ● | ● | ● | | |
| REAL-TIME CLOCK | ● | ● | ● | ● | | | | |
| MULTI-FONTS GRAPHICS | ● | ● | ● | ● | ● | ● | | |
| EXTERNAL VIDEO ADAPTOR | ● | ● | ● | ● | ● | ● | ● | |
| SCREEN SAVER | ● | ● | | | | | | |
| DRIVES C&D OPTION | ● | ● | | | | | | |
| 8088 CO-PROCESSOR | ● | ● | ● | ● | ● | ● | | |
| 1200 BAUD INTERNAL MODEM | ● | ● | ● | ● | ● | ● | ● | |
| EPROM PROGRAMMER | ● | ● | ● | ● | ● | ● | ● | |
| 8" DRIVE ADAPTOR | ● | ● | | | | | | |
| FANCY FONT TYPE SETTING | ● | ● | ● | ● | ● | ● | ● | |
| DIAGNOSTIC DISKETTE | ● | ● | ● | ● | ● | ● | | |
| EPROM UPGRADE KIT | ● | ● | | | | | | |
| PADDED CARRYING CASE | ● | ● | ● | ● | ● | ● | | |
| CANVAS DUST COVER | ● | ● | ● | ● | ● | ● | | |

FANCY FONT Say good-bye to "correspondence quality" and hello to *Fancy Font's* high-resolution, proportionally spaced, letter quality. The range of available fonts and the flexibility of modifying or creating new characters and fonts far exceeds that of the daisy wheel printers (no need to change daisy wheels or type balls!). All this on low cost printers such as Epson MX-80, RX-80 or FX-80.

Fancy Font extends the capability and usefulness of your dot matrix printer. You are no longer limited to a fixed set of characters. Instead you can use over 3000 characters in the *Fancy Font* package and furthermore, can create any characters you like. With *Fancy Font*, you can use your favorite editor or word processing package to create a file to be printed. Include as few or

as many formatting directives as you desire. Then use our printing program to print your file.

KAYPRO PADDED CARRYING CASE-This product is a fully padded carrying case and comes in two models (with or without a shoulder strap). Its construction is of high grade canvas (backpack type) material and has a zipper pocket for transporting paper, cable and manuals **\$55.**

LEGACY ORDER FORM

NAME _____
 ADDRESS _____
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 PHONE () _____

KAYPRO II KAYPRO 4 KAYPRO 10 2/84 BOARD
 4/84 BOARD 10/84 BOARD ROBIE

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California Residents Add Sales Tax
 Shipping and Handling Charge \$4.50

Signature _____

| QUANTITY | DESCRIPTION |
|----------|-------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

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 (408) 625-6562

DEALER INQUIRIES ARE INVITED

MILLIONAIRE

Practice getting rich (maybe) with this game.

by Terian Tyre

Underground caves aren't the only places where adventure can be found. Wall Street is a special challenge with its own mysteries to unravel, and the treasure to be won is spendable.

If you've ever contemplated a stab at the real-life adventure game of the stock market, **Millionaire** is for you. This unusual game recreates the financial jungle right before your eyes. Buy and sell shares of US Steel, IBM and others. If your timing is right, you'll make a financial killing. If not . . . well, at least it isn't real money.

Produced by Blue Chip Software, **Millionaire** is entertainment with a serious side. Much of its goal is to help players understand how the financial world of the stock market operates.

Describing it as a "simulation of the real economic world," Blue Chip makes the following boast. They claim using **Millionaire** can help you to make real money in the real world. They believe it sharpens your investment sense by compressing years of experience into hours of playing time.

At least one famous investment counselor agrees. Howard J. Ruff recommends the game to readers of his newsletter, *Financial Survival Report*, saying it "gives you a level of sophistication as an investor that would take you years and thousands of dollars in costly mistakes to develop."

The arena

In **Millionaire** there are only fifteen stocks in which to invest. These are categorized into five Industry Groups—Computers, Retail, Auto, Oil & Gas, and Heavy Industry. Each group contains three companies. All the companies have familiar names and were chosen because they exhibit typical market behavior.

Carefully researched, the game is based on historical financial trends. This means the numbers and variables you work with are real, not randomly generated.

The designers of **Millionaire** studied the relationship of earnings, number of shares traded, news announcements, and market trends to specific stocks. They concluded that three variables work together equally, more or less, to affect the market. Your goal is to predict how much more (or less) and trade accordingly.

The first variable is the movement of the overall stock market, whether it's on the increase or declining. The second factor is the status of the particular Industry Group, and the third is the price history of the individual stock.

Getting started

Each round of play (or turn) consumes a "week" in game time. One turn can be a few seconds or as long as 15 minutes, depending on how much research the player does. A full game totals 91 weeks and lasts at least two hours.

When the game starts, the first 13 weeks of market activity are displayed. You jump in at week #14 with \$10,000 and 77 weeks





to play. Graphs are used to represent stock and market fluctuations making it much easier to see patterns or trends.

The object is, of course, to parlay your seed money into one million dollars

The documentation is well done and that's a good thing, given the complexity of the game. Before describing exactly how to play, it provides an overview of the stock market. This covers the factors which influence the market, what the different transactions are (buy, sell, call, put) plus some hints on how to trade and what to look for. It then thoroughly explains the game screens and playing rules. The manual includes an index, two pages for notes, and a tear-out reference card.

Playing a round

Each turn, the week's activity is revealed in four parts. First, a graph of the overall stock market is shown, with the current week as the latest entry. Pressing the Return

key brings up subsequent screens of information, including graphs for one Industry Group and one Company. (Note the direction—is the curve on the upswing or going down?)

Next a *Financial Journal* (the game's equivalent to the *Wall Street Journal*) displays the week's business news. This is followed by the details of all stock movements summed up in a table. This screen lists the companies, the high/low value of their stock, their current value, and how much they've changed from the preceding week.

The last screen displays the Command Mode, your menu of action selections. This is when you get to wheel and deal. You can review any item for the week from this list of commands, as well as Company or Group charts. If you forget which stocks you own, you can look in your portfolio, which continually updates your financial records. Of most interest, however, are the transactions which are conducted from this menu. All trading occurs here.

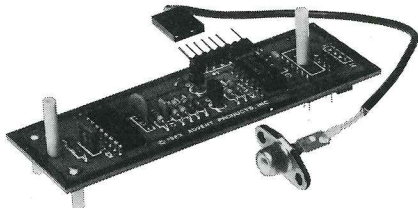
The point is to analyze the market situation and decide which stocks will rise and which will fall. You do as much research as you need, then buy, sell or simply hold your investments. Typing WEEK will advance the game to the next turn, where you see the results of your strategy.

Printer assistance

If this sounds complicated, that's because it is. Part of the adventure is sifting through all the information. In search of help, I turned to my trusty printer. I wanted hard copy of the different screens of data to peruse later for strategic analysis. No such luck. This prompted a call to Blue Chip, where a gentleman told me that print capabilities were not originally designed into the game. It has been requested, however, and future versions may provide that feature.

(continued on page 51)

MAXIMIZE YOUR KAYPRO®-FORMANCE



EXTERNAL MONITOR ADAPTOR Kaypro 2 & 4

The External Monitor Adaptor (EMA) provides the ability for the Kaypro 2 or 4 to drive an external video monitor or projection TV. Simple plug-in installation requires no soldering or wiring. Complete illustrated instructions are included. **EMA for Kaypro 2 & 4..... \$69.95**

EXTERNAL MONITOR & ADAPTOR Kaypro 2'84, 4'84, 10, & Robie

The Kaypro 2'84, 4'84, 10 and Robie produce video which is not compatible with standard composite video monitors. However, with our External Monitor Adaptor (EMA) and specially modified monitor, you can still enjoy all the benefits of a larger CRT.

Monitor: This specially modified monitor is a 12" Comrex CR-5600. It features a high resolution 80 character by 25 line display. Available in either GREEN or AMBER. Please specify color when ordering.

EMA: Like the EMA for the Kaypro 2 & 4, this EMA features simple plug-in installation. No soldering is required. Complete illustrated instructions are included. Please specify Kaypro model when ordering.

EMA Kaypro 2'84, 4'84 & Robie... \$ 99.95
EMA Kaypro 10..... \$109.95
Monitor, Green or Amber..... \$159.95



12ft KEYBOARD CABLE for all Kaypro Computers

This 12ft Keyboard Cable is manufactured to replace the original 6ft cable. Not just a telephone cord, it is designed to meet the exact requirements of the Kaypro. Guaranteed to work.

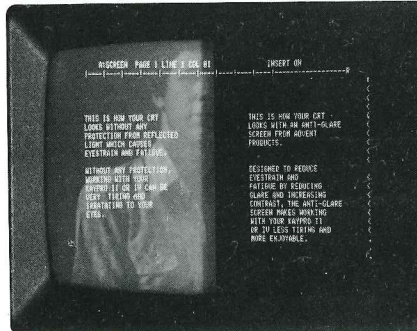
12ft Keyboard Cable..... \$12.95

UNIFORM for all models except the Robie

Allows your Kaypro to read and write up to 55 different computer formats (depending on Kaypro model) including CP/M-80, CP/M-86, MS-DOS, PC-DOS, CDOS, LDOS, and TRSDOS. Please specify Kaypro model when ordering.

Uniform..... \$69.95

Kaypro is a registered trademark of Kaypro Corporation. MS-DOS is a registered trademark of MicroSoft. PC-DOS is a registered trademark of IBM Corp. TRSDOS is a registered trademark of Tandy Corp. CP/M is a registered trademark of Digital Research.



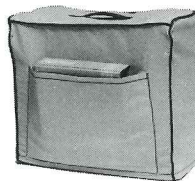
Unretouched photo.

ANTI-GLARE SCREEN for all Kaypro Computers

Reduces eyestrain by increasing contrast and reducing glare. It makes working with your Kaypro less tiring and more enjoyable. Contoured to fit exactly, it offers an undistorted view of the entire CRT. Attaches directly to the CRT and requires no disassembly. Please specify SMOKE or GREEN when ordering.

Anti-Glare Screen..... \$24.95

KAYPRO COVERS for all models except the Robie



Beautiful yet rugged, these covers help protect your investment. They are made from durable weather resistant Sunbrella. Includes two pockets for carrying your manuals, diskettes, etc. Please specify Black or Navy when ordering.

Kaypro Cover..... \$34.95

PRINTER CABLES

These high quality RS-232 and Centronics cables are designed to work with your particular printer and the Kaypro computer. No additional jumpers or other modifications are required. Simply plug it in and start printing. Available in two lengths for your added convenience. Each cable is fully tested and guaranteed. Available for all Kaypro computers. Please specify make and model of printer when ordering.

Available for:

| | |
|-------------|-----------|
| Gemini | Comrex |
| Epson | Panasonic |
| Brother | Okidata |
| Silver Reed | Prowriter |

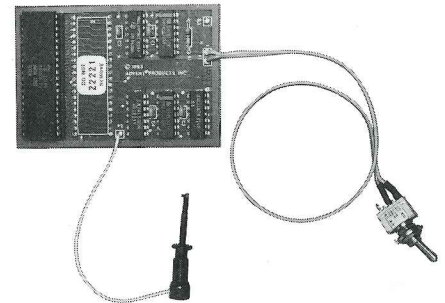
| | |
|----------------------------|---------------------|
| RS-232 Serial | |
| 6ft-\$17.95 | 12ft-\$22.95 |
| Centronics Parallel | |
| 6ft-\$24.95 | 10ft-\$28.95 |



UNIVERSAL MODEM CABLES

These high quality RS-232 cables are configured for most modems used with the Kaypro computer.

2ft - \$19.95 **4ft - \$22.95**



5 MHz TURBOBOARD for the Kaypro 2 & 4

The TurboBoard allows your Kaypro 2 or 4 to compute at twice the standard speed. Word processors, spreadsheet programs, etc. will run much faster. The speed (2.5MHz or 5MHz) is switch selectable and can be changed at any time without affecting the operation of the computer. Installation requires only minimal technical ability and no soldering is required. Complete illustrated instructions are included.

TurboBoard..... \$99.95

PRINTER CARRYING CASES



Make your printer as portable as your computer. Each case has an inside and outside pocket to carry paper and other accessories. Carrying straps loop under the printer providing full support. Makes carrying your printer both easier and safer. Made from durable Sunbrella. Available in Black or Navy. Please specify printer make and model and color desired when ordering. Available for:

| | |
|---------------------|-----------------|
| Silver Reed 550 | Comrex CR15 |
| Okidata 92 & 93 | Prowriter 8510A |
| Epson FX-80, MX-80, | Brother HR15 |
| RX-80, RX-100, | |
| MX-100 | |

Printer Carrying Case..... \$42.95

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Climbing the ladder

As you make money, more choices are available. A net worth of \$12,000 earns Investor status, enabling you to buy stocks on margin. At higher levels (\$18,000 and \$40,000) you can purchase call and put options. This is pure speculation, betting that a stock will move up or down rapidly and dramatically.

Once a higher net worth is achieved, that status can be saved. Future games can be started from this level or an incomplete session continued. When you finally do become a millionaire, the game rewards you with a bankroll of \$50,000 and starts you all over again. Up to fourteen names with different status levels can be stored in the game's memory, but only one person can play at a time.

No piece of cake

This is not a game for those easily discouraged. I found it extremely difficult to make money, even when the overall stock market rose. Trying to second-guess the "free" market is dicey business.

The problem in forecasting is largely due to a sound game structure, which increases complexity parallel to experience. A built-in program generator can create over 300,000 fresh scenarios, promising continuing challenge. It's enough to overwhelm any stock watcher.

There are patterns to be found in stock movement. A dip in the overall market, for example, usually precedes a rise in Oil & Gas. Predictions are easy; accurate predictions are another matter.

Many clues to the market's trends are in the *Financial Journal*; the trick lies in seeing which items are important. Some indicators, like earnings reports, are noted for being unreliable. Others, such as changes in the GNP, have better track records.

Like interactive-fiction games, players must learn how this environment reacts to certain stimuli. For example, the news that Sears has closed 10 stores results in their stock *rising* (due to anticipated reductions in overhead.) Understanding cause and effect is the key to success—and necessary for a real stock market gamble.

Game strategy

During a dozen sessions, I learned something about the stock market and much more about how to lose money. Only in the last game did I achieve Investor status.

I've since concluded that waiting may be a fine strategy for the real market, but in this game the only way to get ahead is to buy and sell madly.

Indiscriminate trading won't insure success either. Both your timing and stock selection must be on target to take advantage of market fluctuations. This is especially true at the higher levels.

Educated opinion

The big question still remains unanswered: Is Millionaire a game "that will pay you to own it" as its brochure proclaims? Perhaps in the long run, it will. Beware the danger, however, of believing advertising copy. The documentation firmly states there are clear differences between the game and the actual stock market. It recommends Dun & Bradstreet's book *Your Investments* as a reference explaining said differences to those wishing to have a go at the real thing.

Having little stock experience myself, I called on the expertise of a friend who's a broker. He played the game for a few hours, muttering comments as he went along. Overall, he judged the market activity as fairly true to life, i.e., merciless. He advised watching trends closely and a quick turnover for most stocks. He also mentioned that *churning* an account, (making lots of transactions) is how brokers usually make their profit.

He pointed out that it's hardest to make money in the very beginning because you don't really have enough cash with which to speculate. At the higher levels, the action and reward or punishment is much more dramatic. After all, it takes money to make money.

As to whether the game would help people to profit in the real world, he wouldn't say. He did say it's an excellent teacher about debts: Millionaire's tax rate of 30%, interest rates of 18%, and brokerage fees all take realistic bites out of your net worth.

Conclusions

Millionaire works as both education and fun. It's easy to play, yet challenging enough to remain stimulating. The serious side of the game promises sharpened investment skills; the fun side appeals to the high-stakes gambler lurking within us all.

