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PROFILES

The TUTORIAL Magazine for Microcomputer Users

April 1987

INFORMATION SERVICES
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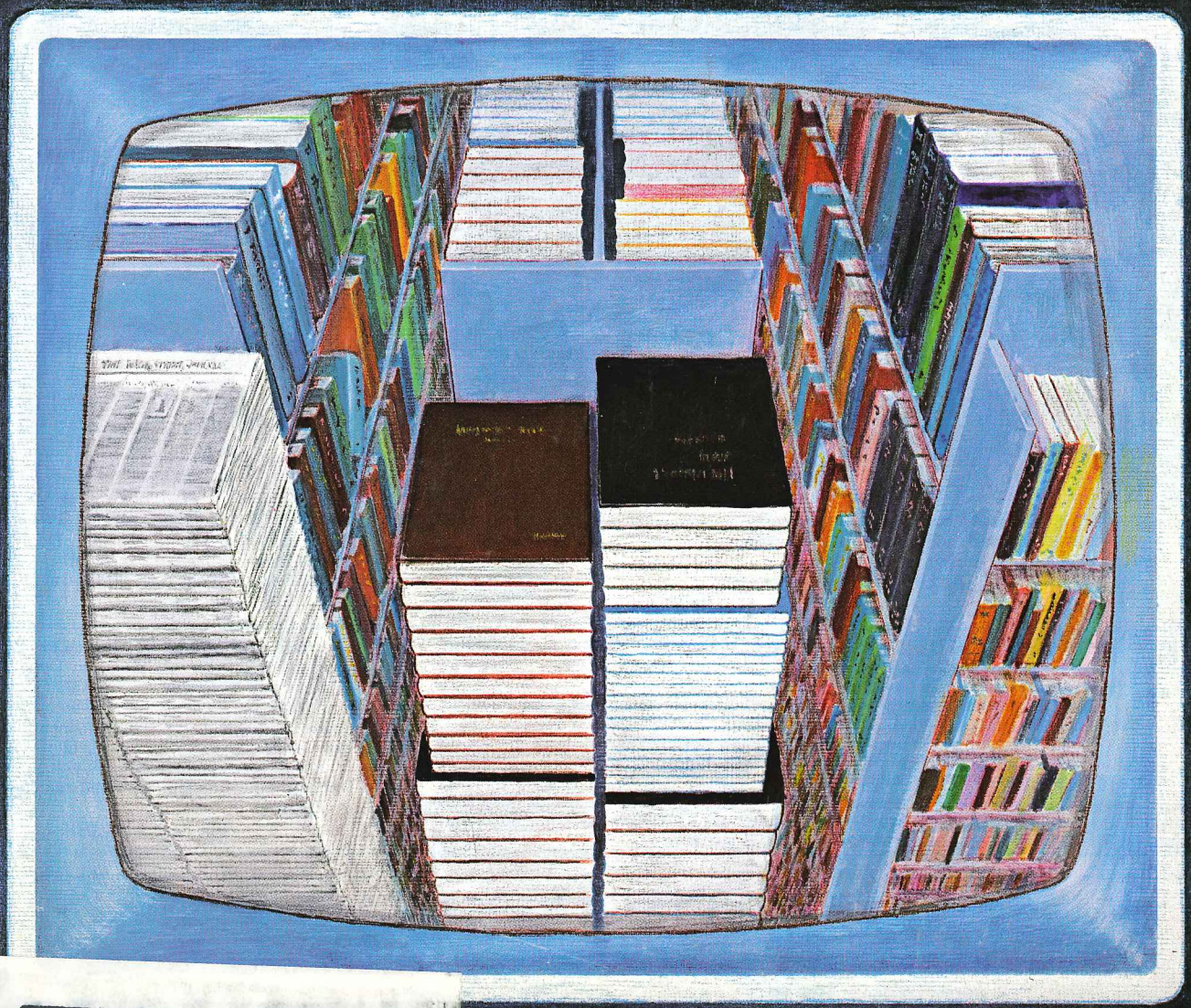
A BEGINNER'S GUIDE TO TELECOMMUNICATIONS

ADD-ON HARD DISKS FOR CP/M COMPUTERS



A First Session with WordPerfect

HANDYMAN

TURN YOUR KAYPRO ON TO HANDYMAN!!!

AUTO DIALER
- Use your modem to make phone calls automatically without exiting the program you are already working on!!!

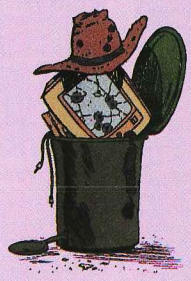
APPOINTMENT CALENDAR
- Check your calendar, schedule appointments anytime your Kaypro is on!!!
- Monthly calendars 1752-2099 AD!!

NOTEPAD
- Write a note, paragraph, letter, a whole file; anytime, from within any other program!!!
- Edit another file without leaving your current file!!!

DIRECTORY
- Check the directory of any disk, any user number, from within any program!!!
- Display the contents of another file on your screen at any time!!!

CALCULATOR
- Punch up a four function calculator anytime, whenever your computer is on!!! Works in decimal, binary, hex!!! Works from within a spread sheet, or any other program!!!

SCREEN DUMP
- Print the screen . . . any screen (minus graphics), at any time!!!
- Dump to your printer, or to a disk file!!!



- "Disk Full" message? With **HANDYMAN** you can check the disk directory and erase superfluous files from within any program!!!

Turn your Kaypro on!!! HANDYMAN is there!!!

HANDYMAN Is a plug-in board for your Kaypro!!!
HANDYMAN Works with all Kaypro CP/M models!!!
HANDYMAN Easy to install!!!
HANDYMAN We'll talk you through it over the phone!!!
HANDYMAN Includes software in ROM and its own working RAM!!!
HANDYMAN You never have to load it!!!
HANDYMAN Single stroke commands!!!
HANDYMAN is compatible with all CP/M application programs!!!

HANDYMAN Uses no main memory!!!

NEW — HIGH TECH K-20 COMPUTER — INTRODUCTORY PRICE — $1,595.00

Includes:
- All brand new components mounted in a Kaypro 10 case.
- 20 Megabyte Seagate 65 millisecond hard-disk drive.
- 800 Kybte (quad-density) Panasonic floppy-disk drive. (Reads single and double sided double-density disks too.)
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- Standard Kaypro software package (WordStar, etc.).
- Advent Turbo ROM or MICROCode Kplus Rom. And of course **HANDYMAN.**

These are **complete computers — not upgrades.** Price and availability subject to change. Allow 3 weeks for delivery. Add 3% for credit card purchases (computers only) and $20.00 shipping and handling. Call for prices on 30, 40, 50, & 100 Megabyte computers. 90 day warranty.

NEW — HANDYMAN Version 1.3

Now complete with File Manager. Copy files from any drive/user to any other d/u without leaving your original application file.
Now enter Appointments with a single keystroke.
Now available with Advent Turbo ROM or MICROCode KPLUS ROM. (Call)
And much more. **HANDYMAN Still uses No Main Memory.**

Still only $124.95

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YES! Send me _____ HANDYMAN(s) at $124.95 $_____._____
My Kaypro signs-on (boots) as CP/M 2.2 _____ (letter).
(Required for 84 series Kaypros only).
Yes! Send me _____ HIGH TECH K-20(s) at $1,595.00 $_____._____
Add 3% for credit card purchases (K-20s only) _____._____
California residents add 6% sales tax $_____._____
Shipping and handling ($5.00 HANDYMAN — $20 K-20) _____._____
Signature _____ TOTAL $_____._____

My Kaypro is a _____ (model) _____ (model year).
I use _____ (Wordstar or Perfect Writer).
Charge my ☐ VISA ☐ master charge ☐ AMERICAN EXPRESS
Card # _____ Exp. _____
C.O.D. and checks drawn on US banks also accepted.
Phone (_____) _____-_____ Eve (_____) _____-_____

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TO: Joan Prentiss-Winston, CEO
FROM: Bertram W. Finch, CFO

PROPOSAL

After researching all our options, I can confidently recommend a software product by SoftCraft, Inc. The product is called Fancy Font and it would meet all our typesetting needs. Fancy Font is cost effective and is compatible with all our laser *and* dot matrix printers, as well as any of our installed word processors.

Fancy Font can meet the needs of the following departments:

Graphics

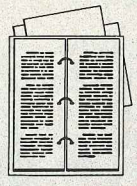
Our graphic artists will find Fancy Font useful for creating vu-graphs, presentation materials and advertisements. There are now commands to create and work with graphic images. SoftCraft also offers a special service to digitize logos and symbols our artists design.

Research and Development

Fancy Font provides the special symbol and mathematical fonts this department needs to produce proposals and technical reports containing scientific notation and mathematical formulae.

$$\pi(n) = \sum_{k=2}^{n} \left\lfloor \frac{\Phi(k)}{k-1} \right\rfloor$$

Documentation



Fancy Font will save time and money in the production of our manuals and technical documents that require several sized chapter, title and section headings in a variety of text formats including portrait and landscape mode. The kern option creates ligatures for the most polished looking documents.

Public Relations and Marketing

Fancy Font can make all our promotional materials look more professional. It is a software package versatile enough to produce news releases, invitations, company newsletters, even last-minute sales presentations, all looking as though they had been done by a professional typesetting service.

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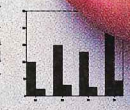


RECOMMENDATION: Fancy Font can meet the special needs of virtually every department in the company. No special hardware or installation is required, so we can use it as soon as it arrives. Fancy Font would cut company costs by reducing printing and typesetting fees and bring in-house, several services that we now send out. **I recommend that we purchase Fancy Font immediately.**

Bertram W. Finch

Bertram W. Finch

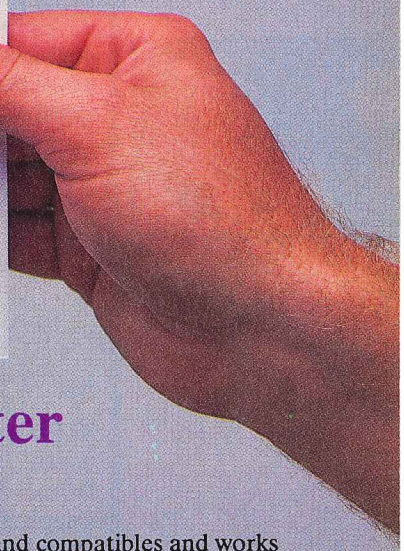
Create boxes shaded or patterned according to your specifications. (new!)

Standard fonts include Sans Serif, Roman, *Script*, Old English, **bold**, *italic* in sizes from 8 to 24 points.