The lessons of Wall Street are many, and not all of them are pleasant. If you learn only one thing from playing Millionaire, you will have gained something. The first lesson: the only sure way to make money in the stock market is to be the broker. □

Blue Chip Software
6744 Eaton Ave.
Canoga Park, CA 91303
(213) 346-0730
Individual game price: \$59.95

Fit to Print

Typesetting with your Kaypro.

by Gordon Lewis

There's no substitute for the beauty, variety, and versatility of typesetting. The typed copy from your printer is fine for everyday writing. But when printing newsletters, magazines, books, and the like, typeset words add special meaning and vitality. There are hundreds of typefaces in existence, which can communicate impressions ranging from dignity to absurdity.

Until recently, typesetting has been a relatively expensive and time-consuming process. Most of the cost is due to the time it takes a skilled typesetting machine operator to manually enter your text from your typewritten copy into a computer, and add the necessary codes. Retyping your text in this way introduces the distinct possibility that the operator (being human) will make a few errors. Even if you find them, there's no guarantee that the operator won't make a few new mistakes when he corrects the original ones. You lose both the time it took you to check over your copy before sending it to the typesetter, and the time it took to proofread the finished typeset copy (galley). Not to mention the cost of the typesetting itself.

Modern typesetting machines are really no more than highly sophisticated word processing programs working with microcomputers, which are connected to photographic printout devices. Therefore, the most logical approach (excuse the pun) would be to transfer text directly from your computer to the typesetting machine. This would eliminate having your text manually entered into the typesetting machine. Your expense would then be reduced to that of having the operator add the necessary formatting codes and produce the galleys.

This process is also beneficial to the typesetting shop. After all, experienced operators are expensive and hard to find. The less time they spend on the relatively simple task of data entry, the more

jobs they can handle. In practice, electronically transferring your text will save you 30-50% of the cost of the previous method. Time savings are even greater. It's not unusual for turnaround time to be reduced 50%. Since manually entering and typesetting ten pages of double-spaced text costs in the neighborhood of \$300 and it can take two days before the finished product is in your hands, the potential savings are significant.

A choice of methods

There are two basic approaches to transferring text from your Kaypro to the typesetter: diskette or modem. The former is theoretically the fastest, least expensive, and most reliable method, particularly if you don't own a modem or have to transfer large quantities of type. You simply send your disk to the typesetter along with a printout marked with your type specifications. The typesetter uses a specially programmed machine that reads the text on your disk and reformats it onto a computer typesetting machine disk. He can then insert this disk into his typesetting machine, bring the text up on his video terminal, and add type formatting codes to your specifications.

Some typesetting machines read ASCII (American Standard Code for Information Interchange, the standard digital code used for characters, numbers, and control functions). If so, the typesetter has the option of connecting a cable from the RS-232C serial port on a Kaypro to the serial port on his machine. With the proper communications programs, he can then use the Kaypro to download text to his machine.

Another benefit of using diskettes is that you don't have to buy a modem and the necessary communications software, or spend hours learning how to use them. If you do a lot of typesetting, you'll save on phone transmission time too.

Unfortunately, few typesetters are willing or able to invest in media transfer equipment. Such machines cost at least \$15,000 and translation software generally costs \$100 per format. They will buy a machine for disk translation only if there's a sufficient volume of business to justify the expense. *(You may be able to find a typesetter who has a Kaypro or a computer that can read Kaypro disks, especially since there are programs like Uniform that allow machines to read other formats.—SH)*

A less expensive alternative for the typesetter is downloading text from your computer to his equipment via modem. The advantage for the typesetter is that telecommunications equipment generally costs less than a media transfer unit and he doesn't have to worry about reading your disk's particular format. His communications and translation unit simply takes the incoming text as it's sent from your modem and translates it into the code used by his typesetting machine.

Transmission errors

In practice, you first notify your typesetter that you plan to send text. He then sets his modem for auto-answer and instructs his communications software to open a capture buffer for the incoming text. Once he's ready, you command your software to read the proper file.

Some communications programs give you a choice of checking text as it goes down character-by-character or line-by-line. If you're sending text at 300 bps (bits-per-second), the slow transmission speed itself reduces the chance of error. I'd recommend using character-by-character error checking only if you have problems with line-by-line.

Moving up to 1200 bps will increase transmission speed 400%, but there's some disagreement over whether or not this increases the possibility of errors, particularly if the transmission happens over a bad line or long distance. If you don't do a great deal of typesetting or you'd like to try the technology at a low initial expense, a 300-bps modem is perfectly adequate. High speed 1200-bps modems are better if you have to send a lot of text, regardless of the theoretically higher possibility of errors. The fact is that transmission errors are rare. Even if you do find errors, the cost of having them corrected is minor compared to the inconvenience of having your computer and telephone tied-up during a long transmission.

How to find a typesetter

First, talk to your current typesetter to see if he's

willing to work with copy sent by modem or on diskette. If not, the yellow pages should have listings of typesetters who might be interested. Look for the words "telecommunications" or "computer typesetting" in their advertisements. Also, check with the people who do your printing; they often know a lot about different typesetters.

A short course in typesetting

Typewriting is a simplified form of typesetting. In typewriting, there are a limited number of typestyles and only two popular sizes (pica, at 10 characters per inch, and elite, at 12). Each letter takes up the same amount of space on each line, and there are only three basic line spacings (1, 1-1/2, 2). Typewriters and computer printers have only recently added proportional letter spacing. Dot matrix printers can simulate italic, extra small print, etc., but their quality is still a pale imitation of the real thing.

By contrast, typesetters have hundreds of typefaces from which to choose in a wide selection of sizes. These range in weight (density of print) from light to extra bold. The measurements they use for line and letter-spacing are calibrated in units 1/72" and smaller. The text can be formatted flush left, flush right, fully justified, or centered. Typesetters can even format your copy into shapes such as circles and triangles.

What this means is that your typesetter needs explicit instructions on how your raw text should be typeset once it has been transferred to his machine. If you don't know much about specifying type, you can give your typesetter a printed sample to go by. If you don't have a sample, or the formatting is tricky, he'll need more specific instructions.

Most typesetters are willing to "spec" the type for you if you can give them a clear idea of what you want. If you're familiar with specifying type, you can write the specs on your printout. Or you can entirely eliminate the need for a printout by embedding typesetting codes in your text. The actual codes can be anything you and your typesetter agree on. The typesetter can also use the print formatting codes used by your word processor, as long as he knows what their ASCII equivalents are and what they mean.

Once the codes are embedded, all the typesetter has to do is translate the codes at his end. His machine will then automatically execute the agreed-upon commands. This method nets the greatest savings, since the typesetter's labor is minimal.

(continued on page 54)

A warning

Because telecommunicating is new to most typesetters and clients, the procedure is not without its problems. For example, though entering codes in the copy yourself gives you direct control over how your type will be set, you also bear the responsibility of coding it correctly. Just as with your word processor, if you give a command to begin italics you must also have a command to end italics, otherwise all your text will be italicized from that point on. It pays to proofread your text *very* carefully before having it typeset.

*The machine doesn't think,
it only follows directions.*

Also, you have to be careful about sending special characters and control codes. The typesetting machine may not be able to translate them. The machine doesn't think, it only follows directions. The directions must be totally logical and consistent or the machine will not perform to expectations.

Most potential snags can be smoothed out by talking thoroughly with the typesetter ahead of time. Be specific about your needs to him, especially if you want to do a variety of special tasks. If you can, keep it simple. You'll have less trouble that way.

Post script

Writing, editing, and typesetting are faster, easier, more powerful and less expensive than ever before, yet the technological revolution in print communications is far from over. Where is it going? Given the increasing sophistication of home and office printers (laser printers in particular), it won't be long before you'll be able to produce professional-looking typeset copy in your home or office. But until then, your Kaypro can do an admirable job of bringing computerized typesetting well within your budget and capabilities. □

The actual parameters for type specification are straightforward and logical. Your typesetter will need the following basic information:

Font—Font is typesetting jargon for a family of type, such as Helvetica, Garamond, Souvenir, etc. If all the text is to be the same font you won't need a code. If the font changes, you need a code to signal the change and when to shift back to the previous

font.

Weight—Type fonts come in weights of light, regular, medium, demibold, bold, and extra bold. Not all fonts are available in all six weights.

Form—The basic forms are italic, condensed, and extended forms. As with type weights, not all fonts are available in all three forms, and not all forms are available in all weights. This is why a type specimen book from your typesetter comes in handy.

Type size—Type size is measured in *points*. There are 72 points per inch. Most type used in body copy is between eight and ten points. Note that with text type (as opposed to *headline* type, which uses the largest capital letter) the point size is not specified as the actual height of an individual character. It represents the distance from the top of the highest "ascender" (a "t" for example) to the bottom of the lowest "descender" (such as a "y").

Leading—Pronounced "led," as in the metal. This term is derived from the time when printers and typesetters used strips of lead to add extra spacing between lines of type. These strips were gauged in specific point thicknesses. For example, ten-point type separated by an extra two points of lead would have an actual line spacing of twelve points from base-to-base of each line. In typesetting terminology this is called "ten on twelve" and is written as the fraction "10/12."

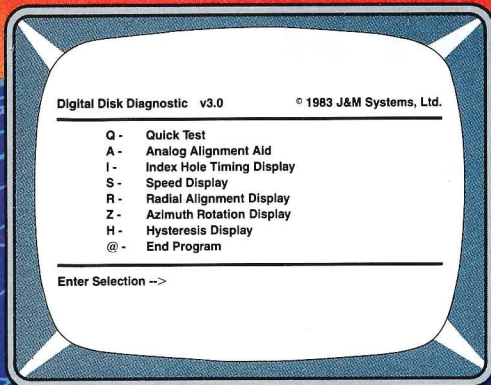
Leading is usually essential to prevent the type from appearing too dense and cramped. Unleaded type is also very difficult to paste up since there's barely enough space for separating one line of type from another. If you're not sure about the proper leading, ask your typesetter for advice.

Line width—How wide is each typeset line going to be? You can specify line width in inches, but for more precise measurement, typesetters prefer picas. There are six picas per inch and 12 points per pica.

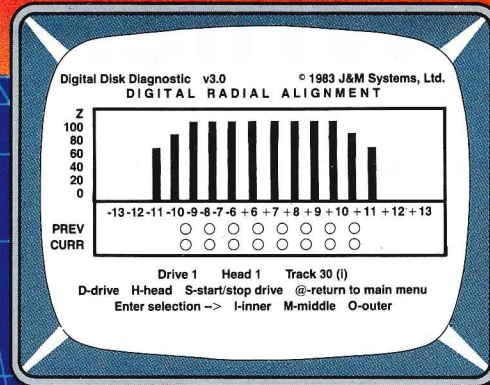
Formatting—Just as with the word processor you use, you must tell the typesetter how you want the text formatted. It can be flush left, flush right, centered, or fully justified (like the columns in this magazine). The typesetter also needs to know whether or not you want words hyphenated. (By the way, when sending text, you must remove all unnecessary hyphens, since syllable breaks won't fall in the same place when the text is typeset.)

DISK DRIVE ANALYSIS PROGRAM

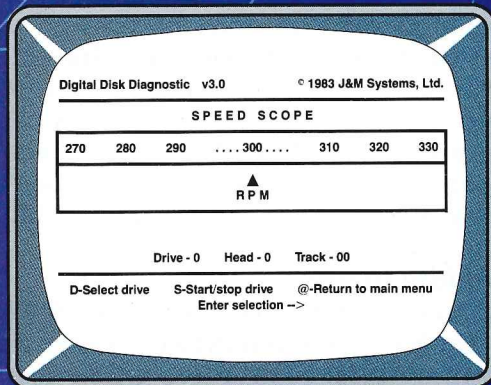
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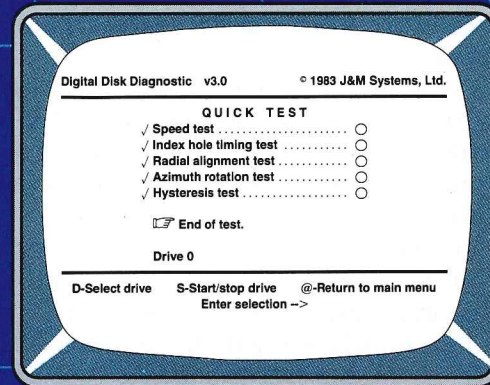
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Printing With Perfect Writer—Part II

The series on mastering printer configuration concludes.

by Kristin A. Farry

Part I of this series focused on the basics of customizing Perfect Writer to your printer. Hopefully, you have gained some fluency with PFCONFIG and your printer and are now producing satisfactory fixed-pitch documents. If so, you are ready to try some fancier printer configuration options.

In this article, I'll explain how Perfect Writer's most ingenious printer-adapter tools—the character width and translation tables—can be used to polish your documents and make your word processing life easier.

As before, keep in mind that there are dozens of printers on the market and it's impossible to discuss their individual idiosyncracies in a single article. The emphasis will be on extracting a method from the apparent madness, not on cookbook how-tos. Some experimentation on your part may be necessary to get the tricks discussed in the article to work on your particular printer.

Printer manuals revisited

First, find your old friend, the printer manual. Using either character width or translation tables requires some knowledge of your printer's character set and the numbers that address it (usually ASCII).

Perfect Writer uses ASCII for all of its internal work; while nearly all printers use ASCII, some have small variations in the definition of less commonly used (non-alphanumeric) characters. Your printer's character set will be tabulated along with the codes that activate each character. For work with the character width and translation tables, you'll be primarily concerned with the "printing" (as opposed to "control") character set, those with ASCII codes from 32 (space) to 126 (~).

Unfortunately, nearly all printer manuals list character codes in hexadecimal (base 16) form,

instead of the decimal form used in Perfect Writer's tables. You might want to take a few minutes to write the appropriate decimal codes into your printer manual beside their hexadecimal counterparts before you take on Perfect Writer's width and translation tables. You don't have to be a math wizard to make the conversion; just find the space character (20 hexadecimal) and label it as 32, and count up consecutively from there: ! is 33, 0 is 48, A is 65, and so on. PFCONFIG echoes each character that you call up by its ASCII number, so you won't have much trouble keeping it straight.

Using width tables

The character width tables were designed to supply Perfect Formatter and Perfect Printer with the size of individual characters when driving a printer that has a proportional wheel or font. In the proportional mode, the width of each character (and the associated printer head movement) is determined by aesthetics only. The resulting printout looks typeset, with no fixed number of characters per inch. The price of this is an increased workload in positioning line breaks, right-justifying lines, and underlining text. As each character is processed, its width is read from the specified character width table and added to the line length total . . . quite a bit more involved than the "count the characters and multiply by the standard character width procedure" used for fixed width pitches!

A character width table is brought into your printer definition by a yes answer to question 7, as in the sample definition shown in Figure 1. The CP/M version of Perfect Writer comes with 4 width tables (numbered 0, 1, 2, and 3); you must specify which one Perfect Formatter and Perfect Printer should use in item 8 of the printer definition.

Any of these width tables may be modified to suit your printer with the "Edit character width

tables" option on PFCONFIG's Master Menu (Option 4). Before you start editing your width tables, take a few minutes to read the information on the width tables in your Perfect Writer user's manual Installation Appendix (page A-33 in early Perfect Writer manuals and pages 313-314 in newer versions). Tables 1, 2, and 3 are set up for some of the predefined "proportional spacing" printer installations provided with Perfect Writer: DiabloPS, SpinPS, and CentPS. You may already be using one of these definitions and the corresponding width table for proportional spacing work.

Well, you may be saying, that's fine for those who dumped big bucks on those fancy proportional spacing printers, but my bargain printer is fixed pitch only. Don't turn the page yet—you might find a width table useful in fixed pitch fonts. Those of you who have carefully studied the Installation Appendix of the Perfect Writer user's manual already know that a width table can be used to set the spacing between sentences. Consider this: if Perfect Formatter and Perfect Printer are told that a width table is a necessary part of a particular printer definition, they add up width data from the designated table to compute the length of a string of characters instead of just counting up the number of characters and multiplying by a fixed number of micras (the standard character width set in item 3 of the definition) as they do when no width table is specified. You can create a width table in which every character's width is 212 micras and then run your printer in elite mode (12 characters per inch); the result will be the same as if you had configured it to run in elite mode with a standard character width of 212 micras and no width table.

The width table edit instructions that appear when you run PFCONFIG tell you that the normal character range is 32 to 126 (ASCII). This range covers all printable characters. However, Perfect Writer has an additional entry in the width tables for a non-printing character, ASCII 127 (the "delete" character). Perfect Writer uses the width specified for this character as the spacing between sentences.

To take advantage of this in a fixed pitch font, set characters 32 through 126 (the printable character set) equal to your basic pitch width (the standard character width) and set character 127 equal to twice this width. The result will be a minimum of two spaces between sentences, with only a few exceptions—the Perfect Formatter routine that locates sentence endings is not 100% accurate. Instead of assuming that every period marks a sentence ending, it looks for standard combina-

tions of a lower case word and various punctuation marks. Hence, the single-spacing of a mid-sentence abbreviation is preserved, but sentences ending with, say, a zip code, capitalized proper name, or hyphenated expression will also be single-spaced. If this occurs, you can use @W() to separate the odd sentence from the following one. Or, consider using a translation table as described later in this article to get around this glitch.

Homemade definitions

If you have a printer with a proportional wheel or font that is not compatible with any of Perfect Writer's predefined proportional printers, you might want to try developing a proportional spacing definition of your own. Note that such an undertaking is only for those with a lot of patience, as it may not be completely successful.

Unfortunately, Perfect Software did not give you direct access to Perfect Writer's "micro-spacing" capability. The only control you have over the microspacing feature is in item 11 of the printer definition, the so-called "special printer code," which turns on microspacing procedures integrated into the software for certain printers (Epson, Centronics, Diablo, etc.). This is an unfortunate departure from the general philosophy of PFCONFIG.

If you don't have one of the printers listed or a compatible, you will have to work out the propor-

Sometimes it pays to match the printer to the software.

tional spacing without microspacing, under special printer code 1. Whether you can get adequate right justification with this code depends on the width of your printer's space character in its proportional mode—the smaller the space, the better the performance will be. Reasonable results can be obtained for printers with space characters as wide as 112 micras, but you may be wasting your time on proportional modes with printers that have larger space characters. (Before you give up, check the printer manual carefully to see if you can redefine the space size with an escape sequence or control character string. If so, set it to be as small as possible within the printer initialization string.)

Once you have decided to go ahead with this project, you must find or figure the widths of each individual character in your printer's proportional

(continued on page 58)

character set. If you have a letter quality printer, chances are that the Diablo table (Table 2) will be very close. Dot-matrix folks will have to scrounge a bit. Naturally, such information is not in the printer manual. Your manual *will* tell you how many dots are printed per inch in the proportional spacing mode; from this, you can compute the width of each dot in micras.

You can always get a magnifying glass and count the number of dots across each character. Before you resort to this kind of tedium, however, consider calling the printer's manufacturer for a list of character widths. You might also compare your printer's proportional character set with that of a friend's Centronics 737, since width table 3 contains the widths for that printer.

Once you have a reasonable set of character widths, type them into an otherwise unused width table. Set the delete character (ASCII 127) width to a multiple of the space width. Next, go back to the printer definition and enter the width table number in item 8. Add the escape sequence or control characters necessary to turn the printer's proportional mode on to item 18 (the printer initialization string). Then, set item 5 (smallest horizontal movement) equal to the width of the space character, even if the printer has narrower characters in this mode. Set item 3 (Standard character width) to a multiple of the space width. Remember that Perfect Writer uses this figure to negotiate all distances specified in characters such as indentations and margins. Consequently, you must go back to PFCONFIG's master menu and use option 3 (Select Perfect Writer default style parameters) to change the paragraph indentation distance and side margins to a multiple of the standard character width. Perfect Writer covers these distances with strings of spaces if it doesn't have microspacing information on a printer. The software doesn't care how many spaces are needed to travel these distances, as long as it doesn't end up with a fraction of a space left over anywhere (an occurrence that is guaranteed to ruin your right justification).

With these guidelines and an accurate character width table, you will get decent right justification. Even if you can't get the right edge perfectly straight, you haven't wasted your time—you can always use this definition for great-looking unjustified documents.

Unfortunately, on models with large space characters, Perfect Formatter and Perfect Printer will have trouble positioning "second pass" text such as underlines and sub- and super-scripts exactly. This is a physical limitation of the printer, not the fault of the software. Calling Perfect Software or

Kaypro and screaming at them will not change your printer. You will have to weigh your personal word processing priorities—you may decide you don't need underlining while in proportional mode, for instance.

If you can't live without all of Perfect Writer's features in the proportional spacing mode, then call Perfect Software and ask them which printer they recommend as a replacement for the one you have. Sometimes it pays to match the printer to the software. Given the number of different printer standards and peculiar fonts, no one software company is going to cover them all perfectly, regardless of their name.

A matter of translation

Perfect Software provided character translation tables to accommodate non-standard printer wheels or character sets. Your user's manual description of these tables (in the Installation Appendix) cites the proportional spacing wheel on the NEC Spinwriter as the only specific example.

A translation table is also necessary for any printer that does not use ASCII codes. ASCII has not always been accepted as the information interchange standard, and some older printers might operate on some other dramatically different character code set. If your printer is one of these, you know about it already—you couldn't print anything intelligible without a translation table.

Fortunately, the vast majority of printers use the standard ASCII character sets and wheels, so most Perfect Writer users won't find these translation tables an absolute necessity. Still, you might find these tables extremely valuable in ironing out small inconsistencies between your keyboard and printer character sets—some ASCII standard characters are less standard than others. Another use of translation tables is fooling Perfect Writer.

First, a little background. The translation table you add to a printer definition is used only by Perfect Printer (not Perfect Formatter) and then only in the final stage of sending characters to the printer. Perfect Printer simply substitutes the appropriate translation table entry for the character you typed into the .MSS file and outputs it to the printer without even looking at the substitution.

If you are using a proportional printer definition, the character width assumed by both Perfect Formatter and Perfect Printer is that of the pre-substitution character. Therefore, you must change the width of the pre-substitution character to that of the substituted character in order to preserve your right justification.

(continued on page 60)

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A yes to item 16 of your printer definition (see Figure 1 again) adds a translation table to your printer definition. Two translation tables are provided in the CP/M version of Perfect Writer; these are numbered 0 and 1. You must specify which one you want to use in item 17. Consult your manual—early versions of Perfect Writer come with both of these tables set up for use with predefined printers. Later versions have left table 0 with all standard characters translated into themselves, so you can tinker with only one or two characters without having to redefine the entire set.

These tables are listed and changed using Option 5 of the PFCONFIG master menu—"Edit character translation tables." Unless you are already using the SpinPS definition to drive your printer, you should work from Table 0, changing only a few characters at a time. Before you change anything, however, you should print the table so you can go back to the original if you need to.

Uses and abuses of translation tables

There are often variations on some obscure characters between your keyboard character set and your printer's character set. In fact, there is no guarantee of standardization between daisy wheels made

for the same printer. Some daisy wheels, for example have European money signs or legal symbols replacing the braces ({ and }) in the regular ASCII set. If you use the braces in your documents, you might want to make Perfect Printer translate them into square brackets or regular parenthesis in the definition for that particular daisy wheel. Such a translation can save you a reprint someday.

If you want to use the character @ in your finished documents, you must use something like @W(@) to get the @ through Perfect Formatter. An easier way to get @ into a printed document, if you use the character often, is to have Perfect Printer translate some unused keyboard character such as | into @. Then type | into the .MSS file everywhere you need @.

You might also find that translating an unused keyboard character into a space is handy for controlling the spacing between sentences where Perfect Writer's sentence end detection routine fails as discussed earlier. For example, if / is translated into a space, then " / " typed after those sentences that Perfect Writer misses will guarantee proper separation.

Recently, I got a call from a user who was working on his dissertation. It seems that at least one distinguished university does not like the line of dashes that Perfect Writer uses to separate footnotes from text; the line used for this purpose must be solid. (No kidding.) The solution? Use a translation table to convert the dash (ASCII 45) to an underline (ASCII 95). Of course, you will also have to translate some other generally unused character (such as ~) to a dash and use that in the .MSS file whenever you need a dash or hyphen. You will also have to redefine the pagefooting, since the default uses dashes which, of course, print out as underlines. Try:

```
@PAGEFOOTING[center="@REF(page)"]
```

Hopefully, your university is not so picky; however, this demonstrates how a translation table can save the day.

Just the first step

These tips are intended as a starter kit, not an exhaustive listing of the possibilities. Work your way through these and you'll be well on the way to becoming a bona-fide Perfect Writer hacker, limited only by your imagination. □

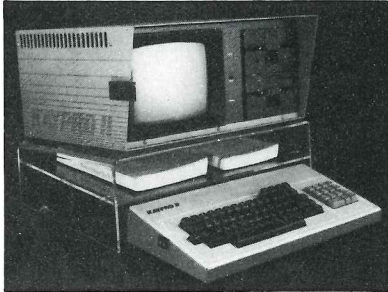
```
Name of printer to be edited: DiabloPS

1 - Paper Width: 21590
2 - Paper Height: 27940 micas
3 - Standard character width: 212 micas
4 - Height of a single-spaced line: 423 micas
5 - Smallest horizontal movement: 21 micas
6 - Smallest vertical movement: 53 micas
7 - Proportionally spaced font/printwheel? Yes
8 - Number of width table to use: 2
9 - Generate online-readable output? No
10 - Initial paper offset: 0 micas
11 - Special printer code: 2
12 - Use Control-H for backspace? Yes
13 - Use Carriage Return (Control-M) for bare carriage return? Yes
14 - Use Form Feed (Control-L) for form feed? Yes
15 - Type of synchronization protocol: 1
16 - Translate characters on output? Yes
17 - Translation table to use: 0
18 - Initialization string:
19 - Reset string:
20 - New line string: ^M^J
21 - Boldface on string: ^[B
22 - Boldface off string: ^[P
23 - Italics on string:

Field number to edit (or Control-G):
```

Figure 1. A typical printer definition.

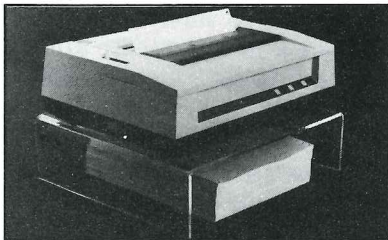
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Add External Video to your Kaypro.

Improve your picture with a homemade adaptor.

by Jim Nickerson, Kurt Bilinski and friends

Not all Kaypros were created equal, and nowhere is this more visible than in the video display. The newer Kaypro 2s and 4s have the same semi-graphics display abilities as the Kaypro 10. Unfortunately, for some owners this additional graphics capability has created difficulties in using an external video display with their computers—many video adapters can only handle the video signals from the older models.

The construction project detailed below is one solution. This video adapter allows owners of the newer models to display the graphics abilities of their Kaypros on external video monitors. The addition of a larger, external display can greatly increase the usefulness of your Kaypro, and for the technically oriented, it's not all that complicated to build such a board. (*Readers should remember any "unauthorized repair" will void the warranty, so obviously this project will void the warranty as well. Tinkering with the insides of your Kaypro should be done after the warranty has already expired. —TS*) All the parts necessary for this project are listed at the end of this article, and should cost about nine dollars at your local Radio Shack.

How it works

The typical video monitor (such as you would use with a video tape recorder) expects to receive several video signals combined on one pin; this is known as composite video. The circuit shown here achieves that by combining the Kaypro's three separate video signals into the desired composite signal.

The main component of the video generation circuitry on all of the newer models is a 6845 video controller chip. This single IC does most of the work of providing the signals necessary to put a display on the screen. Once the 6845's internal registers have been properly programmed (by either the

Kaypro System ROM or the MBASIC commands mentioned below,) the video signals are routed through a single IC to the video connector J1. The vertical sync, horizontal sync and the video information are each on separate pins of the connector. Keeping the signals separate allows the Kaypro to use a less complex video board for its internal monitor.

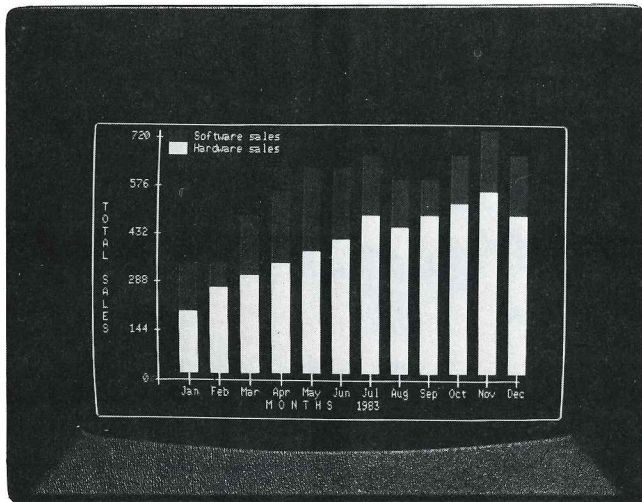
On your computer's main board these three signals are buffered through the same chip (U1—a 7406) on their way to the internal monitor. This is why we chose U1 as a convenient place to extract the signals for our composite video adapter. We can get the power required for our circuitry from the same place, so only one connection to the main board is needed.

The video information signal leaves U1 on pin 6, while the buffered vertical sync appears on pin 2 and the inverted horizontal sync on pin 11. The supply voltage for our project appears on pin 14 of this chip, ground on pin 7.

As you'll see after studying the first photograph,



ProGRAPHICS PUTS THE PRO IN KAYPRO®



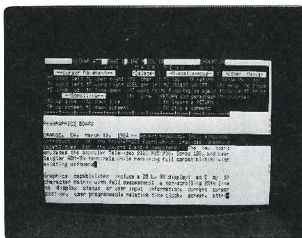
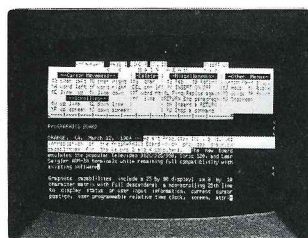
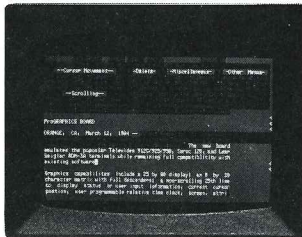
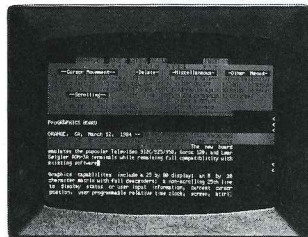
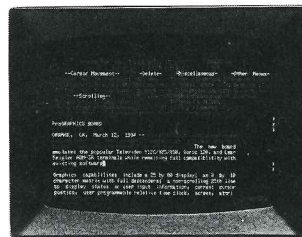
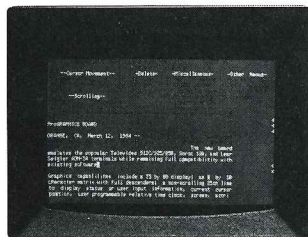
ProGRAPHICS gives your Kaypro 2 or 4 the ultimate in video display as well as graphic capability. ProGRAPHICS emulates the popular Televideo 925/950 terminal at the same time retaining full compatibility with existing software. Simple plug-in installation requires no soldering or other modifications. Here are just some of ProGRAPHICS' capabilities:

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 - key click on/off indicator
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- user selectable character and screen attribute including:
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 - half intensity
 - normal
- real software selectable cursor, including your choice of:
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 - underline
 - blinking (fast or slow)
 - non-blinking
 - invisible

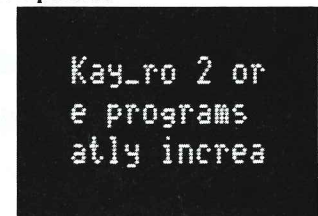
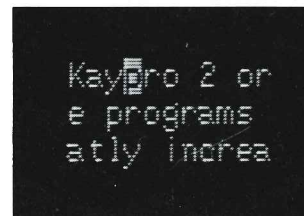
In addition, ProGRAPHICS gives you these features:

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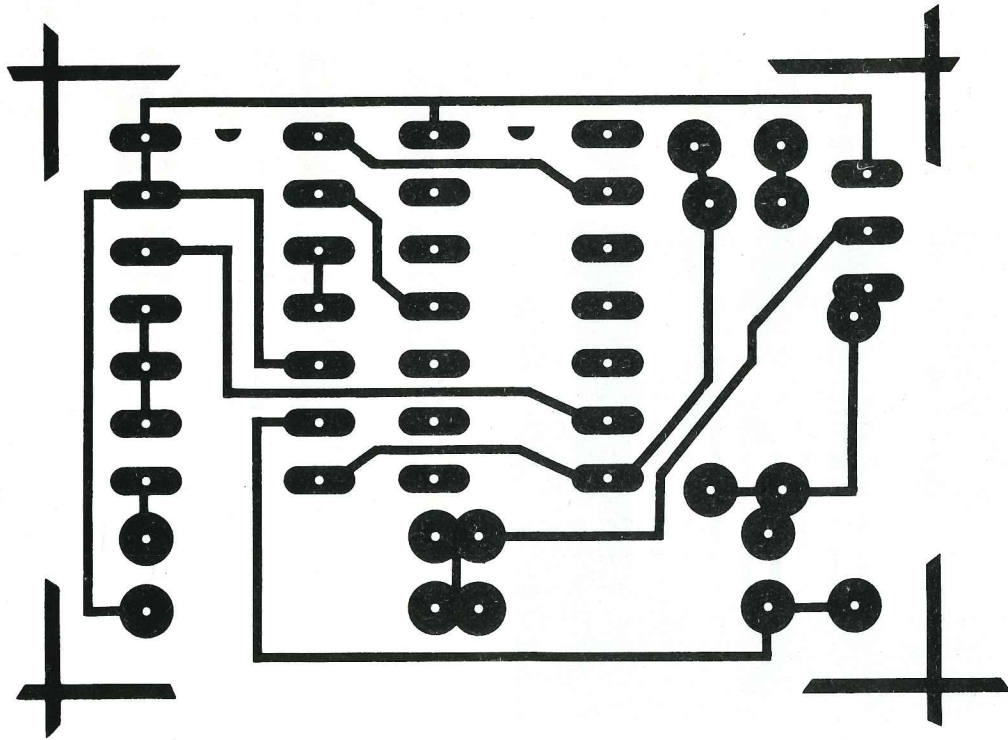


Figure 3. Printed Circuit Board—bottom side.

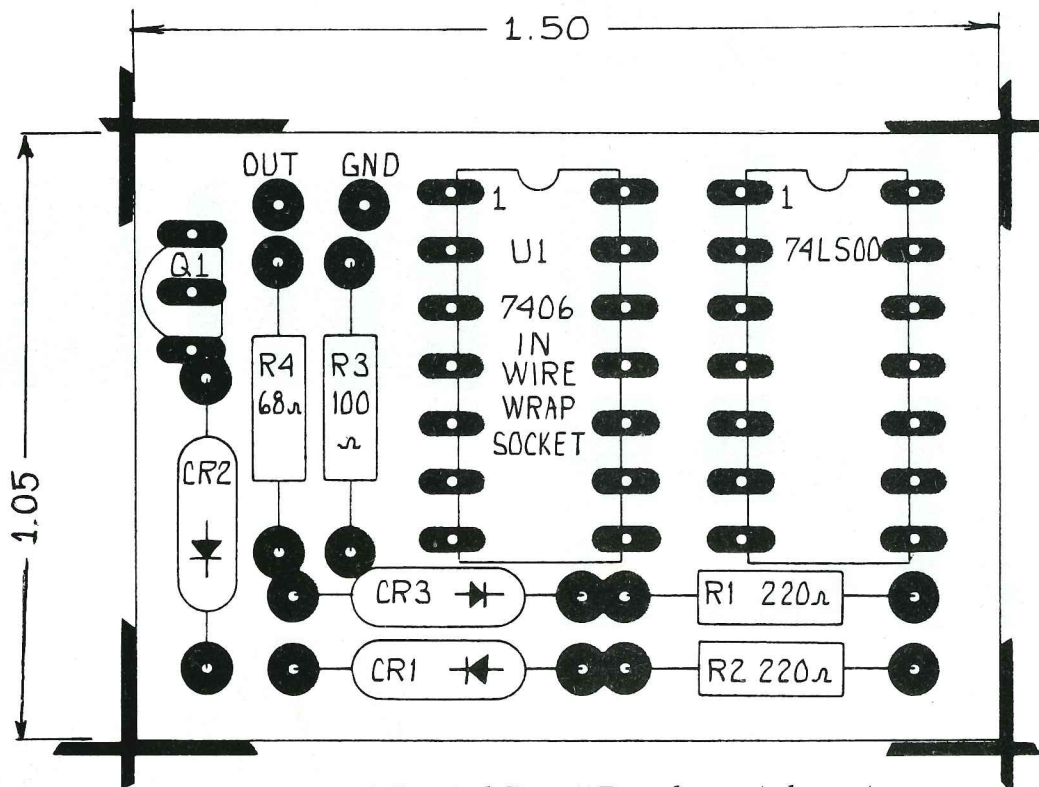


Figure 4. Printed Circuit Board—parts layout.

change in the characters on the display.

Each character cell is 16 lines high. If we reduce the number to 14 (the number stored is the scan lines per character minus 1) we will lose the underline capability. In MBASIC: **OUT (28),9 : OUT (29),14** This won't hurt the text much, but will upset the graphics as they need 16 lines per cell. If we reduce the number to 13 we'll lose the lower line of the descenders "yjgg", making text pretty tough to read. If an even higher frame rate is necessary, then the character generator ROM will have to be changed.

Final touches

Once there is a readable display on your external monitor, the horizontal position of the displayed line can be adjusted. Register 2 of the 6845 (currently set to 86) may be changed to move the line left or right. There are other registers in the 6845 which can be changed but not without consequences. (Since the video driver software in the ROM expects the screen to be 25 lines of 80 characters, it too would have to be changed.)

If an enhanced video display is important and you're up for a some minor tinkering, give this adaptor board serious consideration. The project, while technical, is not complex. The hardware requires only a handful of parts, and the software used to fine tune the display is the familiar MBASIC. Once installed, you can have blinking, half-intensity, reverse video and all on a much larger screen. Not a bad deal for less than ten bucks. □

PARTS LIST

1 14 pin wire wrap socket
1 14 pin socket
1 74LS00 integrated circuit
2 220 ohm resistors
1 100 ohm resistor
1 68 ohm resistor
3 1N914 diodes
1 2N3904 transistor
1 video output connector
as required for monitor
1 prototype board

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advanced applications you can specify low-level parameters such as absolute location of code and data within memory.

The editor

Built into the compiler is a WordStar-compatible full screen editor. Default commands for cursor movement, delete and insert, block and control commands are identical to those for Wordstar. These commands are fully customizable with the terminal installation program. The actions of a few commands have been optimized for writing Pascal source. For instance, a tab (CTRL-I) moves the cursor to the position below the the beginning of the next word on the previous line. This makes indentation and column alignment convenient.

Run-time errors can be found in the source code!

The compiler

The compiler is essentially a Standard Pascal compiler with few exceptions and many extensions. When syntax errors are located, Turbo returns to the editor with the cursor positioned at the point of the error. If the optional error messages are included with the compiler, verbal as well as numeric error messages are produced. Where further detail is necessary, the manual expands on the messages. Compilation is fast! The demo program provided with the system (a mini-spreadsheet, 1262 source lines) compiles disk-to-disk in 74 seconds on a 4 MHz Kaypro 4. Small programs which can be compiled memory-to-memory will compile in seconds. Run-time errors can be located *in the source code!* Run-time error messages include the value of the program counter; this value is then used as a parameter to the Find option. When the error is located, the editor is called with the cursor at the point of the error.

The numerous extensions aside, Turbo has only five deviations from the Pascal standard, the most significant of which are the lack of GET and PUT (READ and WRITE have been extended) and that procedures may not be used as parameters to procedures.

Nine compiler directives are provided. These give you control over parameters like run-time index checking, user interrupts and recursive code generation. Their actions and consequences are fully explained in the manual. As an example, if user interrupts are enabled execution can be inter-

rupted at any time with CTRL-C. The penalty is that execution will be significantly slower in this mode.

Turbo extensions

One would expect a Pascal as efficient and compact as this to have few extensions. Turbo has all the extensions the other compilers have, plus:

- ▶ Up to 127 significant characters in identifiers.
- ▶ Hex input with a prefixed "\$".
- ▶ Variable type BYTE - unsigned 8-bit integer sub-range.
- ▶ Dynamic strings - Strings must have their maximum length specified. Turbo has a full range of string handling procedures/functions. Strings can be concatenated with "+". In addition STR converts a number to a character string and VAL converts a string to a numeric value.
- ▶ The declaration part of a program is free-form. Although standard Pascal specifies that the LABEL, CONST, TYPE, VAR and PROCEDURE/FUNCTION declaration parts of a program may occur zero or one time and only in that order, Turbo allows them to occur in any order and any number of times. This makes the use of a library of source modules convenient.
- ▶ Pi (11 digits) is a pre-defined constant.
- ▶ Arithmetic as well as logical (Boolean) AND, OR, NOT and XOR and the bit manipulation operators SHR and SHL (shift right and shift left).
- ▶ An ELSE clause in the CASE statement.
- ▶ Typed constants. This is unique to Turbo and an extremely handy feature. Though declared in the CONST portion of the program, typed constants are really initialized variables and can be used as such. No more long sequences of assignment statements to give variables their default or initial values.
- ▶ Random access file I/O is implemented with SEEK to position to a specific record. The FILEPOS function returns the current position of the file pointer. ERASE, RENAME and FILESIZE are built in. TEXT files are fully supported as are untyped files with BLOCKREAD and BLOCKWRITE.
- ▶ There are no less than 8 pre-defined TEXT files (including the default INPUT and OUTPUT). To output to the printer just write to the pre-defined file LST.
- ▶ Turbo has nine CRT related procedure/functions. Their actions are defined by the terminal installation program and so will be customized to your system.
- ▶ FRAC returns the fractional part of a real

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number, HI and LO return the high and low order bytes of an integer, and SWAP exchanges the high and low order bytes of an integer.

- ▶ RANDOM returns a random real number between 0 and 1 and RANDOM(I) gives a random integer between 0 and I.
- ▶ Variables can be declared as ABSOLUTE, i.e. located at a defined memory location. This is useful for shared variables when CHAINing programs.
- ▶ The MEM and PORT arrays (type BYTE) allow direct access to RAM and I/O devices.
- ▶ Pointer addresses can be assigned to integers with ORD, and integer values assigned to pointers with PTR.
- ▶ EXTERNAL procedure/functions are supported, with full parameter passing.
- ▶ Other programs can be CHAINED with common variables (shared globals and absolute) or EXECUTED.
- ▶ Machine language subroutines can be entered in the Pascal source with the INLINE statement.
- ▶ Direct BIOS and BDOS calls are supported with parameters passed in and returned from the registers.

- ▶ The heap pointer (dynamic variable management), recursion stack pointer and even the hardware stack pointer (!) are accessible from Pascal.
- ▶ An automatic overlay mechanism (new in Version 2.0).

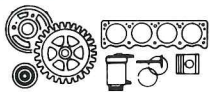
The documentation

The Turbo documentation is as complete and well-organized as I have seen for any software product. The bound (softcover) manual has both a detailed table of contents and a complete index.

The installation and use of Turbo and its editor are detailed in the first section. This is followed by some information common to all three implementations. Operating system dependent portions are then explained, with separate sections for CP/M-80 and the 16-bit versions. The final portion of the manual summarizes all the features of the system and is useful for quick reference.

There are few typos in the manual, and some errors and omissions are detailed in an update file included on the distribution disk. Overall, *everything* necessary for use of the package is explained with reasonable clarity and detail. There are even

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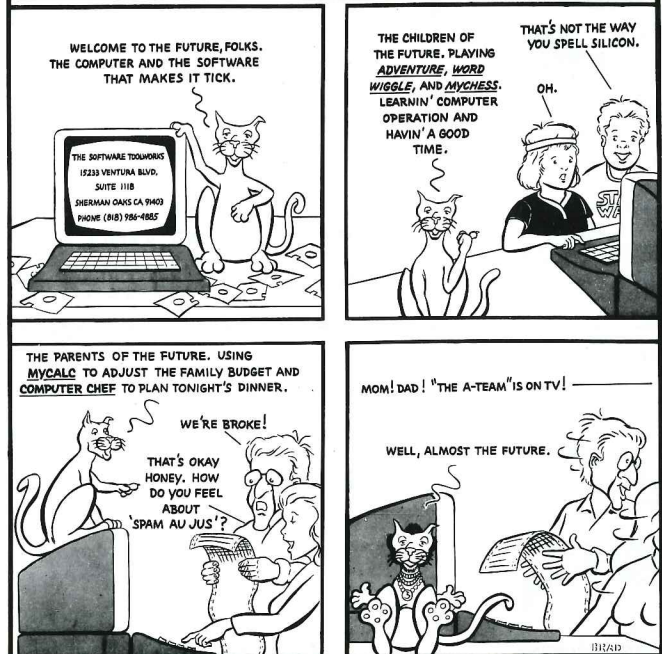
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| | Turbo | MT+ | JRT |
|----------------------|--------------|------------|------------|
| Accuracy (digits) | <=11 | <=6 | <=14 |
| Range | 1E+/-38 | 1E+/-18 | 1E+/-63 |

Table 1. Floating point accuracy and range.

| Program | Turbo | MT+ | JRT |
|----------------|--------------|------------|------------|
| Sieve | 23 | 23 | 375 |
| Fptest | <1 | 3 | 2 |
| Tstlog | 2 | 6 | 18 |
| Tstsin | 1.5 | 6 | 5 |

Table 2. Benchmarks.

All tests run on 4MHz Kaypro, timing from bell to bell. For Turbo, compile times memory to memory were all <1 second, for MT+ compile & link times were less than 2 minutes and for JRT, compiles were in the 40 second range. Default compiler options were used in all cases.

(continued)

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instructions on how to translate the error message file into other languages!

"Gut level" details such as memory utilization, data format in memory, stack structure for parameter passing and the like are all explained. Enough detail is given to allow effective use of Turbo beyond the normal uses of standard Pascal.

Performance

Although no detailed timing comparisons were run (a sweep second hand watch makes for poor timing accuracy) several benchmarks show that in all cases tested Turbo has higher execution speed than either Pascal/MT+ or JRT Pascal. You should run your own comparisons on the types of programs you normally run to get an idea of how much better performance to expect. See Tables 1 and 2 for my results. (*The source code for the benchmarks used can be found in the previously mentioned Micro C column.*—TS)

With this several-fold faster compiler, which generates machine code directly (no link or assembly required,) program changes can be tested very rapidly.

Limitations

The most significant limitations to Turbo Pascal are related to the 64K address space of the Z-80. Source code files larger than the available RAM *cannot* be edited or compiled with Turbo, nor can single programs larger than RAM be executed. However, mechanisms have been provided to get around these limitations.

Large source files can be split into fragments small enough to edit, then "CLUDED in the com-

I found it difficult to find anything significant to criticize.

pilation. The include facility, coupled with the free-form declaration part of Turbo programs makes the generation and use of a library of source modules convenient and very practical.

If the object code is too large to compile to memory, a simple command sends the output to an executable .COM file.

Large programs can be compiled as a number of smaller programs which can then be CHAINED for execution. Chain modules contain only program code, no runtime library, and thus use less disk space. Chained programs can share variables.

Version 2 has an automatic overlay system which allows more than one procedure to share the same memory space. An overlay is a subprogram which is loaded into memory only when needed by the main program.

You need only add the keyword OVERLAY to a procedure declaration for Turbo to create and manage an overlay file. Multiple overlay areas can be created. The compiler will place the overlays for each area into a separate file.