Automatic column command. (new!)

Includes over 1500 mathematical, foreign language and special symbols that can be scaled to any size up to 1 inch.

Drop in graphic images captured from a file or from the screen display of programs such as Lotus 1-2-3. (new!)



Let Fancy Font turn your printer into a personal typesetter.

Fancy Font gives you the utmost in document versatility by allowing you to mix a variety of font styles and sizes in either portrait or landscape mode with your printer's native fonts.

If you have an inexpensive dot matrix printer, Fancy Font turns low-resolution print quality into stunning high-resolution, proportionally-spaced text rivaling laser printer output.

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Fancy Font runs on all IBM PC's and compatibles and works with word processors, spreadsheet and database programs.

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Now with graphics!

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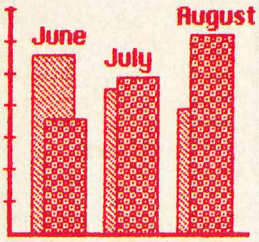
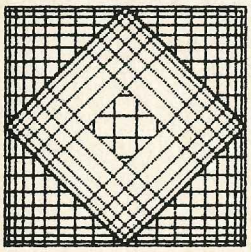
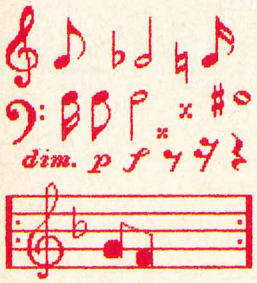
The sample letter above was printed in one pass with Fancy Font on an HP LaserJet+.

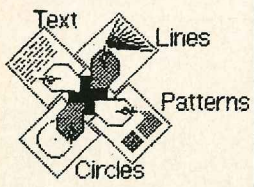
"Kaypro makes a nice computer—too bad it doesn't do graphics"

Graphic Designer







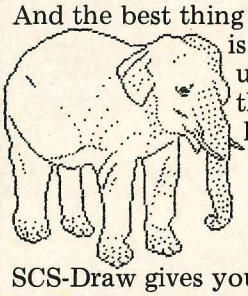


Make that *didn't* do graphics. SCS-Draw is here, bringing Macintosh-style graphics to the Kaypro computer. With SCS-Draw, you can use your Kaypro to draw a picture. Of anything.

The first true drawing program for the Kaypro, SCS-Draw turns your computer screen into a sketchpad on which you can draw detailed images like those shown here. These images can be saved on disk or printed on your dot-matrix or letter-quality printer.

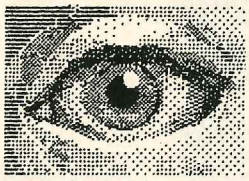
There are many applications of SCS-Draw. For example, you could use SCS-Draw to design and print party invitations, banners, or technical diagrams. You could also use SCS-Draw to promote your business or design your company logo.

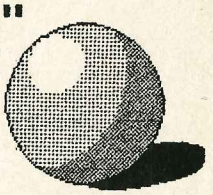
And the best thing about SCS-Draw is that it's fun to use — when was the last time you had some *fun* with your Kaypro?

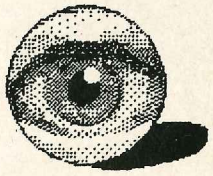


SCS-Draw gives you a variety of useful drawing tools to choose from. You can draw a detailed image dot-by-dot, or do a rough sketch with straight lines. Need a compass? SCS-Draw can draw circles of any size, wherever you need them For subtle shading effects, use one of 23 pre-defined patterns, or create your own.

Other features include block moves, four built-in fonts, and powerful print options like enlargement, indentation, mirror image and rotation. And SCS-Draw's windowing capability lets you work on images much larger than your Kaypro's screen.







Simon&Simon Photography

AAAaaa
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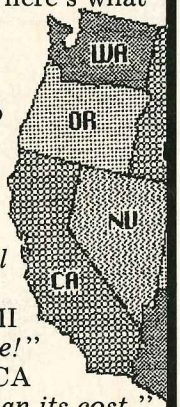
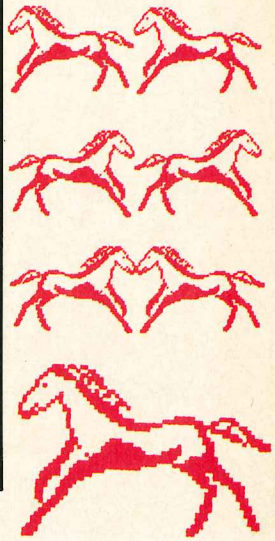
How good *is* SCS-Draw? Every day, we get unsolicited letters and phone calls from SCS-Draw users around the country — here's what *they* have to say:



"Very easy to use."
— G.H., WPAFB, Ohio
"Keep it up ... the program is great fun."
— J.S., Roseburg, OR
"A pleasure to use ... user-friendly, fun, well put together."
— D.A., Kalamazoo, MI
"Everything is bug-free!"
— D.C., Los Angeles, CA
"Worth much more than its cost."
— B.H., Birmingham, AL

Banners

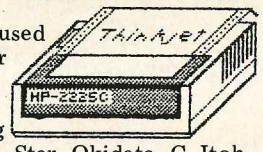


your KAYPRO can Draw

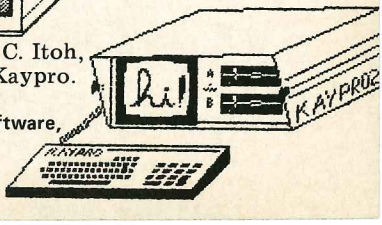
... with **SCS-Draw!** Available now for all '84, '85 and '86 Kaypro CP/M computers. Send $59.95 (check or money order) to **Second City Software, P.O. Box 442, Mt. Prospect, IL 60056.** Call **312-577-7680** for COD orders or more information.

SECOND CITY SOFTWARE

NEW for PrintMaster Owners: *Now you can use your favorite PrintMaster images in your SCS-Draw drawings. The* Image Extractor *converts PrintMaster images to SCS-Draw image libraries. Price:* $24.95 SAVE *when you buy SCS-Draw and the* Image Extractor *together: Only* $79.95



SCS-Draw can be used with most popular dot-matrix and letter-quality printers, including those from Epson, Star, Okidata, C. Itoh, Panasonic, IBM, HP, Diablo and Kaypro.



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TYPIST

PROFILES

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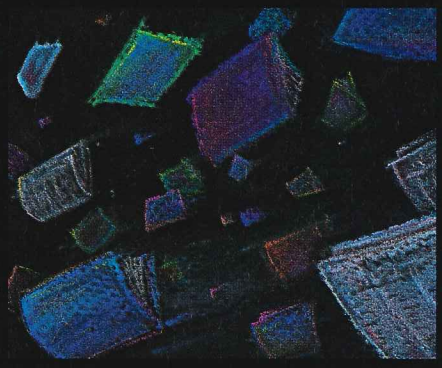

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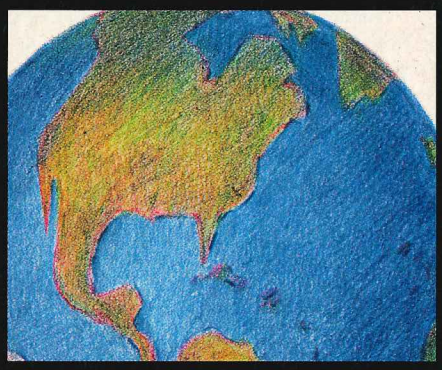

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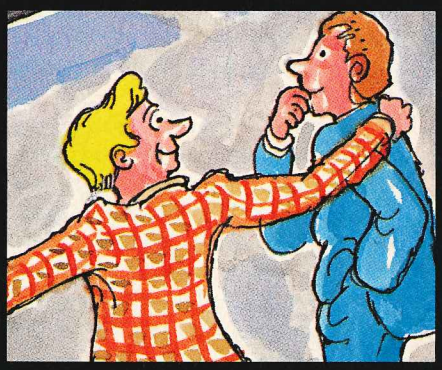

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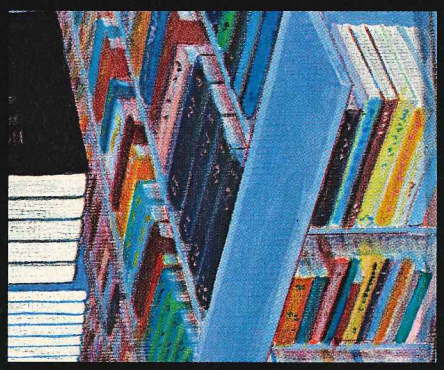

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ON THE COVER:
One of the most attractive capabilities of personal computers is tapping huge reservoirs of information electronically. Artist Pete Evaristo captures the essence of this activity with his cover illustration. Our feature article, "Information, Please?" offers a look at what's out there and who's got it.

PUBLISHER
Janet Gallison

CO-EDITORS
Diane Ingalls
Terian Tyre

TECHNICAL EDITOR
Tom Enright

ASSISTANT EDITOR
Suzanne Kesling

ASSISTANT TECHNICAL EDITOR
Marshall L. Moseley

REMOTE/CONTRIBUTING EDITORS
Joseph Comanda
Ted Silveira
Jim Spickard

CONTRIBUTING WRITERS
T.F. Chiang
Don and Sharyn Conkey
Brock N. Meeks
William Murdick
Robert J. Sawyer

ART DIRECTOR
Rochelle Bradford

CONTRIBUTING ARTISTS
Mike Dormer
Rick Geary
Greg Martin

CONTRIBUTING PHOTOGRAPHER
R.S. Powers

ASSISTANT PUBLISHER
Gwyn Price

CIRCULATION
Michael Herbert

ACCOUNTING
Larry Stenger

DIRECTOR, ADVERTISING SALES MARKETING COMMUNICATIONS
J. Austin Lane

SENIOR ACCOUNT EXECUTIVE
Marilyn Lenk

ADVERTISING SALES
249 S. Highway 101, Suite 321
Solana Beach, CA 92075
(619) 259-4469

EDITORIAL OFFICE
533 Stevens Avenue
Solana Beach, CA 92075

CIRCULATION
P.O. Box 2889
Del Mar, CA 92014
(619) 481-4353

Volume 4, Number 9
PROFILES (ISSN 8755-464X) is published twelve times a year by PROFILES Magazine, 533 Stevens Avenue, Solana Beach, CA 92075.
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Editors' Notes

One version means more for all

When a magazine has as diverse an audience as *PROFILES* does, it's not easy to keep all readers happy all the time.

When we began covering DOS machines, many longtime CP/M users protested in fear that we would drop CP/M coverage altogether. Meanwhile, DOS users wanted more information on their machines, and we gradually increased DOS coverage while trying to maintain CP/M coverage.

Recently, we started publishing two different versions of the magazine, with material specifically for CP/M users in one version and material for DOS users in the other, though most material was identical in both.

Some CP/M users were pleased with this arrangement, because they felt it showed a real commitment to CP/M coverage, something that's increasingly scarce. But readers who use both CP/M and DOS were not at all happy—they wanted coverage of both in the same magazine (something equally scarce) and there were surprising numbers of them letting us know it.

In an effort to be responsive to the needs of as many readers as possible, we've made the decision to return to a single version of the magazine covering both operating systems. However, this single version will have *more pages* than before. This way we can continue to give both CP/M and DOS the *same amount of coverage* they had been getting in the split issues, and those who use both systems will get even more of what they want.

CP/M users can be assured that reverting to a single issue does not mean any less support for them. DOS users will continue to find a high percentage of DOS material, and users of both systems will find all they need in one magazine.

Also in response to readership needs as determined by a recent survey, *PROFILES* will be concentrating more heavily on tutorial articles—clear, step-by-step instructions for doing specific things with your computer, aimed primarily at beginning and intermediate users. Our goal is to help you use your computer more efficiently and for more purposes, and to help you learn as quickly and painlessly as possible.

We'll continue to provide clear, useful laymen's overviews of new technological developments and services for computer users so you can better understand what they will mean to you and how they can help you get more out of your computer.

Finally, we'll be providing more reviews of the products you're most apt to be interested in, complete with unequivocal scorecards letting you know how they measure up by six clear criteria.

We hope that all of this will make *PROFILES* the computer magazine you can't do without.

One last word: the *PROFILES* staff likes a joke as well as anyone, and since this is the April issue, April Fool's day offers us the excuse to perpetrate one. Have fun finding it

Terian Tyre
Diane Ingalls

General subscription information can be found on page 59. Our basic one-year rate is $25 for 12 issues. If your first issue does not arrive within eight weeks after ordering, or you miss an issue, please write to us: PROFILES Magazine, P.O. Box 2889, Del Mar, CA 92014. We'll extend your subscription or send the issue. To direct PROFILES to a new address, attach a recent mailing label plus your old and new addresses. Allow eight weeks for processing. International subscriptions are available directly through PROFILES Magazine only. Our regular yearly international rate is USD $40 (includes postage). Checks MUST be drawn on a U.S. bank in U.S. dollars ONLY.
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7012) VDO: Ver. 2.5. Video Display Oriented editor. Full screen editor with help menus uses only 7K of memory!

7013) WORDSTAR PATCHES: Patch subroutines and patch locations for modifying Wordstar.

7048) EXPRESS: Version 1.0. A full screen editor designed for programmers. This editor can access files in any user area, on any disk from anywhere on disk to anywhere on the disk.

7049) VDE: Version 2.31. A small powerful text editor that takes up only 10k of memory.

EDUCATIONAL

7006) DB HELP: Dbase help program listing all Dbase II commands and functions. (Requires Dbase II).

GAMES

7000) NEW ADVENTURE: Enter into the Colossal Cave to find fortunes of treasures and gold.

7002) DC10: An exciting flight in the cockpit of a DC 10. Includes instrument representation. (Requires MBASIC).

7015) GAMES, GAMES, GAMES: Star Trek, Chess, Aliens and more. (includes source code).

7017) BASIC GAMES: Star Traders, Chase and Nuclear Reactor. (Requires MBASIC). (Requires Turbo Pascal).

7021) THE MINES OF MORIA: A complex fantasy game that changes every time you play it. (Requires MBASIC).

GRAPHICS (REQUIRES KAYPRO w/ GRAPHICS)

7003) DDRAW: Version 2.0. Create pictures on your screen and save them on disk to recall later. This program also allows you to dump graphics to your printer. (Includes PASCAL source code).

7034) ARTIE: Version 6.0. An excellent graphics design program that allows you to dump your art files to your Okidata or Panasonic printers.

7053) & 7065) PLOT: Version 3.3. A very impressive high resolution plotting system for dot matrix printers. The plotting program comes preconfigured for Epson, C. Itoh, and Okidata printers. Source code is included. High level language facilities for creating the vector files are supplied for MBASIC, TURBO PASCAL and Microsoft FORTRAN80. Requires disk 7065. **(2 disk set. Must order both disks)**

HACKERS/SECURITIES

7005) DB SQZ6L: Take this program and encrypt your Dbase II command files to protect them from prying eyes. (Requires Dbase II).

7046) SCRAMBLE: Version 2.0. A very effective way to protect your files. This program scrambles your file using an eight character password. Even the author says he could not decypher without the password!!!

LANGUAGES

ALGOL

7040) ALGOL-M: An algol subset suitable for learning algol. Includes compiler and interpreter.

APL

7063) APL: Yes you read right ... APL. Don't know much about this program except that it appears to be bug free and supports standard APL.

ASSEMBLERS AND STUFF

7026) NEW ZASM: A Z80 macro assembler that assembles standard Z80 mnemonics into Intel hex format.

7027) ZMAC: A Zilog mnemonic assembler that generates relocatable object code. Also included is ZLINK a linkage editor for programs assembled by ZMAC. Generates native code.

7033) XLATE: Version 5.0. Xlate takes 8080 source code using Intel mnemonics and creates a new Z80 source code using Zilog mnemonics.

7042) DAZZLE STAR: Z80 disassembler with built in editor. The editor uses Wordstar compatible commands.

BASIC

7041) NBASIC: Nbasic is a basic preprocessor for Mbasic and Basica*. This preprocessor allows the programmer to use alphanumeric labels, REPEAT/UNTIL loops, case statements and fortran like subroutine calls.

C

7023) SMALL C COMPILER: Version 2.0. Expanded version of Ron Cains Small C. (Includes sample programs).

7024) SMALL C SOURCE: Version 2.0. Source code for C compiler. For those who want to modify a C compiler. (Requires 7023 to compile compile itself !).

7025) SMALL C MACRO FILES: Macro source files for Small C.

COBOL

7068) COBOL: Compiles to interpreted code. Includes interpreter and full documentation.

FORTH

7038) FORTH 83: 1983 standard forth interpreter.

LISP

7036) & 7070) ILISP: This is an implementation of LISP based on the LISP dialect called SCHEME.(Requires CP/m 2.*). **(2 disk set. Must order both disks)**

MODULA 2

7064) MODULA 2 SOURCE CODE: This disk contains fifty Modula source code files. Included are many useful utility procedures.

PRINTER UTILITIES

7022) FONTSY: Banner program for all printers. (Includes source).

7028) BRADFORD: An excellent near letter quality printer program for your Wordstar or standard text files. Comes with five fonts for Epson MX w/Graftex, IBM Dot Matrix, Star Gemini 10x/15x, and Epson FX/RX printers. A truly amazing program.

MISCELLANEOUS

7020) EXPERT SYSTEMS: Written in Pascal. (Requires PASCAL Compiler).

7039) DESK MASTER: A computer desk organizer. Desk Master comes with a calendar, card file, memowriter, and calculator.

7043) TOUR: Version 2.0. Document editor for outlining projects, also include desk calendar.

TELECOMMUNICATIONS

7004) DBBS: A space efficient dynamic bulletin board system that incorporates passwords. (Requires MBASIC).

7009) MBYE: Version 4.0. This is a remote console program for CP/M 80 computers. This disk contains assembly language source code only and is NOT for the novice programmer.

7010) & 7069) ROS: Version 3.4. Remote Operating System including PASCAL source code. Requires Turbo Pascal. **(2 disk set. Must order both disks)**

7069) ROS: Requires disk 7010.**(Disk 2 of 2).**

7011) ROSMAC: Set of machine dependent I/O and clock drivers for ROS V 3.3 and 3.4.

7018) MODEM 7: Powerful modem program that supports auto-dial for Signalman Anchor Mark XII, Hayes Smartmodem 300 or 1200, U.S. Robotics 300/1200 and PMMI 103 s-100 Plug-in.

7035) MEX: Version 1.11. Modem program that also incorporates a phone number librarian.

7054) & 7055) PBBS: A Small, very fast BBS program written in Z-80 assembly language. PBBS provides 8 level user profile,private and public message system, BYE504 or 339 bdos interface, automatic user/message automatic file maintenance. Plus more. **(2 disk set. Must order both disks)**

7058) & 7059) MBBS: A very powerful BBS. (Version 4.5). **(2 disk set. Must order both disks)**

7060) MBBS UTILITIES: Set of utility programs for MBBS.

7061) IMP: Version 2.44 Modem program that supports both KMD batch protocol in addition to MODEM7 type.

UTILITIES

7001) CPM POWER: Version 2.53. A CP/M subset with many additional commands.

7007) DB UTILITIES: Set of Dbase II utility programs and overlays. Includes source code.

7008) FBAD: Version 6.0. Checks your hard or floppy disk for bad tracks. Includes source.

7014) YANC: Version 2.4. Yet ANother Catalog program for those who attempt to keep themselves organized...

7016) MISC. STUFF: Contains XCCP, DASM, and I/O Cap.

7029) QUIKKEY: Version 2.0. Key redefinition utility.

7030) SUPERSUB: Version 1.3. Replaces SUBMIT on CP/M. Allows submit files and supports interactive mode.

7031) EPEX: Version 1.1. Evironmental Processing EXecutive. EPEX ia a very powerful environmental program with such features as batch processing including IF /ELSE /END /GOTO, named directories, aliases system control and much more. Includes full documentation.

7032) EPEX TOOLS: Tool package for EPEX V 1.1.

7037) EGUTIL: Set of CP/M utilities including free disk space by sector, file tagging, and hidden files.

7044) NEWARC: Set of archive tools written assembly language for increased speed. Tools include copy, add, del, directory, sort, and type. There is even a utility for running command files from the archive

7045) CRUNCH: Version 2.3. Utility for crunching and uncrunching files.

7047) FU-12: Full screen binary editor using commands patterned after Wordstar.

7050) SPOOLBUFFER: Throughs all output to the printer to disk file then from disk to printer for more efficient use of CPU time.

7051) CONIX: Conix is an operating system that operates under CP/M. Some of the capabilities of Conix include path searching, automatic overlay, redesigned user areas, 8M Print spooler, user definable function keys, virtual disk system, user definable I/O devices and much, much more. Conix is a must for any serious CP/M user.

7052) & 7071) CONIX DOCUMENTATION: Complete documentation for Conix. **(2 disk set. Must order both disks)**

7056) KMD: Version 1.5. Very popular file transfer program.