Good candidates for overlay files are routines like initialization, sign-on message output, instructions and menu procedures. Often, these procedures are called only once or infrequently during a program. Their program space can then be used by other program procedures called in as overlays.

Criticisms

I found it difficult to find anything significant to criticize in the package. There are, however, a few "nit-picking" details that can be mentioned.

- ▶ I would have preferred a 3-ring binder for the documentation. (This is obviously a personal preference)
- ▶ The listing utility (TLIST.COM) does not use form feeds for pagination, and with at least two printers, lost track and got out of synchronization with page boundaries.
- ▶ There is no default length for dynamic strings, the maximum length must be declared.
- ▶ There is no way to override returning to the editor when compile time errors are encountered. At times it would be convenient to scan the entire source for errors before invoking the editor.

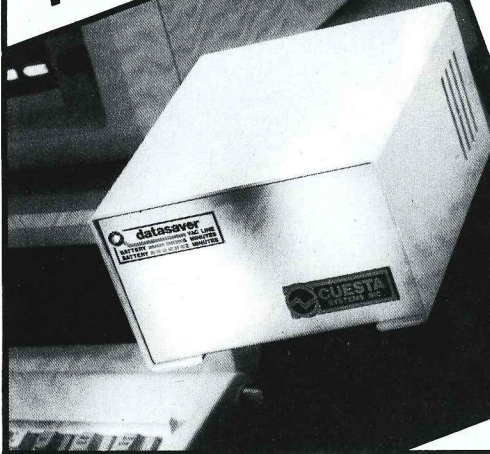
Conclusions

As a standard Pascal, Turbo is without question one of the most cost-effective purchases you can make. Beyond the standard, there are enough extensions and built in facilities to make the package as useful as C for even low-level work, and it's much more convenient to use.

I would not hesitate recommending the package to anyone either currently using Pascal, or interested in learning the language. □

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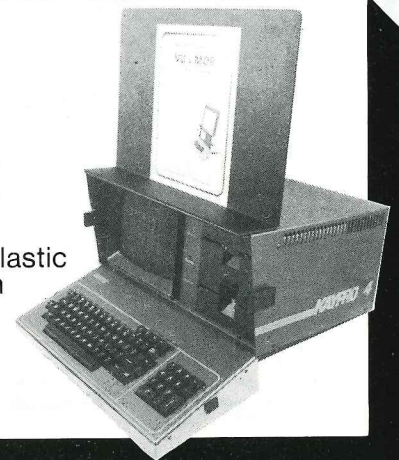
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by Dudley Bromley

You have just been exposed to recursion in one of its most dramatic forms. By studying the title, you can at once begin to appreciate recursion's complexity, as well as its unremitting logic. But most of all you can almost *feel* recursion's magic, its uncanny ability to flirt with paradox.

With the development of structured programming languages such as S-BASIC, recursion has become an important—and controversial—topic in the world of software. The purpose of this article is not to get bogged down in the controversy. We'll introduce you to recursion and show you some of its uses. Whether recursion is better or worse than other programming tools will be left for you to decide.

Inside recursion

Conceptually, recursion can take many forms (movies inside movies, stories inside stories, boxes inside boxes (comments inside comments (or even comments inside comments inside comments))).

The word itself is derived from the verb *recur*, which means to happen again or at intervals. In programming, recursion is closely related to nesting.

The most common application of nesting in S-BASIC programs is nested FOR-NEXT loops, in

which one FOR-NEXT loop is nested inside another. The program in Listing 1 demonstrates the use of nested FOR-NEXT loops to zero out an array.

```
DIM INTEGER array (100,100)

PROCEDURE zero.the.array
  VAR i,j = INTEGER
  FOR i = 1 TO 100
    FOR j = 1 TO 100
      array (i, j) = 0
    NEXT j
  NEXT i
END of zero.the.array

REM *** MAIN CODE ***
zero.the.array
```

Listing 1.

It should also be noted that S-BASIC supports every conceivable combination of nested statements, limited only by available memory, including nested IF-THENs, WHILE-DOs, REPEAT-UNTILs, CASEs, FUNCTIONS, and PROCEDURES.

The scope of recursion goes far beyond mere nesting, however. An element of *self-reference* is inherent to every recursive event. In a computer program, this means that a procedure or a subroutine calls *itself*, which at first seems to defy logic if not common sense. In fact, it is this aspect of self-reference that pushes recursion to the very edge of paradox.

A paradox is something that is neither true nor not true. Perhaps the most famous paradox in history is called the Epimenides Par-

adox and can be stated as follows:

This sentence is false.

If the sentence is false, then it is true, which means it's false, which means it's true, and so on. If on the other hand the sentence is true, then it's false, which means it's true, etc. Either way leads to an endless loop. You can see why computers have difficulties with paradoxes.

When handled correctly, however, recursion doesn't fall over into paradox. The reason is that every successful recursive routine eventually bottoms out; it stops.

An early summary

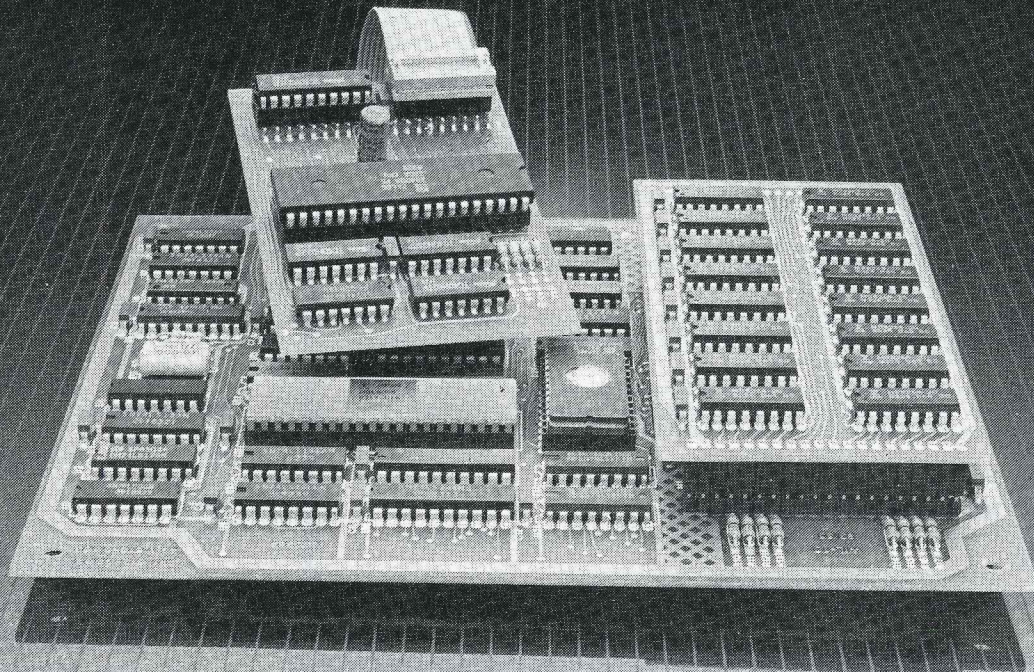
Listing 2 is an example of a recursive procedure, part of a program to sum the first 100 integers (1 + 2 + 3 + ... + 100). This is not the most efficient way to use recursion for reasons that will eventually become clear, but it demonstrates the concept of recursion quite nicely.

The program uses one integer variable, *n*. Because *n* is declared (in the VAR statement) at the top of the program, it is global to all procedures.

The main code sets *n* equal to one and calls the summer procedure. Summer then takes the value of *n* (1) and renames it. Now

(continued)

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RECURSION

a new variable exists, j , which is totally independent of n .

Summer increments j and adds j to n ($2 + 1$). Then, because j is less than 100, summer calls itself!

The new summer takes the number it receives (2), increments the number (to 3), adds the number to the current value of n (now also 3), and calls itself again. This process continues

```
VAR n = INTEGER
```

```
PROCEDURE summer (j = INTEGER)
  j = j + 1
  n = n + j
  IF j < 100 THEN summer j
END of summer
```

```
REM *** MAIN CODE ***
n = 1
summer n
PRINT n
```

Listing 2.

until j is equal to 100. Finally, when PROCEDURE summer (and its 99 descendants) are finished, the main program takes over again and prints out the answer.

So much for the high-level explanation.

If you really want to use recursion effectively, then a better understanding of what's occurring is necessary. Unfortunately such understanding can only be obtained by probing deeper into our subject, by looking at things on a whole different level.

PUSHing and POPping

The key to understanding recursion's internal processing is presented in Listing 3. (When you first try this program, leave out the two lines shaded in gray.—TS) The output from that program is a graphic example of what computer scientists call a *push-down stack*.

A stack is a table of memory locations, or addresses, that is kept internally by a program. To push down on the stack means
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RECURSION

that the program temporarily suspends one routine to start another (a recursive procedure calls itself, for example).

To do this, the first routine must remember where it was so it can continue from that point when the second routine is done. The first routine remembers by putting an address on the top of the stack, thereby pushing down any other addresses already on the stack.

You can see that when recursive procedures are used, the length of the stack can grow to be quite long. And each time the stack is pushed, the program changes. It begins anew, from scratch, on a different level, on a lower level, than before.

In the case of Listing 3, the last call to the summer procedure is

99 levels down into the program. When that inner-most procedure is finished, the program goes to the top of the stack and returns to the address it finds there (moving up to the next higher level in the process). This is called "popping the stack", i.e., the top of the stack "pops" off and the next address in line becomes the new top of the stack.

```

VAR n = INTEGER

PROCEDURE summer (J = INTEGER)
  PRINT "PUSH -----> j = "; j
  j = j + 1
  n = n + j
  IF j < 100 THEN summer j
  PRINT "j = "; j; " -----> POP!"
END of summer

REM *** MAIN CODE ***
n = 1
summer n
PRINT n
  
```

Listing 3.

(For a more graphic demonstration of the stack action, you should now add the two lines shaded in gray.)

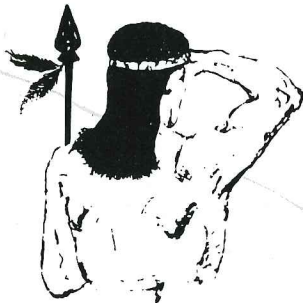
What all of this means is that each recursive call to a procedure takes up the same amount of internal memory as every other call to that procedure. This includes the space required to define completely new variables and to store their values on every level. Thus the variable *j* in the summer procedure exists on 99 different levels, and its value on any one level is *totally independent* of its value on any other level!

Whew!

Moving up a level

Let's review what we've learned.

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learned that recursion is a unique concept in computer programming (we should also be aware that true recursion is possible only with structured programming languages such as S-BASIC).

Second, we have seen that the efficiency of a recursive procedure, especially if it is contained within a large program, decreases in direct proportion to the number of times the procedure is called and/or the number of variables it uses.

But most of all we have learned that recursion is not the best choice (or even a good choice) for many programming applications.

For example, the following program is much simpler to understand than Listing 3, uses about 1% of the memory, and it accomplishes exactly the same thing.

```
VAR n, sum = INTEGER
sum = 0
FOR n = 1 TO 100
  sum = sum + n
NEXT n
PRINT sum
```

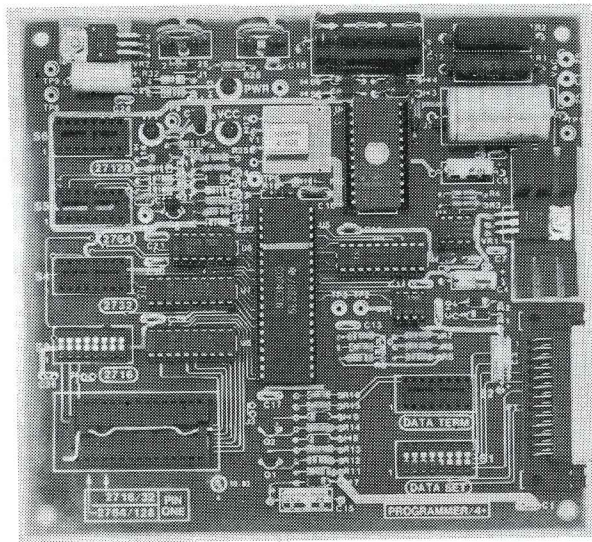
Choosing your algorithm

So how in the world is a person supposed to know when to use recursion? Well, the time to decide if recursion is appropriate for your particular application is when you're first analyzing the problem.

During this initial analysis, if an obvious means of simple iteration becomes apparent, then for God's sake use it. And if the number of calls to a procedure is going to be high, or if a lot of data are passed to the procedure each time it's called, then chances are recursion is not the answer.

If, however, you happen across problems which are *defined* in a recursive manner (and if you've made it this far in an article on *(continued)*)

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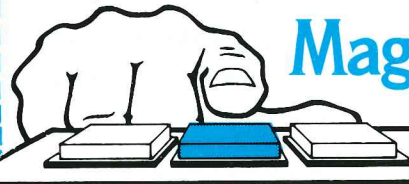
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RECURSION

recursion, you'll have no trouble recognizing them), then you are obliged to at least attempt recursive solutions.

A classic example

The factorial problem is most often used to illustrate recursion in computer programs. The factorial of a number, n , denoted $n!$, is defined to be 1 if $n = 0$; if n is not equal to 0, then $n! = n * (n-1)!$.

This is as recursive a definition as you can find. It means $5! = 5 * 4! = 5 * 4 * 3! = 5 * 4 * 3 * 2! = 5 * 4 * 3 * 2 * 1! = 5 * 4 * 3 * 2 * 1 * 0! = 5 * 4 * 3 * 2 * 1 * 1 = 120$.

Finding the factorial of a number can be accomplished using the same iterative methods mentioned before, but since the problem is defined recursively, why not use recursion? It takes the same number of lines to code a recursive function to find the factorial of a number as it does to code the loop above, so why not? The feeling of satisfaction you get will be well worth the extra thought it takes to understand what's going on.

A final thought

Finally, I leave you with one of the best (and most subtle) recursive definitions around. I found this in the form of graffiti, so I cannot identify its author. But I'm sure you'll agree that the writer's sense of recursion is truly magnificent:

There are two kinds of people in the world: those who divide everyone into two groups, and those who don't.

□

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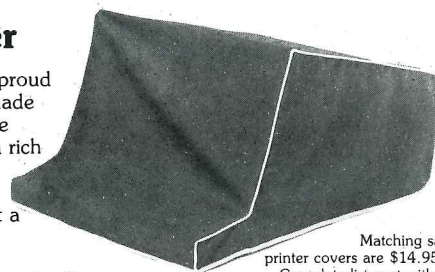
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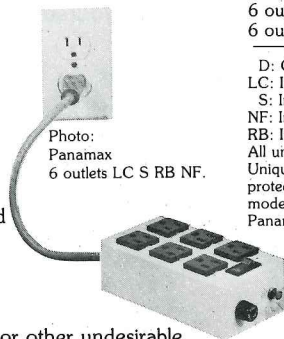


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A BASIC Contrast

*Compare S-BASIC and MBASIC
for a better grasp of programming.*

by David Weinberger

With MBASIC and S-BASIC you have a pair of powerful tools for developing your own programs. Because generally it is easier to write programs in MBASIC, it may seem that you should develop your programs in it and then translate them into S-BASIC. But there is a good reason for working first in S-BASIC: it is harder to master largely because it forces one to learn how to write programs well.

As a demonstration, here is a program which turns your Kaypro into an electric typewriter. It lets you type in a line, wipe out any mistakes by using your backspace key, and then print the line out by hitting the carriage return. The beeper sounds if you go past the margin, each line is numbered (only on the console, of course), and page breaks are displayed. It's for those times you are too lazy to use a word-processing program. (Now *that's* lazy!)

I wrote this simple program using MBASIC because MBASIC is an interpreted, not a compiled language. Therefore, you don't have to run your program through the compiler to find out it doesn't work. If you are like me (relatively inexperienced at it) programming occasionally proceeds by trial-and-error, with an

emphasis on the latter. S-BASIC becomes quite frustrating when you are compiling it for the fiftieth time, making small (or large) errors each time. But having learned BASIC through S-BASIC has influenced—and I think improved—my style of MBASIC programming. (Also, having learned S-BASIC has made it a snap for me to pick up Pascal.)