7057) LBRDISK: This set of programs fool BDOS into thinking that a library is actually a logged disk device.

7062) MAGIKEY+: A key redefinition program that allows you to create and keep key definition files.

7066) & 7067) FATCAT: Version 2.4. A catalog program that allow cataloging hard drives as well as floppy disks. Very easy to operate and configure. **(2 disk set. Must order both disks)**

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Letters

Stock market madness

Jim Spickard's article in the November 1986 issue ("Stock Market Madness") regarding the use of personal computers for trading in the markets is a valuable contribution to computer literature. Of course, we are all interested in the latest versions of word processors and data bases, but there are more applications of importance to serious computer users than these "hot ticket" items.

We were very gratified by Mr. Spickard's conclusion favoring Compu/CHART (our product) even when compared against much costlier programs. We have taken his admonishment regarding our manual to heart and have redone it with regard to content and printing quality. We produce it in-house on our laser printer and can thereby keep it well-conformed to changes in program features. (Incidentally, Compu/CHART 3 is not copy-protected.)

Our thanks to him and to you for taking some of the "mad" out of "Stock Market Madness."

Jules Brenner
NewTEK Industries
Los Angeles, California

Mailing programs

I have been an avid reader of *PROFILES* magazine since its inception and have every issue you've published. I think it is a fine magazine and look forward to every issue. The purpose of this letter is to comment on the recent review of PRO Mail ("Mailing List Managers," March 1987).

PRO Mail was reviewed there and also in the February "First Impressions" column by Tom Enright. As the author and manufacturer of PRO Mail, I was both nervous and excited as I read each article. I must say that both these articles were fair and accurate.

However, there was one error. In "First Impressions," Mr. Enright states that PRO Mail will not print by company name. PRO Mail has five options for reports: alphabetical, zip code, record number, search, and one the user can set himself. This can be set to any field in the program, including company name, so as you can see, PRO Mail can print reports by company name.

Let me also add that all other shortcomings mentioned in the articles are corrected in the 5.0 update now being distributed. Unfortunately, this release wasn't ready when the reviews were done.

Keep up the good work in continuing to provide us with the best computer magazine on the market.

Barry Hurd
Hurd Computer systems
Cypress, California

Making sense of MailMerge

Compliments to William Murdick and Tyra Braden for the tutorial on minimum MailMerge in the November issue.

The manuals drive me bonkers because I don't want or need to do "everything." Murdick and Braden said "the minimum capability described here may be all you'll ever need." And how right they are!

That is why I subscribe to your magazine and just love "Beginner's Luck." I find all the bits and pieces I need therein and thereabouts. As a matter of fact, I have manuals whose covers have never and never will be creased. Though the desire to learn is there, the available time to do it is not.

Bring on the Murdicks and Bradens. They make my life easier and help me enjoy this Kaypro.

A.R. Morin
Webster, New York

Thank you! Thank you! Thank you to William Murdick and Tyra Braden for their insightful "Beginner's Luck" column.

One day, prior to becoming enlightened by their simplified, logical discussion of MailMerge, I spent hours trying to go through the program with my manual. I kept missing the boat. Murdick and Braden's approach was perfect for the computer novice like me.

I noticed that in the December 1986/January 1987 "Beginner's Luck" James Spencer discussed Perfect Calc. I do not have this program, but I do have Lotus 1-2-3—any chance of a step-by-step on this one?

If it is at all possible, please expand the "Beginner's Luck" section. Most of the articles you publish will be helpful when I have had more practical experience with my Kaypro, but it would be helpful in the meantime if there was even more space dedicated to the neophytes.

Barbara T. Conner
Alexandria, Virginia

We're glad you're finding "Beginner's Luck" helpful, and though we're not expanding that column per se, we are making a concerted effort to include more tutorials for beginning and intermediate users. As it happens, "A First Session with Lotus 1-2-3" is scheduled for next month's issue.

Code problems

I have used Kaypro computers since the beginning and still feel there is no better computer (or CP/M) magazine than *PROFILES* available to serve users. But one constant and apparently continuing problem has annoyed me repeatedly.

The problem concerns "Learning to Recognize the Landmarks" (October 1986) and author Tom Wagner's answer to John Pearson's letter (February 1987). *PROFILES* has a continual problem of publishing bad code in the magazine. Something needs to be done about it. When I was yet a novice I had problems with it, and now that I am more skilled it simply annoys me and is a smear on the reputation of the magazine.

Wagner's essential reply to Pearson was to say that the code was intended to illustrate a concept, and not to provide a functional program. *PROFILES* apologized to readers in the next paragraph.

My own opinion is that it represents poor programming, poor teaching, and, as viewed by a former newspaper editor, very poor editorial work. *PROFILES* can do better than to allow this problem to continue. The proper place to say that published code is intended to illustrate concepts and may contain errors making the code unusable is in a headnote to the article, not in a subsequent apology published two months later.

Better yet, why can't you use consultant editors, as we do in scientific publishing? Have one for each language, and have them review and test code before it is accepted for publishing. I am sure you can find many volunteers to do it for only the cost of listing their names

as consultants.

I also have a continual problem with the way you publish code. You published a nice program about controlling printers with dBASE II in February. On page 43 *et seq.* you were forced to say several times (and you frequently and unnecessarily do this) that a character in code was a zero and not an "O." And throughout the article you appended periods to lines of code! One of my colleagues, new to dBASE but with a Gemini printer, was trying the code with the periods in the code. Why can't you take two easy steps to cure these simple problems, which have existed in the magazine since the beginning?

Why don't you switch to non-proportional spaced type with a slashed zero for your published code (so people can count the significant spaces in published code and tell zeros from Os?

My second suggestion concerns code contained within a paragraph, which you use frequently, and the problem of unwanted periods. The problem of periods could be overcome by simply printing the code line on a separate line. This would avoid trailing periods.

I have one other complaint, and that is with your reply [re: volume pricing] to Thomas Adams of Saudi Arabia ("Letters," February 1987). Many of us old CP/Mers will not sell our old machines but will keep them as a second or give them to a college-bound child, or something. I like my Kaypro PC, but I regularly use my old CP/M machine every night at home on manuscripts. Many, many of us would pay money for a hard disk at a reasonable price (say, $500 for a 20MB with controller and installation software). I believe there are more of us out here than you realize.

You have control of the proper forum to evaluate the needs of your users. Many other magazines regularly run reader questionnaires. Why don't you ask your readers on a one-page, check-the-box questionnaire about their needs and specifically address hard disk problems? Ask what hard disk size is wanted most, what price they will pay, whether they want internal or external, etc. Surely there is a *PROFILES* reader out there capable of making controller boards himself and providing them in a package with a drive and software. This person might be induced to do so if *PROFILES* published the responses to the questionnaire. I would write a check immediately to get a hard drive for my Kaypro 2'83.

T. Dave Gowan
Lock Haven, Pennsylvania

To respond to your points in turn, by "bad code," we assume you mean code that will not run. There have been instances of errors in published code, and when that happens we run corrections as quickly as possible. But these have not cropped up very frequently, and we think it's unjustified to say that errors in code are a "constant" problem.

The code in "Learning to Recognize the Landmarks" was a different situation. You rightly say that if code is known to contain errors and is not intended to run, but is used for illustrative purposes, that should be pointed out at the beginning of the article—and it was. In the editors' note preceding the article, readers were told that code examples in the article were "intended to illustrate programming concepts, rather than to be samples of code that will actually run." Using consultant editors is a good idea, but our experience is that competent ones don't work for free and that it's not as simple as it might seem to verify the expertise of "outside help." Furthermore, we often publish machine-specific code, and it's very difficult to find anyone off-site who is familiar with all the various models and especially all the various ROMs used in Kaypro computers.

We agree that using slashed zeros is necessary. Rather than recite a litany of typesetting problems, we will simply assure you that we will begin using slashed zeros as soon as possible, and will solve the problem of significant spaces at the same time.

We began to include lines of code in paragraphs, rather than placing them on separate lines, in an effort to conserve space. We knew closing punctuation would be a problem, and attempted to deal with it by putting commands in boldface, putting punctuation in regular type, and warning readers to be aware of this convention. Obviously, as your colleague's experience shows, this was not an adequate solution. We recently went to a smaller type size for the magazine's text,

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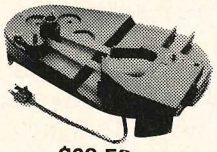

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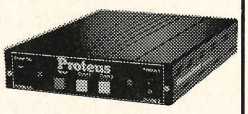

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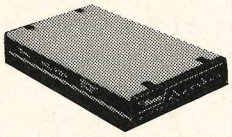

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which frees up more space, and we will adopt your suggestion of placing code on separate lines.

Finally, as to your suggestion that we run questionnaires about readers' equipment needs and publish the results, we don't believe it's our function to conduct free market research for potential entrepreneurs. If there are as many people as you say who want inexpensive CP/M hard disks, they may be able to bring pressure to bear on existing manufacturers to market them, though the greater production costs for CP/M hard disks and lack of standard system software would still be obstacles to lower prices.

Focus on applications

Thanks for all your work on the magazine. I'm one who's trying to move from appliance user to power user (a hacker I'll never be). But keep thinking "applications." A friend who was a power in aviation industry public relations once gave me a copy of a poem that illustrates my point:

"Tell me quick and tell me true
(Or else, my love, the hell with you)
Not how the damned things came to be,
But what they're going to do for me."

Madison F. West
Wichita, Kansas

Adventurers and hard disks

Perhaps a few *PROFILES* readers would like to join our band of seasoned adventurers struggling to beat the 550-point "Adventure" sold by Micro Cornucopia. There is strength in numbers, yet we are few and seek expert guides to help us open the safe below the hall of the Mountain King, and to understand the clue about "stand where the statue gazes and use the right tool." What do you do with the dragon's teeth, the mithrall ring, and "noside samoht"? If you can help us, please write to:

Tom Adams
SAPL MIS
POB 30167
Yanbu Al Sinaiyah
Saudi Arabia

Also, I'm trying to add a hard disk to my Kaypro 4'84 for under $500. You can help if you ask Tom Enright to explain the difference between SASI and SCSI hard disk controllers and the difference between a RAM disk and cache memory.

Tom Adams
Saudi Arabia

Good luck getting unstuck in "Adventure" (does the name Thomas Edison mean anything to you?). As for the hard disk queries, we'll pass your request for a discussion of SASI and SCSI hard disk controllers on to Tom Enright. He discussed disk caching in connection with a caching program in "First Impressions" in the February 1987 issue. You may also find the article on hard disks for CP/M computers in this issue useful.

How about a book?

After reviewing a number of the issues of *PROFILES* from this past year, I was impressed by the number of articles on WordStar, particularly on patching. Several referred to an apparently key article in the July/August 1985 issue titled "WordStar Deluxe."

While obtaining that issue would probably help me complete the details of patching for my purposes, I wonder if you could put together a book on advanced uses of WordStar. I have found many books on WordStar, most of them claiming to make it easy for the beginner, but I have yet to find a book that is for the advanced user.

I would like to nominate Ted Silveira as author of such a book. Actually, he could take his articles on the subject, add some details from articles such as "Do It Your Way," by Robert Sawyer, and perhaps include some of the letters and comments of readers that you have published (and perhaps some you haven't) and have such a book.

I'm obviously asking a lot. I suspect a book that would cover the general details of patching, as well as the specific labels and addresses, would do the trick. An advanced book on WordStar could also describe some of the tricks that can get WordStar to do things it isn't intended to do.

Donald Ratcliff
Toccoa, Georgia

Do we have great timing, or what? We have scheduled a reprinting of Silveira's article, "WordStar Deluxe," for the May issue for the benefit of those who missed it the first time around. It is indeed a key article, the most popular we have ever published, and we hope it answers many of your questions.

As to your request, PROFILES is not in the business of publishing books, but we'll pass your letter on to Ted Silveira in case he might wish to pursue the idea.

"How about a review of . . . "

Apart from an article on using Perfect Writer to create an index for a WordStar file, you haven't covered any of the indexing programs that seem to be specifically written for WordStar.

An indexing program would be of considerable benefit to me, but the brief information in the advertisements is insufficient for me to decide which one to purchase.

Like many others, apparently, I am very dependent on your magazine to help me select software and hardware best suited to my needs, and I would be grateful if you were to review these programs in the near future.

My Kaypro 2X can do all that I want, so please continue with keeping CP/M alive.

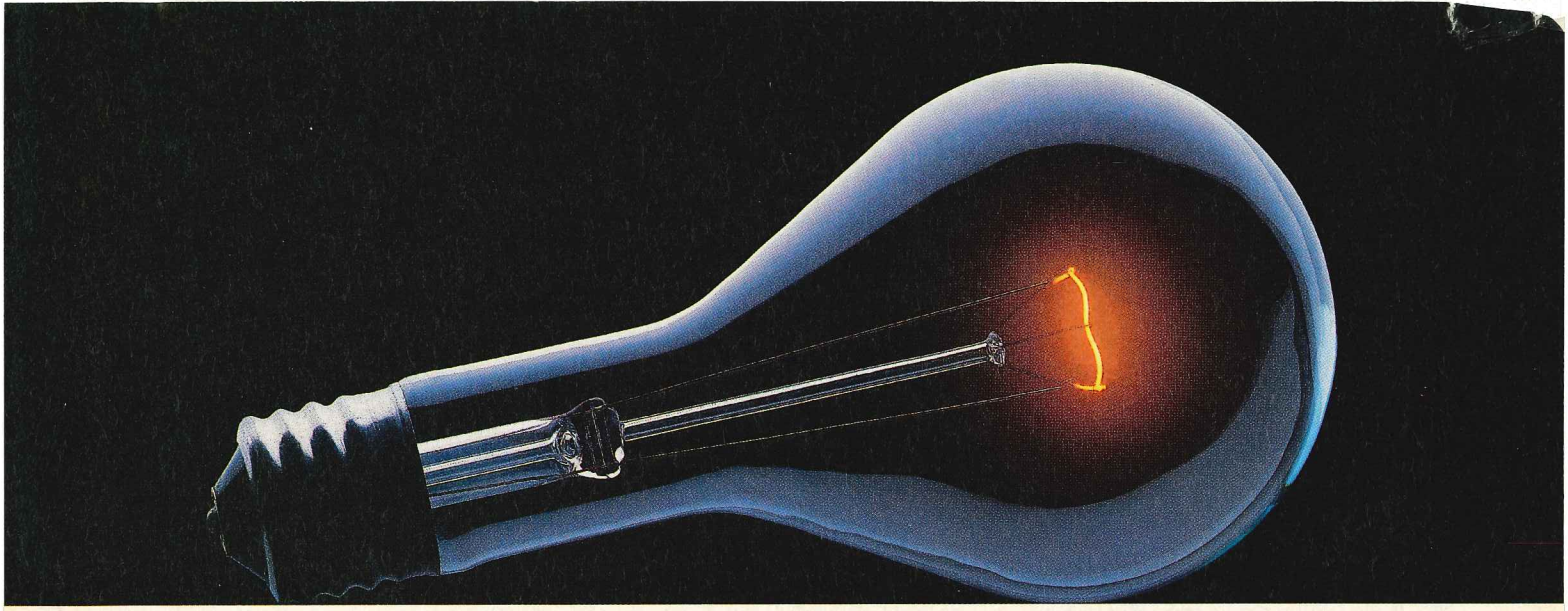
Mike Ellis
Perth, Australia

I have been receiving *PROFILES* for several years now and owe you many thanks for tips, reviews, etc. It is out of this sense of debt that I now write and hope to address a few readers like myself who began with Perfect Writer on a Kaypro CP/M machine and now own or are considering purchasing a DOS machine.

It is worth knowing that FinalWord II is a direct descendant of the old Perfect Writer. The way it operates is much the same, but it has many improvements that obviate many of the gymnastics required in PW.

Maybe some of your readers who are contemplating getting a Kaypro PC but are reluctant to leave PW might like to know this—there is vast freedom and flexibility in FinalWord II. Perhaps *PROFILES* could review the program.

Wayne E. Standifer
St. Petersburg, Florida



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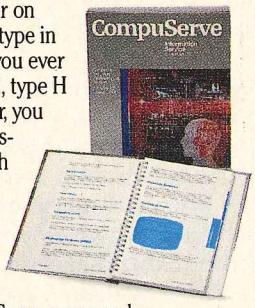

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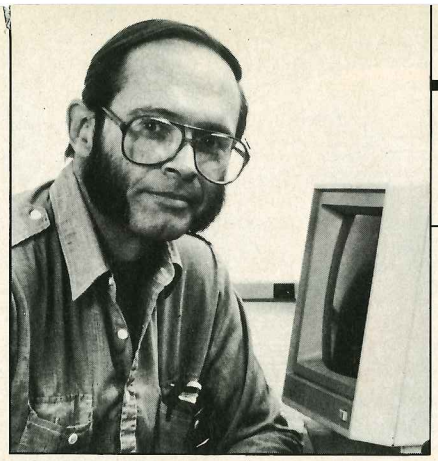

First Impressions

PGA: TurboPGA board and NEC's MultiSync monitor

by Tom Enright

The products for this month are a little high-priced, but offer out-of-this-world performance. The first item is a PGA (Professional Graphics Adapter) from Orchid Technology. The other item is the NEC MultiSync Intelligent monitor from NEC Home Electronics.

The NEC monitor automatically detects whether your video card is sending CGA, EGA, or PGA signals and adapts itself automatically. PGA graphics, in case you haven't heard, gives you 640 x 400 pixel resolution and displays up to 256 colors at once. These 256 colors are chosen from a total color palette of 262,144 colors.

PGA background

Architects, engineers, and artists want a graphics board with high resolution and lots of colors. IBM came up with the PGA in an attempt to establish a standard in the high-resolution graphics market. Other high-resolution graphics boards are available, and have been for some time. But IBM is accustomed to setting standards for the rest of the industry to follow.

The PGA standard normally requires that you use two video boards and two monitors. The PGA board is for graphics only; it does not respond to anything except its own special command set and is not a DOS console device (there is no C:\ prompt on a PGA monitor). DOS command lines and I/O from normal software are not shown on the PGA system. You need a regular video card and monitor for access to MS-DOS—to enter commands, run programs, etc.

A PGA system also requires a special monitor. A PGA monitor must have a 30.5 KHz horizontal scan rate and be able to respond to analog RGB signals. (CGA cards require a 15.75 KHz scan rate and EGA cards need 21.8 KHz.) The high scan rate for PGA is necessary for the higher (640 x 400) resolution.

In analog RGB the signal lines for each color carry intensity information instead of just being on or off. While PGA uses the same type of connector, the signals are on different lines. Analog RGB allows 15 different intensity levels for each primary color (red, green, and blue). Each pixel (dot) on your screen is defined by a signal specifying its red, green, and blue components. It is the ability to assign so many intensity levels that allows you to display any 256 out of 262,144 colors.

Orchid TurboPGA board

Orchid's TurboPGA board is not cheap. As a matter of fact, it is more expensive than IBM's board. That's the bad news. The good news is that it outperforms IBM's PGA board the same way a Corvette outruns a Volkswagon.

The Orchid TurboPGA is for AT-type machines *only*; it won't fit in a PC and Orchid doesn't make a model of it for PCs. The TurboPGA has an onboard 80186 CPU to manage its operations. The IBM board uses the computer's CPU for all operations. What this means is that you simply pass commands to the TurboPGA. Then your CPU can do something else while the TurboPGA's CPU executes the command you sent.

The Orchid TurboPGA command set is a superset of IBM's command set. That means that it has every command of the IBM board and many more. Valid commands are divided into Drawing Primitives, Drawing Controls, Display Controls, and Execution Controls.

Drawing primitives are the commands that produce images on the screen of your PGA monitor. There are commands to draw points, lines, circles, ellipses, arcs, pie chart segments, and irregular polygons, and to fill shapes with colors. The TurboPGA board has both two- and three-dimensional primitives.

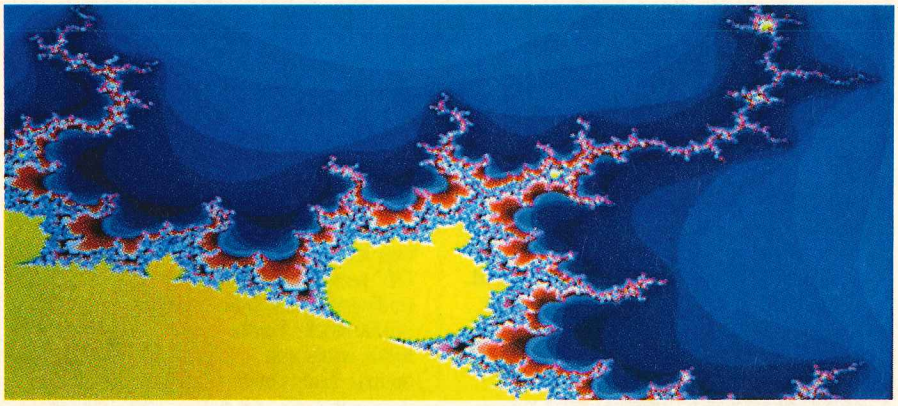

PHOTO: A Mandelbrot Displayed Using TurboPGA

Drawing controls are commands that determine how subsequent primitives will be executed. They select options such as color for following commands, viewport and window sizes, text size and angle, and scaling. Commands that alter three-dimensional rotation, scale, and translation are also drawing controls. A drawing control does not change the image already on the screen; it only affects commands that come afterward.