S-BASIC makes it hard *not* to write structured programs. In structured programming, you analyze the main task of the program into smaller tasks, and then analyze each of those tasks. Then you write sub-routines which accomplish each of the sub-tasks. Ideally, there should be only one way in and one way out of each sub-task: conditional branchings are kept to a minimum. The program goes through each of these modules in a logical order.

A look through the listings

Let's go through both versions of the typewriter program, noting differences. (We will put an **M** or an **s** after program lines in order to indicate it refers either to the M- or S-BASIC listing.)

Both versions begin with some comments. With MBASIC, the comment lines must each begin with REM or an apostrophe; in

S-BASIC you can begin a multi-line comment with the word "comment" and end it with "end". ("REM" also works in S-BASIC for single-line comments.) The compiler ignores comments, so writing them does not waste memory or slow down program execution (unlike in MBASIC).

Notice also that in S-BASIC you do not have to number each line. The compiler, however, will print out your program with each line numbered, for easy reference.

In S-BASIC you have to declare all your variables before using them. This begins at line 17s with a REM. There is no need to stick with short names for your variables in S-BASIC because the compiler will shorten them without you ever noticing.

From line 24s to 66s in the S-BASIC version of the program, I declare my procedures. Procedures are sub-routines. They serve several purposes. First, if there is some task that has to be accomplished at several spots in your program, you need only write it out once and then at the appropriate spots invoke the procedure by name. Second, by having procedures do much of the work of the program, the structure of your program is clear. Third, it is possible to build up a
(continued on page 90)

TYPER
(c) David Weinberger, 1984

```
10 '
20 '
30 '
40 ' Type in a line and print it out by
45 ' hitting Carriage Return. Erase any
50 ' mistakes by using the backspace key.
55 ' Margin bell sounds. Escape from the
60 ' program by typing Control-C
70 '
80 PRINT CHR$(26);
90 DIM S$(100)
100 L=L+1
110 IF L=56 THEN 350
120 PRINT USING "##";L;
130 C$=INKEY$
140 IF C$="" THEN 130
150 IF C$=CHR$(8) THEN 440
160 IF ASC(C$)<13 AND ASC(C$)>8 THEN 130
170 IF N>=71 AND C$<>CHR$(13) THEN 130
180 N=N+1
190 PRINT C$;
200 S$(N)=C$
210 IF C$=CHR$(8) THEN S$(N-2)="":N=N-2
220 IF N=65 THEN PRINT CHR$(7);
230 IF C$=CHR$(13) THEN 250
240 GOTO 130
250 REM PRINTING OUT
260 FOR H=1 TO N
270 LPRINT TAB(H+5);S$(H);
280 NEXT
290 FOR L1=1 TO N:S$(L1)="":NEXT
300 N=0
310 LPRINT
320 PRINT
330 C$=""
340 GOTO 100
350 REM NEW PAGE
360 PRINT STRING$(79,45);"P";
370 L=0
380 PRINT TAB(54);"CR=space N=begin new page"
390 I$=INKEY$
400 IF I$="" THEN 390
410 IF I$=CHR$(13) THEN PRINT TAB(79)"<":LPRINT
420 IF I$="N" OR I$="n" THEN 100
430 GOTO 390
440 REM DELETE
450 IF N=0 THEN 130
460 S$(N)=" "
470 PRINT CHR$(8);" ";CHR$(8);
480 IF F=0 THEN F=1 ELSE F=0
490 N=N-1
500 GOTO 130
```

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BASIC

```
0001:00 comment
0002:01                                     TYPER
0003:01                                     <c> David Weinberger, 1984
0004:01
0005:02 This is the S-BASIC version of a program that lets you type
0006:02 without using a word-processing program. It will print only
0007:02 when you hit the carriage return; before then you can
0008:02 delete by using your backspace key.
0009:02
0010:03 This is not the most elegant version possible in S-BASIC; it
0011:03 uses some features really just to demonstrate their use.
0012:03 This extended comment is an example of using a feature simply
0013:03 to demonstrate its use.
0014:03
0015:04 end
0016:03
0017:03 rem                                     *** VARIABLES ***
0018:03
0019:03 var line,n,x,f = integer
0020:03 var whichprinter, chrinput, newpagechoice = char
0021:03
0022:03 dim char LetterString(100)
0023:03
0024:03 rem -----PROCEDURES-----
0025:03
0026:03 rem PRINTS OUT A LINE
0027:03 Procedure print.out
0028:04   for x=1 to n
0029:05     print #whichprinter; Letterstring(x);
0030:05   next
0031:04 print #whichprinter;chr$(13);chr$(10);
0032:04 print chr$(13);chr$(10);
0033:04 n=0
0034:04 end print.out
0035:03
0036:03 rem REMOVES NON-PRINTING CHARS.
0037:03 Procedure new.input
0038:04   chrinput = ""
0039:04   goto 50inkey
0040:04 end of new.input
0041:03
0042:03
0043:03 rem BEGINNING A NEW PAGE
0044:03 Procedure newpage
0045:04   print string$(79,45);"P";
0046:04   line=0
0047:04   print tab(54); "CR=space N=begin new page"
0048:04 320 input3 newpagechoice
0049:04   if newpagechoice=chr$(13) then begin
0050:05     print tab(79);"<"
0051:05     print #whichprinter; chr$(10);
0052:05     end
0053:04   if newpagechoice="N" or newpagechoice="n" then 30
0054:04 goto 320
0055:04 end newpage
```



```

0056:03
0057:03 rem DELETES BY BACKSPACING
0058:03 Procedure delet
0059:04         if n=0 then 50inkey
0060:04         letterstring(n)=" "
0061:04         print chr$(8);" ";chr$(8);
0062:04         n = n-1
0063:04         goto 50inkey
0064:04 end of delet
0065:03
0066:03 rem ----- end of procedures -----
0067:03
0068:03 print chr$(26);
0069:03
0070:03 rem                 *** INSTRUCTIONS ***
0071:03 TEXT 0,&
0072:04                 TYPERS
0073:04
0074:04
0075:04
0076:04
0077:04 This program allows you to type line by line directly to your
0078:04 printer. The line won't print out until you hit the carriage
0079:04 return. You can correct any mistakes on the line before
0080:04 printing it by using the backspace key, which will delete as it
0081:04 goes.
0082:04 Control-C will end the program.
0083:04
0084:04 Type P to have it sent to your parallel port (for a line
0085:04 printer),or type S to send it to your serial port (for a daisy
0086:04 &
0087:03                                     wheel).
0088:03 rem                 *** WHICH PRINTER? ***
0089:03
0090:03 25 input3 whichprinter
0091:03 Case whichprinter of
0092:03         "P": whichprinter=1
0093:03         "p": whichprinter=1
0094:03         "S": whichprinter=2
0095:03         "s": whichprinter=2
0096:03         whichprinter: goto 25
0097:03 end
0098:03
0099:03 print chr$(26);
0100:03 echo off
0101:03
0102:03 rem----- MAIN PROGRAM -----
0103:03
0104:03 30 line=line+1
0105:03 if line=56 then newpage
0106:03 print using "##";line;
0107:03 print " ";
0108:03
0109:03 50inkey input3 chrinput
0110:03 if chrinput=chr$(8) then delet

```


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BASIC

library of procedures which you can stick into various programs you are developing. The S-BASIC version of TYPED does most of its work in procedures for the second reason.

and, still in S-BASIC, we print the instructions on to the screen. One could achieve the same effect in MBASIC by using lots of PRINT statements, but S-BASIC makes it absurdly easy. The material to

In S-BASIC, you can label any line you want with any number you want.

Procedures reviewed

Let's look at the procedures. I have listed them in no particular order. At 27s begins a procedure I've named "print.out". It prints out the line just typed in; *n* is the number of characters in the line. When it is done, it sends a carriage return and linefeed to the printer.

Procedure "new.input" (36s-40s) ignores any non-printing characters that have been typed in, and goes to get the next character typed in. Notice the "50inkey" at 39s. In S-BASIC you can label any line you want with any number you want (it doesn't even have to be in order), and you can append to that number a label to remind you what is going on at that line.

Procedure "newpage" (44s-55s) is invoked after 55 lines have been printed. It gives you the option of starting a new page immediately or printing blank lines until your form-feed paper reaches an appropriate spot to begin again.

Procedure "delet" (57s-63s) lets you delete letters by backspacing. (It has to be spelled 'delet' because if you spell it properly S-BASIC will think you are commanding it to delete a file.)

Printing features

Now we clear the screen (68s),

be printed must begin with "text", be followed by a zero to indicate it is to be printed on the console, and then a delimiting character of your choosing. It will stop printing the next time it comes across this character (86s).

We are still in S-BASIC. At line 88s the program asks to be told which port it should be sent to in case you have both parallel and serial printers. Besides offering the CASE statement unavailable in MBASIC, notice that when using INPUT3 asking for a variable defined as "char", S-BASIC does not wait for a carriage return before accepting the input.

You can get MBASIC to print to either printer by fiddling with the IOBYTE at memory location 3, but why should you have to know such things? (POKE 3,129 will send it out the parallel port; POKE 3,1 will send it to serial heaven.)

At 100s, "echo off" keeps your input from showing up on the screen. Without this feature, each letter you entered would show up on the screen twice (although there are other ways around it.)

Bringing up MBASIC

At long last MBASIC catches up. At line 100M and 104s the programs start accepting what you type. MBASIC offers the command INKEY which cannot (so