Display controls can change what is displayed on the screen, but not what is

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PHOTO BY R.S. POWERS

stored in graphics memory. Display controls determine which palette is currently in use or how individual colors in a palette are displayed. They also cover commands that pan the image or zoom in for a closer look at some part of the current image.

Execution controls determine how command files are executed. A command file is similar to a batch file under DOS. It consists of a series of commands to the PGA board to do certain things. Execution controls include commands to begin executing a file, to loop a certain number of times, to branch to another file, and to wait for a period of time before continuing.

Commands are sent to the board as either ASCII strings or binary numbers. The board comes with a device driver that allows you to read or write to the board in ASCII mode, as if it were a disk file. This is the easiest way to use the board from a programming language. You write ASCII commands to the file "CGB" and the PGA board executes the commands as they are sent. The TurboPGA also comes with a program called PROTALK that is a lot like a BASIC interpreter. When running PROTALK, you simply type ASCII commands and the board executes them.

Any commercial software that supports the IBM PGA board works with Orchid's TurboPGA board. It appears to be fully compatible. You won't find arcade games that will use this level of graphics. Support for PGA graphics is limited primarily to CAD, image scanning software, and advanced drawing programs. Normal software does not support PGA boards and will be unable to communicate with them, so don't expect to display Lotus 1-2-3 graphs on a PGA system.

With 640 x 400 resolution and up to 256 colors available, this board can produce images that are tough to tell from a

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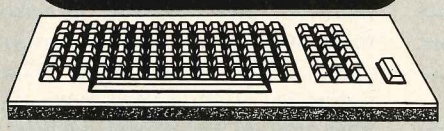

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photograph. If you look closely, you can see some jagged lines; from a distance of more than two feet, however, images can be amazingly realistic. When it comes to displaying lifelike images, the number of available colors is more important than how many pixels are available.

With this board and the right 3-D modeling software, a graphic artist could whip up proofs for an ad campaign very quickly. To truly appreciate what this board can accomplish you need to see something like the mandelbrot set at 640 x 400 resolution and in 256 colors—it's impressive.

An optional extra for the TurboPGA board is a plug-in EGA daughter board. The EGA daughter board also offers what it calls an "enhanced EGA mode" that offers more colors in graphics mode than normal EGA cards can produce. If you use the daughter board, you don't need another video card, as you do with other PGA boards. And if you use NEC's MultiSync monitor, a single monitor can do double duty for both graphics and normal use.

When you are using one monitor for both PGA and EGA display, you select the mode by pressing ALT-1. It acts as a toggle switch, moving you from EGA to PGA and back again. You can also run two monitors from one video card if the daughter board is installed. The second (non-PGA) monitor can be monochrome, CGA, or EGA.

If you need a graphics board this powerful, Orchid's TurboPGA is hard to beat. It is faster than any other PGA board that we've seen, and with the EGA daughter board offers more flexibility than almost anything else on the market. It *is* expensive, but if you can afford the very best, this is the one to buy.

This look at PGAs in general, and the TurboPGA board specifically, has been rather brief. We are planning a more detailed review of this board and a more in-depth discussion of PGA graphics in general for a future issue.

NEC MultiSync monitor

Color monitors are never cheap. If you've spent good money on an RGB monitor to go with your CGA card, you won't be anxious to scrap it just to move up to an EGA or PGA card. Well, NEC has the one and only RGB monitor you are ever likely to need—the MultiSync Intelligent Monitor.

The NEC MultiSync monitor, or JC-1401P3A, automatically checks the frequencies between 15.5 KHz to 35 KHz and locks onto the scan rate your video board is using. This monitor also has a 0.31 mm dot pitch and displays the dots against a black background for increased clarity. Most CGA monitors have a dot pitch of 0.40 mm, which makes for a grainy appearance.

The NEC JC-1401P3A comes with its own tilt-and-swivel stand and has its controls mounted under a cover on top of the case instead of on the front. Having the controls on top is a little less convenient, but NEC more than makes up for it with the number of controls provided. Under the top panel are controls for brightness, vertical size, vertical hold, vertical position, horizontal position, and contrast. In addition, there are two switches to control text mode and horizontal width. When the horizontal width switch is on, the display area on the screen changes size. The text switch enables you to choose—with dip switches on the rear panel—what color text will appear.

The rear panel holds the power switch, a series of dip switches to choose text color, a switch that lets you disable the automatic scanning of frequencies, and a switch to manually select TTL or analog mode. The last two switches are used only if you want to use them. During our test the monitor was left in the automatic mode.

The NEC monitor will function at scan rates of up to 35 KHz and has 560 lines of 800 dots each. Not even a PGA card at 640 x 400 and 30.5 KHz uses all the potential of this monitor. NEC claims that this may well be the only color monitor you will ever have to buy, and they are right.

Not even a PGA card, at 640 by 400 and 30.5 KHz, uses all the potential of this monitor.

The small dot pitch and dark black background make text and graphics appear crisper than on other monitors. Text is more readable, colors are brighter, and lines are sharper than on any other monitor I have seen. The entire monitor, from appearance to operating traits, exudes very high quality.

PROFILES *would like to give special thanks to Focus Computer Communications (4320 Viewridge Ave., San Diego, CA 92123, 619/277-0112) for providing a NEC monitor for this review when NEC could not provide a monitor in time for our deadline.*

Focus is a dealership (not a Kaypro dealer) specializing in CAD/Graphics products. It offers CAD systems, software, peripherals, and operator training .

Summary

Product: TurboPGA board
Manufacturer: Orchid Technology
47790 Westinghouse Dr.
Fremont, CA 94539
Phone: (415) 490-8586
Sugg. List Price: $1,495; EGA daughter board $395

Product: MultiSync Intelligent Monitor
Manufacturer: NEC Home Electronics
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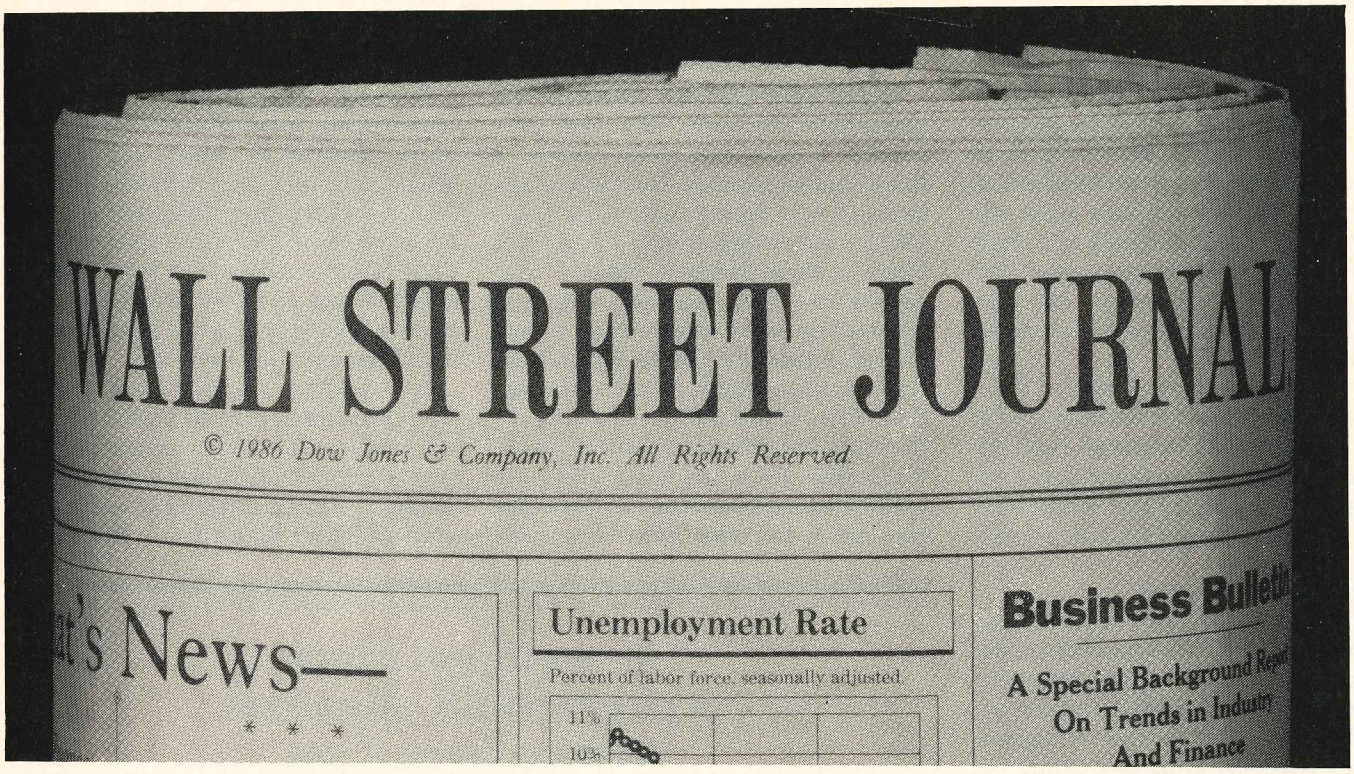

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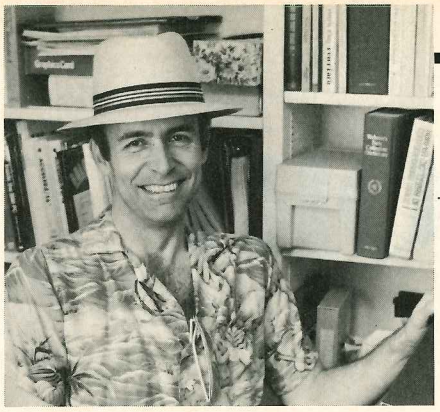

Flea Market

Follow-up report on idea processors

by Ted Silveira

There's one thing software reviews seldom tell you—how the program feels after you've been using it for several months, after you've learned all its commands and are trying to put it to work. It's almost impossible to include that kind of information in a first review—at best, a reviewer has only weeks to use a program instead of months.

In July and August of 1986, I did a two-part review of MS-DOS and CP/M idea processors. So I'm going to take this opportunity to let you know how those programs feel to me nine months later, and which programs I now use myself.

Putting power to use

But before I do that, I'd like to pass along some things that I've learned about idea processors in general. First, idea processors are powerful tools, and you can use their power—the power of organizing information through outlines—in many different ways. Beyond simply outlining something you have to write, you can manage projects, keep a to-do list or phone list, create organizational charts, store and retrieve reference information, run meetings, and even write programs.

But you'll also find that it takes a definite *effort* to incorporate the idea processor into your normal work habits. I've found that I don't use these programs in as many different ways as I thought I would, simply because I never seem to have the time to teach myself a new way of working. When I'm in a hurry and need to work out a to-do list or a meeting agenda, I still reach for some scratch paper. The problem is the same one people face when changing from a typewriter to a word processor—you lose ground at first. So if you plan to get an idea processor, be prepared for some work before it really pays off.

Second, although idea processors are general-purpose tools, like word processors, I (and most other people, I think) tend to use them for only certain kinds of jobs. In my case, I use them almost exclusively to help me get my ideas in shape before I tackle a new column or article. Typically, I open a new outline, make a list of ideas, eliminate the clunkers from the list, sort the rest into some logical progression, and then fill in details until I've fleshed out the piece. Once the outline's done, I save it in a disk file so that I can refer to it while I'm actually writing. I do use idea processors for other jobs—I've even written an entire user's manual with one—but 80 percent of the time I use them just as described above.

It's worth it to master a program with a ferocious learning curve if you get years of easy use.

As a result, I don't need all the features that most idea processors have—print formatting, for example, or automatic phone dialing. So the best idea processor for me is not the one with the most features—it's the one that has the best combination of features for the jobs that I do most often. For example, because I often have to work quickly (looming deadlines), I won't use a program that makes it awkward to bang out my ideas. On the other hand, because I almost always work with short outlines (2-4 pages) and discard them once the article or column is finished, I don't care if a program isn't good at locating information in the outline.

However, someone who's slowly accumulating information for a massive Ph.D. dissertation won't care much about rapid entry but will absolutely demand a program that can easily retrieve information from a large file. The problem, of course, is figuring out ahead of time what you're going to use the idea processor for so that you'll know which features you need.

Third and last, though it's nice to have a program that's easy to learn, it's far more important to have a program that's easy to use once you've learned it, one in which all the important commands lie comfortably on the keyboard. It's worth a month of frustration to master some program with a ferocious learning curve if you get years of easy use in return.

I want to emphasize that the following comments are my personal reactions to these programs and are *heavily* influenced by the kind of work I do. If you use an idea processor in a different way, you'll probably find many of my comments invalid.

MS-DOS—revised opinions

MS-DOS offers many more idea processors than CP/M does. Unfortunately, I'm not really happy with any of them. The two programs I chose as the best MS-DOS idea processors—MaxThink and PC-Outline—are still the best all-around programs, I think. But each has problems.

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PHOTO BY TODD TSUKUSHI

MaxThink simply has more features than any other program, and because it has so many commands and menus to deal with, it takes longer to master than other programs. That in itself is not a problem—it's worth investing some time to be able to use all the things MaxThink offers. But even now that I've learned the program, I'm not *comfortable* with it.

First of all, MaxThink is a *modal* program, and I often make mistakes because I forget that I'm in the "movement" mode instead of the "editing" mode or that I'm at the Brainstorm menu instead of the Edit menu. Second, even though I've now learned the MaxThink commands I use most often, they don't seem to fall easily under my hands—they feel a bit awkward, in other words. And third, I'm still irritated by the fact that most of the time MaxThink only shows two levels of my outline while I'm working (you can see more, but the view returns to two when you start work again).

PC-Outline suffers from one of the same problems as MaxThink—it's commands aren't laid out conveniently on the keyboard. To its credit, PC-Outline has single-keystroke alternatives for almost all commands so that you can skip the menus if you want, but commands aren't grouped well (the save-outline command is right next to the delete-outline command, for example). The result, as with MaxThink, is that I've never gotten comfortable with the program.

I've also found that while multiple windows (PC-Outline can do nine) sound like a nice feature, I seldom use more than one (strictly because of the kind of work I do—other people will find them very valuable). I *do* like the fact that PC-Outline can run as a memory-resident pop-up, a great feature in an idea processor.

Though multiple windows sound nice, I seldom use more than one—but others may find them valuable.

Lately, I've been skipping MaxThink and PC-Outline and using Ready! instead. Ready! is more limited than the first two programs (*much* more limited than MaxThink), and I was lukewarm about it in my original review. But lately I've come to value its good points more.

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First, it's a memory-resident program, like PC-Outline. I like this feature very much because it means both that the program is always available for making quick notes and that I can pop up an outline in the middle of another program to remind myself what I'm doing.

Second, Ready! is very easy to use, even though it's a modal program like MaxThink. It's easy to use partly because it has fewer commands than the other programs and partly because its commands are laid out logically—Ready! is a "comfortable" program. I find this ease of use very important because I often spend long periods (weeks, sometimes) away from MS-DOS while I'm working on a CP/M project. When I return, I can "pick up" Ready! more quickly than the other programs.

But I'm still irked by Ready!'s limits, the main one being that it only allows you to enter single-line headings. You can't attach paragraphs of text to the headings (as you can in other idea processors), so the amount of writing you can do with Ready! is limited. (Yes, Ready!'s elder sibling, ThinkTank, can handle paragraphs, but I don't think ThinkTank is as good a program as Ready!.)

If Ready! could handle paragraphs of text, I'd be satisfied. If MaxThink had a better user interface, I'd be delighted. As it is, I grumble.

Note: PC-Outline is now distributed by Brown Bag Software for $89.95. It is still available via the shareware route on MS-DOS bulletin boards as PCO322 (PC-Outline version 3.22). Don't be mislead by the new version number—3.22 seems to be the same as the pre-Brown Bag version 1.08. There are no major alterations from the version 1.07 I covered in the original idea processors review.

CP/M—opinions confirmed

In CP/M, the idea processors have worked out as I expected. The only programs worth considering are Thoughtline and OutThink. And in my work, I find that I use Thoughtline quite a lot and OutThink very seldom.

It turns out that Thoughtline's strengths suit the work I do. It's easy to use, since it uses WordStar commands (and I know WordStar very well). It's fast when working with fairly small files. It lets me bang in my ideas very quickly, and when I type beyond the end of a heading, Thoughtline automatically opens up a paragraph attached to the heading. And it has a good set of commands for the kind of idea-juggling I do when roughing out a new column or article.

Thoughtline has definite weaknesses, though. It has no block text moves when you're working in a paragraph. It's quite slow at loading and saving large files. And most important, it has no search command of any kind. But because I work almost entirely with short outlines, no more than a few pages, these weaknesses are only minor annoyances to me, though they will be major drawbacks to others.

I use a double standard—I expect more from DOS programs because they have more to work with.

OutThink, on the other hand, is not so well suited to the work I do, its biggest drawback being that it insists I enter a heading in two parts, a key and a subtitle, instead of as a single line. This split (with a pause in between as OutThink saves the key) effectively prevents me from doing the kind of rapid brainstorming that I often need to do.

But OutThink is very good at handling large files (it shows only a fraction of the slowdown that Thoughtline does) and at retrieving information from large files. The "keys" that are so irritating when I'm brainstorming make it possible to quickly find information not only in the current outline but also in others. These features are extremely important for certain kinds of work, but not for me.

In other words, both Thoughtline and OutThink are good programs—it just happens that Thoughtline suits the work I do while OutThink doesn't. Were I writing books instead of magazine articles, the results would probably be reversed.

Those of you who read my original idea processor review may wonder why I use Thoughtline when I'm working in CP/M but not when I'm working in MS-DOS, even though the CP/M and MS-DOS versions of Thoughtline have exactly the same features. The answer is that I use a double standard in selecting programs. I expect more from the MS-DOS idea processors because they have more to work with (more RAM, more graphics, and usually a hard disk). I'm content with less from a CP/M idea processor because of CP/M's limits (64K memory and negligible graphics). Considering what they have to work with, I think MS-DOS programs *should* be faster, friendlier, and more capable. What's surprising is that they so often aren't.

Summary

Product: MaxThink
Manufacturer: MaxThink, Inc.
230 Crocker Ave.
Piedmont, CA 94610
Phone: (800) 227-1590; in CA (800) 642-2406
Sugg. List Price: $89.95

Product: PC-Outline
Distributor: Brown Bag Software
2105 S. Bascom Ave., Suite 164
Campbell, CA 95008
Phone: (800) 523-0764; in CA (800) 323-5335
Sugg. List Price: $89.95

Product: Ready!
Manufacturer: Living Videotext, Inc.
2432 Charleston Rd.
Mountain View, CA 94043
Phone: (800) 822-3700; in CA (800) 443-4310
Sugg. List Price: $99.95

Product: Thoughtline
Manufacturer: Spite Software
4875 Southwest Nineteenth Dr.
Portland, OR 97201
Phone: (503) 224-0137
Sugg. List Price: $69.95

Product: OutThink
Manufacturer: Kamasoft, Inc.
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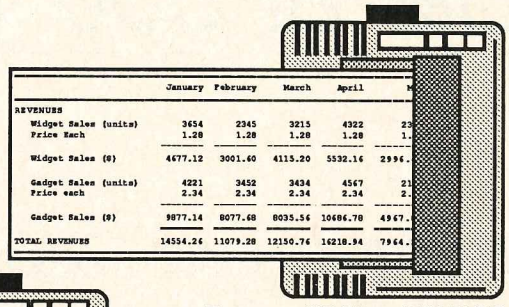

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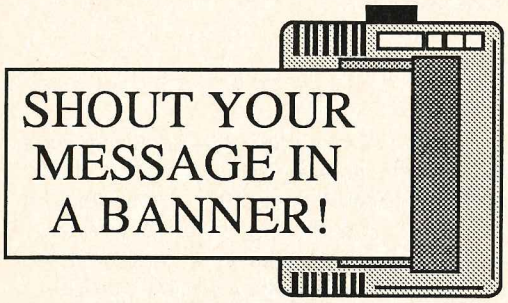

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Life at 300 Baud

"Plink": Never a dull moment

by Brock N. Meeks

Brad Johnson (not his real name) is gearing up for the down side of the week. It's Wednesday night and Johnson is anxious to shed his Brooks Brothers image and slip into his alter ego. Tonight, like most nights, Johnson will surround himself with people who know him only as "White Knight."

The transformation to White Knight takes a minute or two—the time it takes Johnson to log on to a commercial online system called American People/Link.