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```

0111:03 if ascii(chrinput)<13 and ascii(chrinput)>8 then new.input
0112:03 if ascii(chrinput)=3 then 999end
0113:03 if n>=71 and chrinput#chr$(13) then new.input
0114:03 n=n+1
0115:03 print chrinput;
0116:03 Letterstring(n)=chrinput
0117:03 if chrinput=chr$(8) then Letterstring(n-2)="" and n=n-2
0118:03 if n=65 then print chr$(7);
0119:03 if chrinput=chr$(13) then begin
0120:04         print.out
0121:04         goto 30
0122:04         end
0123:03 goto 50inkey
0124:03
0125:03 999end
0126:03 end
0127:03
0128:03          ***** End of program *****

```

far as I know) be emulated entirely by S-BASIC. "Inkey" looks for a single character input. It does not wait for a carriage return. If nothing is input, it moves on to the next command. But line 140M tells the program to look for another input if none has been given so far; the pro-

gram won't budge until you type something in. At 109s I have supplied a number for the line since other lines refer to it. I have tagged the line number with "inkey" because this is the routine which does what INKEY does in the MBASIC basic version. (The difference is that the S-BASIC pro-

gram halts execution waiting for your input, whereas the MBASIC program continues going between lines 130 and 140 until you input something.)

What was typed at the keyboard?

Now we look to see what has been

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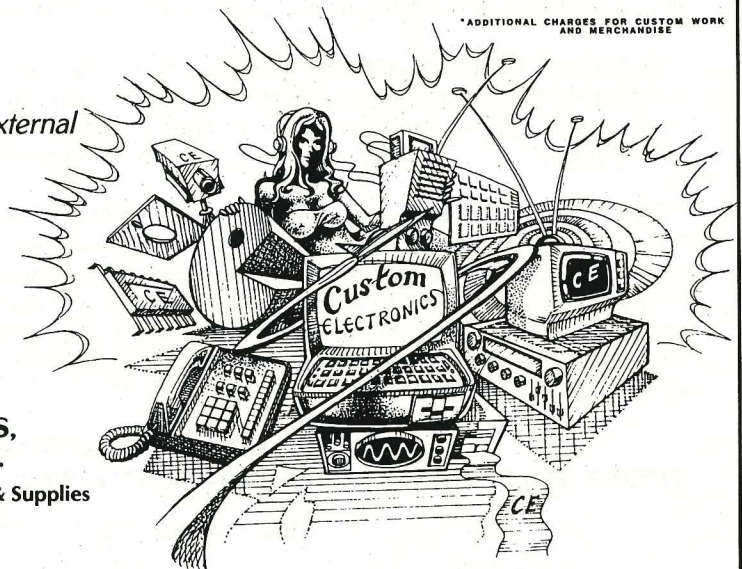
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input. At 150M and 110s we check to see if the backspace key has been pressed. If so then we should delete the previous input (i.e., replace it with "", and move the cursor back one space), which we do in MBASIC by jumping to 440M and in S-BASIC by calling procedure "delet".

At 160M and 111s we look to see

if the cursor keys have been depressed. If so, we want to ignore them and go back for another input. S-BASIC does this by invoking the "new.input" procedure. At 112s we tell S-BASIC to jump to the end if a Control-C has been entered. MBASIC does this automatically (which can be a disadvantage at times). Finally, if

we have gone past the right margin by entering anything except a carriage return (ASCII 13), then we want to ignore it.

If all those tests are passed, then we can increase the counter which keeps track of how many letters have been entered on that line (180M, 114s), and start filling up an array with all the letters on the line (200M, 116s). If the input was a backspace (ASCII 8), however, we want to remove the previous character from the array and set the array to accept the next entered character in its place (210M, 117s). If it is the 65th input accepted (not counting deleted ones), then sound the bell (220M, 118s). If the input is a carriage return, indicating the typist is finished with that line, then print it out (230M, 119s) by jumping to 250M, or by calling the procedure "print.out". (Notice the handiness of the begin-end structure available in S-BASIC.) Otherwise, go back and accept another input.

Now in MBASIC is a batch of sub-routines. The main program in each version really consists of a series of tests (Is the input a control-C? Is it someone who forgot that the cursor keys don't work in this program?) which send the computer to appropriate sub-routines. Both programs are structured. The MBASIC version is structured because S-BASIC got me to think that way.

It's all worth it

Learning S-BASIC definitely is harder than learning MBASIC. But it inculcates good programming habits, and while I cannot in good conscience really advise anyone to learn BASIC by sitting down with the execrable S-BASIC manual the way I did, nevertheless I am glad that I put myself through it... now that it's over.

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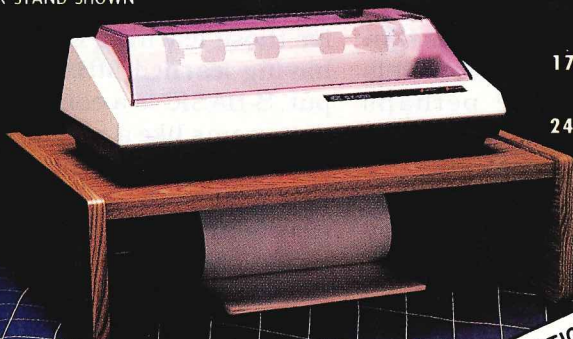
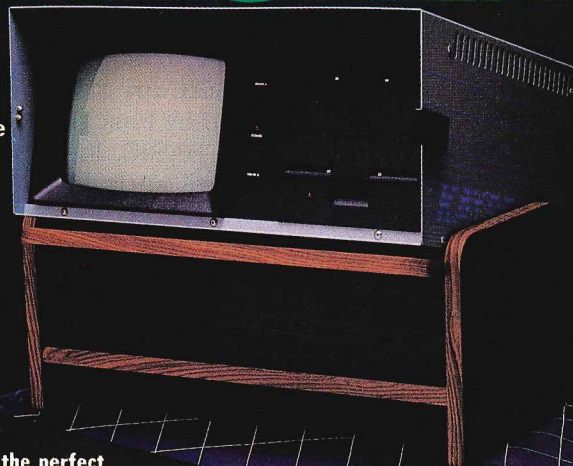
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Technical Forum

by Tyler Sperry

Moving the magazine schedule to ten issues a year has turned into quite an adventure. At the time this is written we have virtually filled the magazine, and there are still two stories that we didn't have room for. (One of them was the infamous last episode in the S-BASIC data files saga. *Sigh*) Still, I think we've got a pretty good mix of articles in this issue, including two articles tackling S-BASIC and a review of Turbo Pascal. Which brings up an interesting, if only slightly controversial, topic: how viable a language is S-BASIC?

Let's abstain from beating up too much on the documentation that comes with it. Everyone knows that the manual supplied for the language is tough-going at best. (Although, there is a fellow in Canada who has written his own manual for S-BASIC that looks better than the original. Look for a full review in the next issue.)

Granted that the documentation is . . . well, **bad**, the situation gets even worse when you consider the huge number of books available to teach people Microsoft BASIC or Pascal, and the slim pickings for S-BASIC. Given this handicap, there are perhaps three reasons people will try to learn S-BASIC:

- ▶ It's a compiler and thereby allows you to store your programs as .COM files.
- ▶ It has some other features that MBASIC can't match.
- ▶ And finally, yes, it came free with the computer.

In the rest of this column and in the review elsewhere in this issue, we'll be looking at a package that competes with S-BASIC on all counts except price.

Learning programming languages

It still amazes me when I talk to people who have trouble learning S-BASIC, that they persist in thinking of it as a slightly altered MBASIC. It certainly *appears* logical to think of it in those terms—after all BASIC is right there in the name. What so different about the two languages?

Well to begin with, portions of S-BASIC are rather clearly influenced by Pascal and Algol rather than BASIC. Functions and procedures spring to mind as a typical example: S-BASIC and Pascal are virtually identical in handling functions, while MBASIC has only subroutines. Once you begin to look carefully you see that S-BASIC can be considered to be Pascal with some conveniences added. (Like a lack of semicolons. Hooray!)

But leaving aside the similarities to Pascal, there is a bigger problem waiting in ambush for those learning S-BASIC after having learned MBASIC. Simply put, S-BASIC is a compiler.

It seems like a small point, but once people have gotten used to being able to fiddle with programs in an interactive manner using the MBASIC interpreter, using a compiler can be a royal pain. Compilers force you to first write your program using a word processor, then compile the program you wrote. This process is almost inevitably repeated as your typing mistakes are caught—*one at a time*—by the

compiler, forcing you to edit your program a piece at a time. If you are a clumsy typist, or just not a very gifted programmer, you can lose a lot of time moving from the word processor to the compiler and back again. Any feedback you gain on what you've done wrong can quickly be lost in the irritation of going back to edit the file for the *n*th time.

Until recently, all compilers acted pretty much the same: in slow motion. S-BASIC was and is no exception in this regard. But now, finally, there is an alternative.

Turbo Pascal

While there is a full review of the Turbo earlier in this issue, and virtually every computer magazine has said nice things about the package, there are some points that should be brought up for those who aspire to enjoy programming.

First off, like S-BASIC and unlike MBASIC, the Turbo package is a compiler that generates .COM files for you. Unlike S-BASIC, however, Turbo allows you the option of compiling your program to RAM. This, coupled with the WordStar-like editor that is contained within the Turbo compiler means that both your source program and the code it generates can exist in RAM. Since many of the delays in processing your program result from the (slow) handling of disk storage, this along can really speed things up.

But it gets better.

When you do make that inevitable syntax error in your program, Turbo intercedes on your behalf, invokes the editor, and places the cursor at the error. (Or, at least the point at which it became confused.) The entire debugging process consists of choosing options from the Turbo menus, and you have to try it to



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A preliminary verdict

I realize that this column may seem needlessly harsh on S-BASIC, but the fact is that those learning to program need a language that is well-documented and interactive, while those who aspire to becoming professional programmers need access to a compiler that operates with a standard language. On virtually all these counts, S-BASIC is sadly lacking.

Turbo Pascal, on the other hand, is well-documented and interactive to a degree few compilers can match. At a price of \$50 it's not a bargain so much as a steal.

And as for which package I recommend to beginners? That, as they say, is left as an exercise for the reader.

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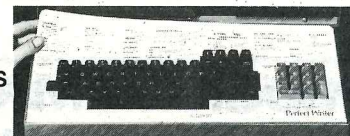
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FOREWORD

(Continued from page 12)

complimentary issues from his customers before they get their machines. (Getting better sales-people, or learning the software involved—either would seem

him. You see, for every dealer who feels he has to con people into buying things, there are a dozen who offer support and a sympathetic ear. And it's a funny thing,

*Since the editorial slant
is to aid our readers . . .
there have been
relatively few conflicts*

preferable.) But on consideration, I don't think I will.

First, because this man didn't strike me as the reasonable type. And secondly, because I'm pretty sure the market will take care of

those are the dealers who seem to have plenty of business.

And for our readers, I offer this advice. It's old and street-worn advice, but it's still valid: *Know your dealer.*

Moving?

Address changes should be mailed to our Editorial Offices at least eight weeks in advance, and should include your mailing label. Send information to:

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PROFILES Magazine accepts submissions from freelance writers. Material submitted should address the concerns of Kaypro owners, but articles may target readers anywhere in the spectrum from novice to advanced technical expertise.

Read through some of our previous issues to see what we have already covered, and to get an idea of the slant and style we prefer. Then send us a single page query letter, giving us a concise description of how you would treat the subject. If you have some expertise which makes you particularly qualified to write on a subject, please give details in your query. Enclose samples of your writing, preferably clips of published work.

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PROFILES occasionally buys professional quality photos, cartoons, and art work. Contact us before planning to submit any such work to accompany a written submission. Please remember, however, that *PROFILES* cannot be responsible for unsolicited manuscripts or art work.

Include your telephone number and a self-addressed stamped envelope (SASE) with all your correspondence to us. We try to respond to queries and articles by phone or mail within four weeks.

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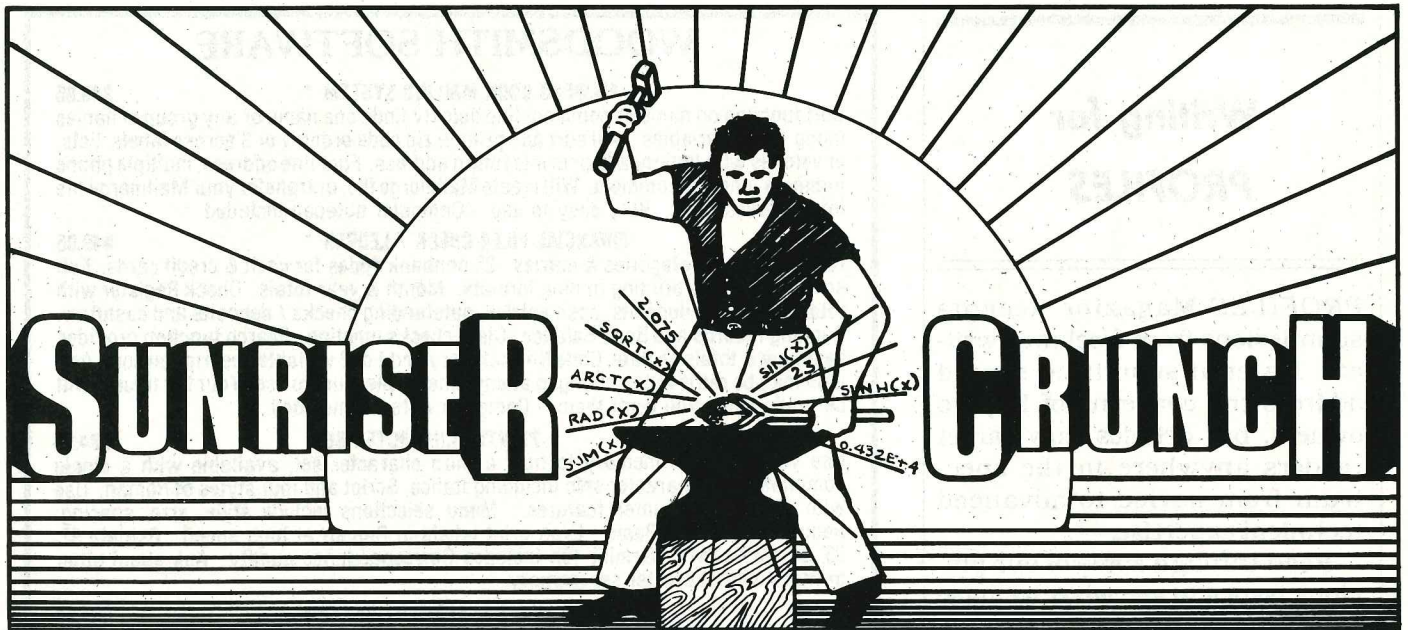
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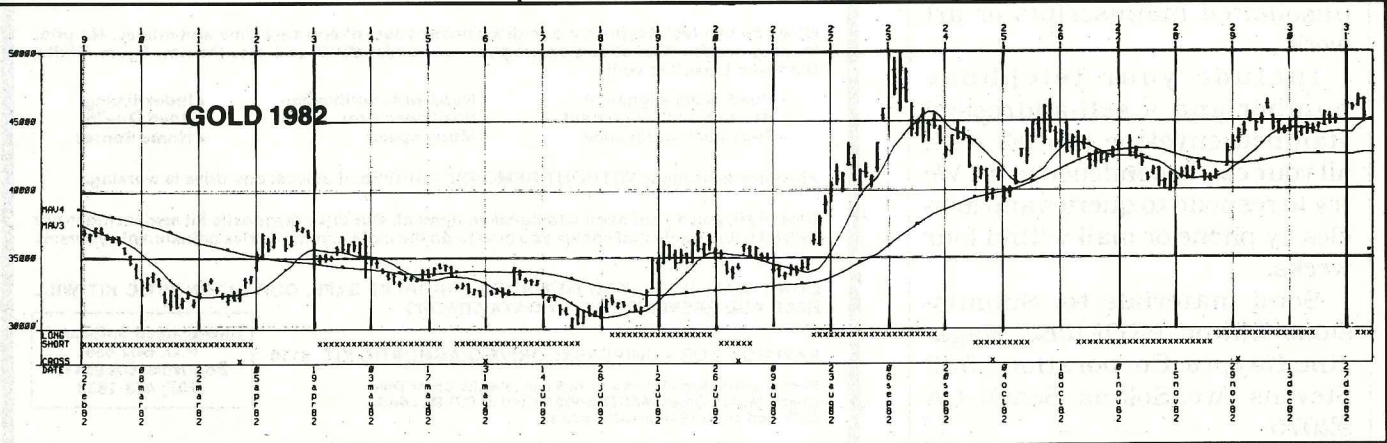
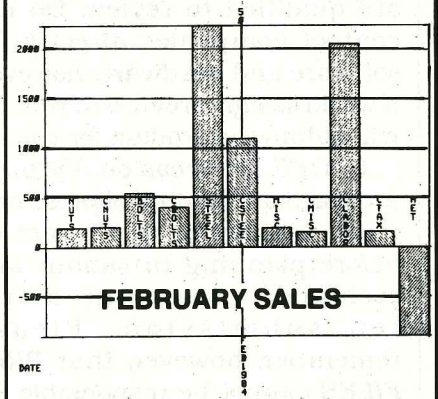
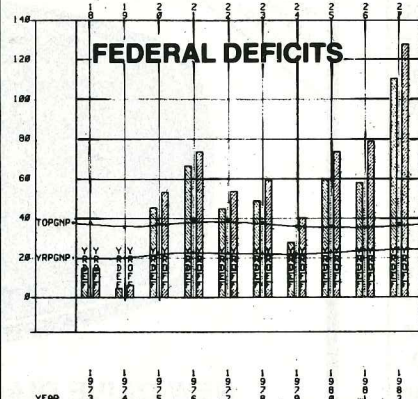
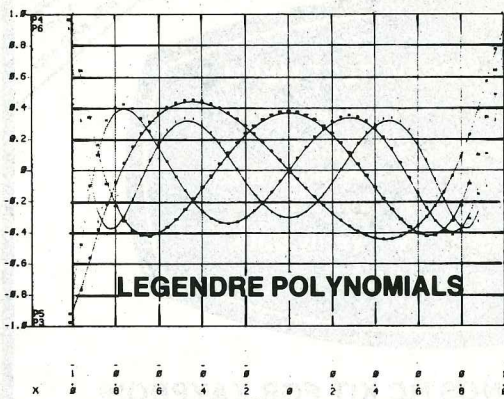
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The following new product listings are not reviews, and should not be considered as tested endorsements. We have looked at some of the products, but we do not necessarily have hands-on experience with them.

To be considered for publication in new products, please send press releases and product information to: New Products Editor, PROFILES Magazine, Kaypro Corporation, P.O. Box N, Del Mar, CA 92014. Send 8" X 10" black and white glossy photos if available.

Collector's database. Designed as a listing for collectors and connoisseurs, Collector's Data Service provides an online international exchange for buyers and sellers of rare, exotic or exceptional merchandise in over 20 categories. These include antiques, art, classic cars, stamps and yachts.

The service enables collectors interested in an item to search the world for it, while sellers can place their ads before potential buyers. It has no sign-up charges, minimums or monthly fees; you are charged only for connect time, which is billed automatically to your credit card. Advertisers pay only \$3.00 a month for a 10-line listing, or a cent/a line/a day.

Other categories include aircraft, exotic real estate, gems/jewelry, horses, musical instruments, rare books, purebred pets, rugs/tapestries and extremely rare. Lists of stolen property will

be available, along with newsletters, event calendars, auction listings, and show dates.

Collector's Data Service, Ltd., 420 West Mercer, Seattle, WA 98119 (206) 281-7273.

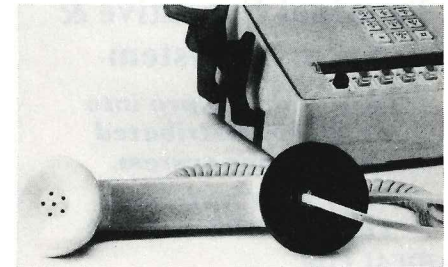
Property management software. Property Management Plus, a system for tracking income and expenses on rental property, provides management and accounting information for single-family homes, multi-family housing, and industrial property for one or many owners. The program keeps track of tenant information, rental income, late fees, vacancies, and leases. Up to 100 categories of expenses and income can be maintained. The system will also print checks and rental receipts, help you balance your bank account and produce graphs.

\$525. Kaypro 2, 4 and 10. Realty Software Company, 1926 S. Pacific Coast Highway, Suite 229, Redondo Beach, CA 90277 (213) 372-9419.

Portable modular phone jack. You can now connect hard-wired (non-modular) telephones to modular phone jacks for telecommunications using the Black Jack™ phone attachment. All you do is unscrew the mouthpiece and microphone on the telephone handset, press the Black Jack into place, insert the modular jack from your modem and away you go.

The Black Jack is made of rubber with a built-in circuit card

and modular jack. It is compatible with single or multi-line telephone handsets such as Bell, ITT and GTE manufactures. Modems equipped with Touchtone® dialing may dial directly through the Black Jack, and pulse dialing is done on the telephone set itself.



\$49.95. The Microperipheral Corporation, 2565 152nd Ave. N.E., Redmond, WA 98052 (206) 881-7544.

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B & G Microsystems Marketing, P.O. Box 441, Londonderry, NH 03053 (603) 432-7936 or 434-9981.

Temporary disk storage. This disk file holds floppies upright to protect them from damage while working with several at a time. The putty-colored plastic unit, called the Disk Jockey, has a multi-tiered design that holds up to five 5 1/4" floppies and has compartments for felt tip pens and labels.

\$6. MicroComputer Accessories, Inc., 5721 Buckingham Parkway, Culver City, CA 90230 (213) 641-1800.

Add-on video board and graphics upgrade. The AT-1 Video Attribute Add-On Circuit Board adds reverse video, reduced intensity, blinking and reverse screen to the Kaypro 2 and 4. In addition, it enables multiple terminal emulation and screen dump.

The GR-1 Graphics Upgrade adds Epson printer compatible graphics and screen dump character translation. Both add-ons connect directly to the Kaypro's circuit board without modification to the main board.

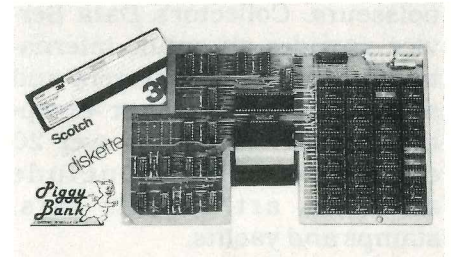
Prices are \$149.95 for the AT-1 and \$49.95 for the GR-1. Together, the cost is \$179.95.

JFN Industries, 361 N. Fuller



Ave., Los Angeles, CA 90036
(213) 939-4105.

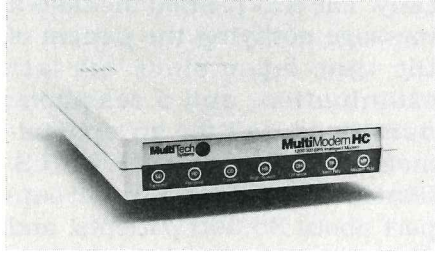
Memory board. The Piggy Bank™ adds 384K of memory that can be used as a RAM expansion or bank-switched memory, or both. Installable in less than 15 minutes, the Piggy Bank has directly addressable memory and is fully compatible with CP/M+ (CP/M 3.0), which does not come with purchase. Printed circuit board, software, and installation/users' manual is included.



\$649. Kaypro 2 and 4. E-Systems, Berkeley, 2308 Fourth St., Berkeley, CA 94710 (415) 486-0686.

Intelligent modem. The 300/1200 bps Hayes-compatible MultiModem can store up to six 31-digit phone numbers in its battery-backed memory, detect dial and busy tones, and continuously dial until connection. It has seven status LEDs and a test mode that provides diagnostic information during set-up and operation.

It comes with a two-year warranty, documentation, and free time on CompuServe and NewsNet.



\$549. Multi-Tech Systems, Inc., 82 Second Ave. S.E., New Brighton, MN 55112 (612) 631-3550.

Graphing, forecasting and statistical analysis software. APSGRAPH is a program designed to meet the presentation graphics needs of managers and financial planners. With it, you enter the data, define labels, and select the type of graph desired, which includes bar, floating bar, pie, line and more. APSGRAPH supports Okidata, Mannesman-Tally and Epson printers.

\$295. Kaypro 2, 4 and 10. Automated Professional Systems, Inc., 270 Madison Ave., New York, NY 10016 (212) 725-2442.

Screenplay writing software. FeatureFormat is a self-installing add-on to WordStar that lets you write in screenplay format. It has automatic margin changes, tabs, carriage returns and name and slug line capitalization. You can do such functions as change from description to dialogue simply by pressing one key.

\$49.95. Kaypro 2, 4 and 10. PowerSoft, 1543 N. Myers, Burbank, CA 91506 (818) 845-2386.

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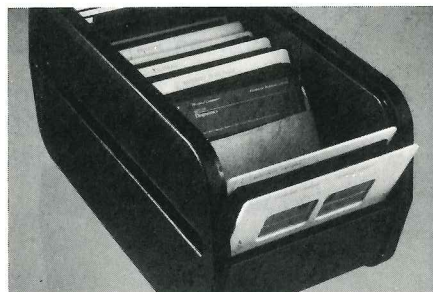
\$182. Kaypro 2, 4 and 10. ATS Cases, Inc., 25 Washington Ave., Natick, MA 01760 (617) 653-6724.

Free microcomputer book catalog. *Micro-Computer Explained* is a new 32-page catalog of over 400 books for the novice to experience user. It features books on how to use various software programs, programming, business, science, engineering, and training/education. It also includes training and education software and videotapes.

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Rolltop disk file. The Rolltop 100 Executive features a silver top enclosure and a black plastic body that holds 120 diskettes. It also comes with ten dividers and color-coded labels.

\$39.95. MicroComputer Accessories, Inc., 5721 Buckingham Pkwy., Culver City, CA 90230 (213) 641-1800.

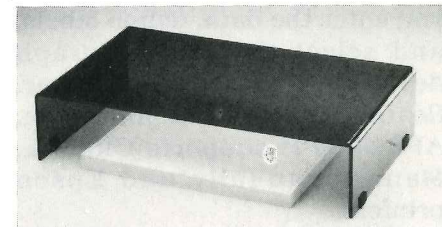


Patient recall system. This package, designed under the

direction of several practicing health care professionals, helps with appointment scheduling by printing recall cards automatically. The text printed includes a message notifying the patient of the time lapse since his last examination, and a telephone number to call for an appointment. The system, called P.R.S. (Patient Recall System), will support about 35,000 patients, and uses menu-driven prompts to lead the operator through all phases of installation, operation and report generation.

\$395. Kaypro 10. Arctic Data Corporation, 1839 1st Ave., Prince George, B.C. V2L 2Y8 (604) 562-5240.

Printer stand. Omnium's Mini-Printer Stand has a bottom paper feed and is made of durable,



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\$36. Omnium Corporation, P.O. Box 186, Stillwater, MN 55082 (800) 328-0223.

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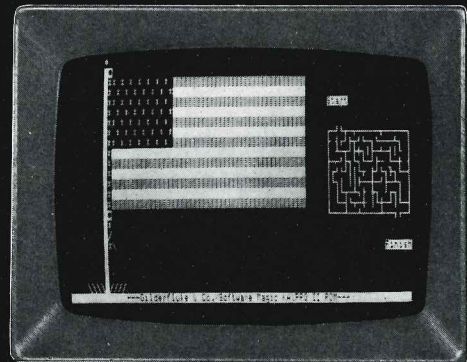
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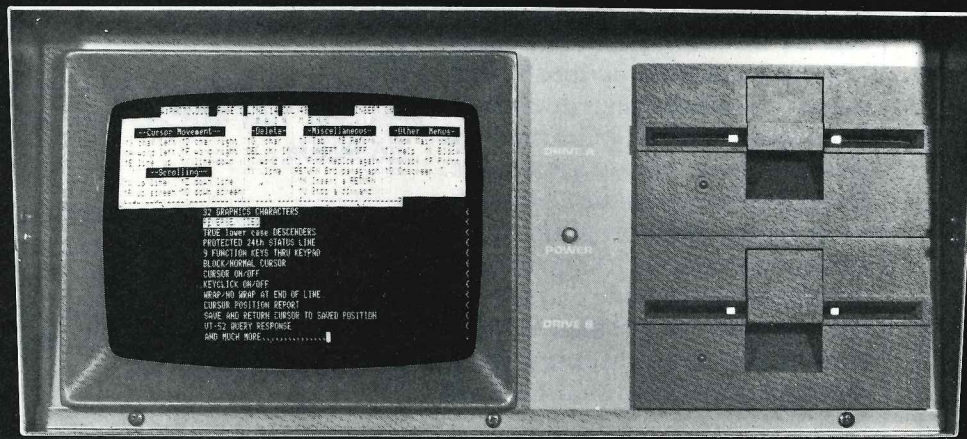
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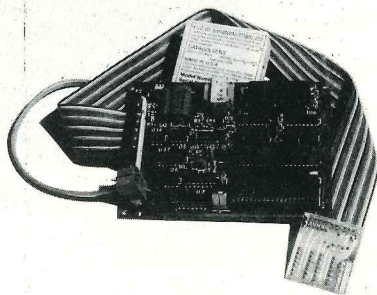
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\$427.50. Kaypro 2, 4 and 10. Datasolvers, Inc., 440 Maple, Wichita, KS 67213 (316) 264-5068.

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\$25.50. \$8.50 for a demo disk that can be applied toward purchase. Kaypro 2, 4 and 10. Requires the MBasic interpreter to run. Wildriver Software, 1111 Birch Dr., Hudson, WI 54016.

Educational software. The Think+plus Educational Series has 24 software packages covering such subjects as math, fractions, percentages, decimals, vocabulary, and grammar for grades one through eight. Designed for use in the classroom or at home, each program in the series has close to 100 questions. Teachers and parents can specify the number of problems to be solved and the minimum pass-through grade required for each one.

\$34.95 each. Kaypro 2 and 4. Resource Software International, 330 New Brunswick Ave., Fords, N.J. 08863 (201) 738-8500.

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\$150. Kaypro 2, 4 and 10. Maurizi Associates, 1344 Fitch Way, Sacramento, CA 95825 (916) 486-2993.

Computer registration service. The National Registry for Computers will maintain a serialized list of your computer and related hardware, and help you recover it when it's lost or stolen. As soon as the service is notified of a loss, it contacts law enforcement agencies and applicable insurance carriers. The service regularly costs \$20 a year, but has a special offer through October 1st for \$15 a year.

National Registry For Computers, P.O. Box 40158, San Diego, CA 92104.

In the May/June issue, we listed the name of a structural analysis software program incorrectly. The correct name is FRAME80™. PROFILES Magazine regrets the error.

Users' Groups

by Richard Conde

As the new KUG manager I found myself attending both the New York Computer Show and the Virginia Computer Show almost before I found my desk. The purpose of the trip was to contact and meet with as many of the local Kaypro Users' Groups as possible. As you might expect, such meetings proved a valuable, efficient and fun way to get oriented to the KUG world.

Everyone I met exhibited down-home friendliness, a willingness to share information and a genuine expertise. KUG members are impressive!

I particularly want to acknowledge the following individuals for their outstanding contributions to their KUG groups, as well as their willingness to take time from their busy schedules to meet with me: Joseph P. King of NYKUG, Al Gerson of KUGRAM, Richard Weingarten from the Long Island Computer Association, John E. Smith and David Curtis of the Tidewater KUG, Marty Keiser from the Charlottesville KUG and John Blincoe from CKUG of Washington DC.

A desire to improve information between KUGs and between the KUGs and Kaypro is the mutual goal of all concerned. With this in mind, our department will be contacting the KUGs as soon as possible.

In the planning stage is ONKUG, the Official National Kaypro Users' Group and a newsletter for that organization to be distributed regularly. It will be

the official voice of Kaypro Corporation to KUGs around the country and the world. This should be in place by the end of the year.

In the meantime, keep those newsletters coming . . . we'd like one from every group, and be patient . . . we will answer your letters, although we're not able to respond as quickly as we'd like . . . yet.

Kaypro users' groups have no official relationship with Kaypro Corporation. Therefore, we can take no responsibility for the accuracy of the information in the list below, nor for the activities of the groups themselves. For further information, you can contact the group in the list nearest you or write to:

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Of course you may be able to "force fit" your application into some existing canned package you have, but to really be flexible you need a separate program for your special purpose.

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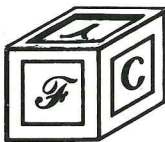
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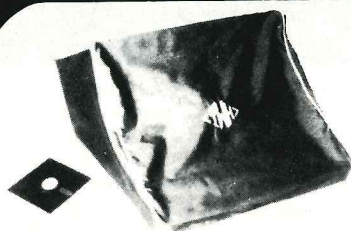
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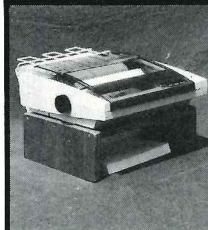
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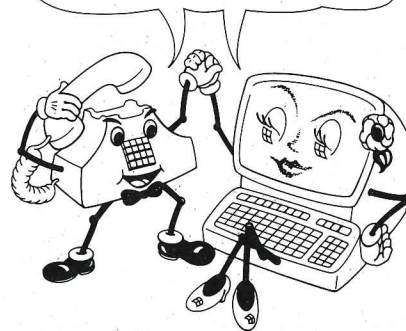
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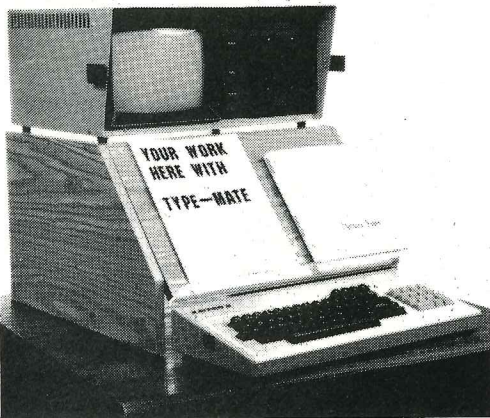
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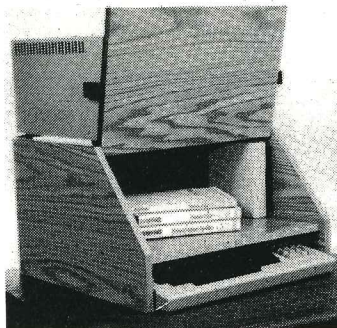
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^R 10, 15, 20 ^R

in a file printed by WordStar with HexPrintR installed into it would send the same thing to the printer as the BASIC program statement:

LPRINT CHR\$(10); CHR\$(15); CHR\$(20);

(Not recommended for daisy wheel printers)

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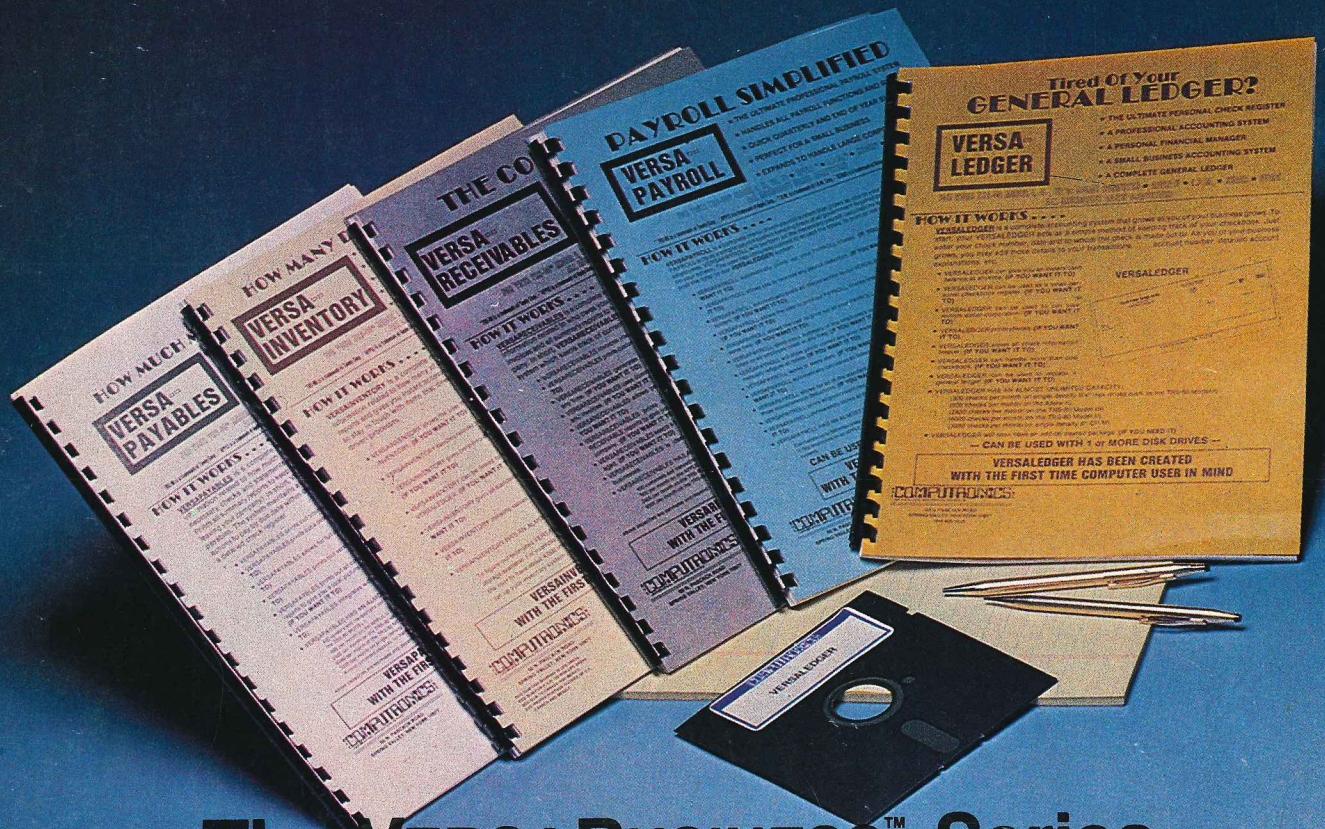
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