This Arlington Heights, Illinois-based service is affectionately known as "Plink" to its more than 16,000 avid users. Plink, as Johnson has found out, is a great place to meet and be with people. For all its other services, "Plink is about people," said Johnson.

Arcades to carrier tones

Plink was developed with a fortune made off teenagers pumping quarters into video games. In 1967 brothers Jules and Merrill Millman founded the nation's first video amusement center, "Aladdin's Castle." (Aladdin's Castle eventually became the nation's largest chain of video amusement centers.) The Millmans sold the chain to Bally Manufacturing and turned their efforts—and capital—toward the emerging videotex industry. After carefully studying the trends in videotex, the Millmans founded American People/Link. Today, those former coin-dropping teenagers, now turned Yuppies, are pumping a share of their disposable income into Plink. And most of that money is spent on Plink's Partyline.

Partyline is similar to CompuServe's "CB" service. This service lets you "talk" with "Plinkers" from all over the world while sitting in front of your computer. During my first night in Partyline, for example, I talked with a reporter from *The New York Times*, a call girl from Los Angeles, a civil servant in England, and a 15-year-old hacker from Silicon Valley. I should note that there is no way to check out another Plinker's claims about his or her identity.

Apparently, the blurring of real and assumed identities bothers very few Plinkers. "Plink gives me a chance to step beyond the normal, daily 9 to 5 grind," said Johnson, who added that when he's online as White Knight he always "speaks in the King's English." Plink's advertising actually encourages this role playing. One ad reads, "Be anything you want to be on American PEOPLE/LINK." The ad pictures a portly middle-aged man posed as Indiana Jones, Mitch Gaylord, and Michael Jackson.

Terminal party

According to Plink president Merrill Millman, most users head straight for Partyline when they log on. Partyline contains 100 "channels." (Compare this with CompuServe's CB total of 72 channels; band A has 36, as does band B.) After entering Partyline, Plink sends information to your computer screen telling you how many people are actually using Partyline, and what channels they are on. Simply "tune into" a channel and jump into the conversation.

The conversation comes fast and furious, even at 300 baud. Your comments and those of other Plinkers are blasted across your screen every time the Enter key is hit. Conversation runs from witty to wacky, boastful to bawdy. At its best, Partyline is a robust, scattergun series of one-liners (comments are rarely longer than ten or 12 words). At its worst it can be an assemblage of scatological slurs. What it is not, however, is dull.

Veteran Plinkers toss around a vernacular well suited to rapid-fire keyboard entry. "Morf?" means "Male or Female?" and is usually directed as a query to someone with an androgynous handle, such as "Huggy." "OIC," "BTW," and "IMHO" mean, "Oh, I see," "By the way," and "In my humble opinion." Should you receive a message from someone asking for a private "Hot Chat," it's a safe bet they don't want to discuss tropical climates.

These private conversations are carried on in Chat mode. This allows two Plinkers to talk one-on-one, without the distractions of the open channel. The private Chat mode is fertile ground for cultivating intimate online relationships.

So many online relationships have flourished on Plink that a Chicago businesswoman, who goes by the handle Miss Plove, organized a Plink club called Love-Link. Love-Link is an electronic version of the newspaper personal ads. And these ads work. Several couples have met and married via Love-Link.

Life beyond Partyline

Love-Link is only one of several clubs offered via Plink's Club-Link. These clubs are the same as CompuServe's Special Interest Groups (SIGs). Plink asks you to "think of it as a continuous, non-stop club meeting in which members are scattered all over the country and drop in whenever they feel the urge."

Each club carries an open message base, where users can discuss various issues relevant to the club. In addition, each club has a data library divided into separate sections, each one dealing with a particular facet of the club. Each of these sections contains text files or programs available for downloading. Real-time conferencing is also available so members can meet without having to go into Partyline. The range of clubs on Plink gives further evidence that this system is primarily people oriented.

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Although there are clubs that cover computer hardware, the real action takes place in the non-computer clubs. For example, the Naturist Club extolls the virtues of "going nude in mixed company—without sex. That's what naturist men, women and children do all the time." This is followed quickly by the line, "No, we're not kooky! We've just discovered a healthier, more relaxing way of life." This club can give you the skinny (sorry) about nudism in today's society. In the data library there is a comprehensive directory of North American nudist clubs and naturist groups.

Ink*Link is the local writer's hangout. This is a place to showcase your writing talents. Members in this club (anyone can join) trade poetry, short stories, humor, and even erotica. (Admittance to the erotica section is carefully screened; you must be over 18 to access this section.)

I dropped into the journalism section and found a discussion on the merits of electronic journalism. There is also a section called Orchard, for interactive fiction. (You read previous chapters and then add your own twist to the plot.) Finally, Tools of the Trade takes you through the pros and cons of several word processors and spelling checkers.

Other services

Peoplescan is Plink's national bulletin board. Here you can post help-wanted messages, list items for sale, and relay requests for information and similar messages. Other users are free to roam through this bulletin board. There is a function allowing you to reply directly to the author of the message. Your reply is posted to the author's electronic mailbox.

The most diverse club on Plink is The Learning Center. The message sections are very active.

The Plink equivalent of the *National Enquirer* is *The Herald*. This is an online electronic gossip tabloid. If you want some inside information on Plink goings on, or on other Plinkers, this is the place to go.

The most diverse club on Plink is The Learning Center (TLC). Its message sections are very active. There's a Community Bulletin Board where new club members can introduce themselves. In the Education Roundtable you can find discussions on such topics as compulsory schooling and book burning.

TLC's Missing Children section functions as part of a nationwide system to locate missing children. This section contains discussions on issues such as the controversy surrounding the statistics on abducted children. In the library there are descriptions and digitized pictures of missing children.

Other message bases in TLC include: Health, (non-computer) Languages, Parapsychology, Kids Link, Genealogy, and Mindlink. (Mindlink is a section for Plinkers who are also members of Mensa, the international high IQ society.)

Plink also has clubs that cater to Christians, Jews, science fiction fans, homosexuals, teenagers, trivia buffs, debaters, and sports buffs.

The Link Letter is a hard copy newsletter for Plink members. It is edited by a Plinker whose handle is Wordsmith (William John Wheeler). But don't try to set your calendar by the newsletter's delivery date. As *The Link Letter* itself states: "*The Link Letter*, the fact-and-fun-filled newsletter of American People/Link, is published irregularly and with abandon."

Low cost

No, you can't update your stock portfolio from Plink. You can't even check the weather in Botswana (unless you happen to be in Partyline, chatting with someone from Botswana). But you can send electronic mail to anyone else on the system.

Because Plink is tied into the Telenet packet-switched network, you can use Plink to send messages, reports—or whatever—almost anywhere in the world. And you can do it for a lot less than on a service like CompuServe. Plink also has a direct-connect number in the Chicago area.

Plink requires a $10 registration fee. Beyond that, Plink charges for non-prime time hours are $4.25 (300 baud); $4.95 (1200 baud); and $6.95 (2400 baud). Prime-time hourly charges are $11.95 (300 baud); $12.65 (1200 baud); and $14.65 (2400 baud). It should be noted that if you call in on the direct-connect line you are automatically charged non-prime time rates, regardless of the actual time of day. However, unless you live in the local area, you'll be racking up long-distance telephone charges.

You can sign up for Plink via modem by calling (800) 826-8855; Illinois residents can call (312) 822-9712. You can call a voice line at (800) 524-0100; Illinois residents call (312) 870-5200.

Information, Please?

Getting facts online

by Jim Spickard

"All right!" said my friend Jostein, who was visiting from Norway. "Let's see just how much you Americans know about Europe. Who's the Norwegian king?"

"Olav V," I shot back as I uncorked our second bottle of wine, "and he skis!"

"Not bad," he admitted, "but all Norwegians ski. Who's the prime minister?"

"It used to be Kare Willoch," I replied, "but you had an election this year and I don't know who won. Come on upstairs and I'll find out.

"I wanted to show you this anyway," I remarked as I turned on my computer. "I may live out in the boondocks, but I can still find information faster than if I lived next door to the library. And this library's never closed."

I loaded my software, turned on my modem and punched a few buttons. "WELCOME TO BRS/AFTER DARK" scrolled onto my screen.

"Norway, h'm . . . let's try 'AAED'—that's the Academic American Encyclopedia Database. I'll tell the computer to find an article containing the keywords 'Norway' and 'government.' There we go: Gro Harlen-Brundtland was elected last summer. He's from the Labor Party."

"Pretty quick," said Jostein as the information scrolled by. "But 'he' is a she. You still haven't learned how to read Norwegian names."

"While we're here, there's something I've been meaning to look up," I continued. "You know that article I've been working on? On Mary Douglas, the anthropologist? A bunch of Biblical scholars have gotten interested in her work, and I have to find out what they're saying."

Five more keystrokes and we were looking at *Religion Index*. At the prompt I typed "Douglas-M$." "That's the way you write names on BRS," I said. "The '$' is a wildcard. It finds anything from 'Douglas-M' to 'Douglas-Mzzzz'—so I don't have to search as much.

"Let's see, 56 entries. We'll print them all—but not long form. That would take too much time."

Nine keystrokes later the listing began. "I'll just catch it on my RAM disk," I said, "and look at it tomorrow. Then I can go back and print abstracts of the ones I want, or go to the library and read whole articles. If I were using DIALOG (another online service) I could have them send me reprints, but the cost of those really adds up. I prefer to get my reading list online and use the library."

"That's incredible," said Jostein. "How much did all that cost?"

"About 35 cents for the bit on Norway, and maybe two dollars for the rest. After Dark is one of the cheaper services. Most of its data bases cost less than $20 per hour, and we were only online about ten minutes. When I think of all the time I'd have to spend in the library to get the same results, I've saved myself quite a bundle."

Time and money

Most of us depend on information. We need facts we can't get in the daily paper—legal facts, medical facts, economic facts, political facts. Whatever we do is only as good as the information we receive.

As a sociologist I need to keep track of new publications in my specialties, review research for my classes, and steer my students toward resources they need for their work. In the past year I've looked up things as varied as new articles on the cross-cultural study of religions, research on the effectiveness of the death penalty, and economic development statistics for Bahrain.

I can't spend hours in my library's reference room hunting down material—and I can't just ask my college librarian to do it for me. Online information is much faster.

And it's usually more thorough. Working online, I have access to more than 2,000 different data bases— collections of information—each pulling facts from many different sources. *Biological Abstracts*, for example, covers articles from more than 9,000 periodicals and published sources dealing with all aspects of biological science. Every two weeks it adds some 14,000 new items. *Management Contents* prints summaries of every article from more than 500 business magazines, plus business-related articles from law journals and other sources.

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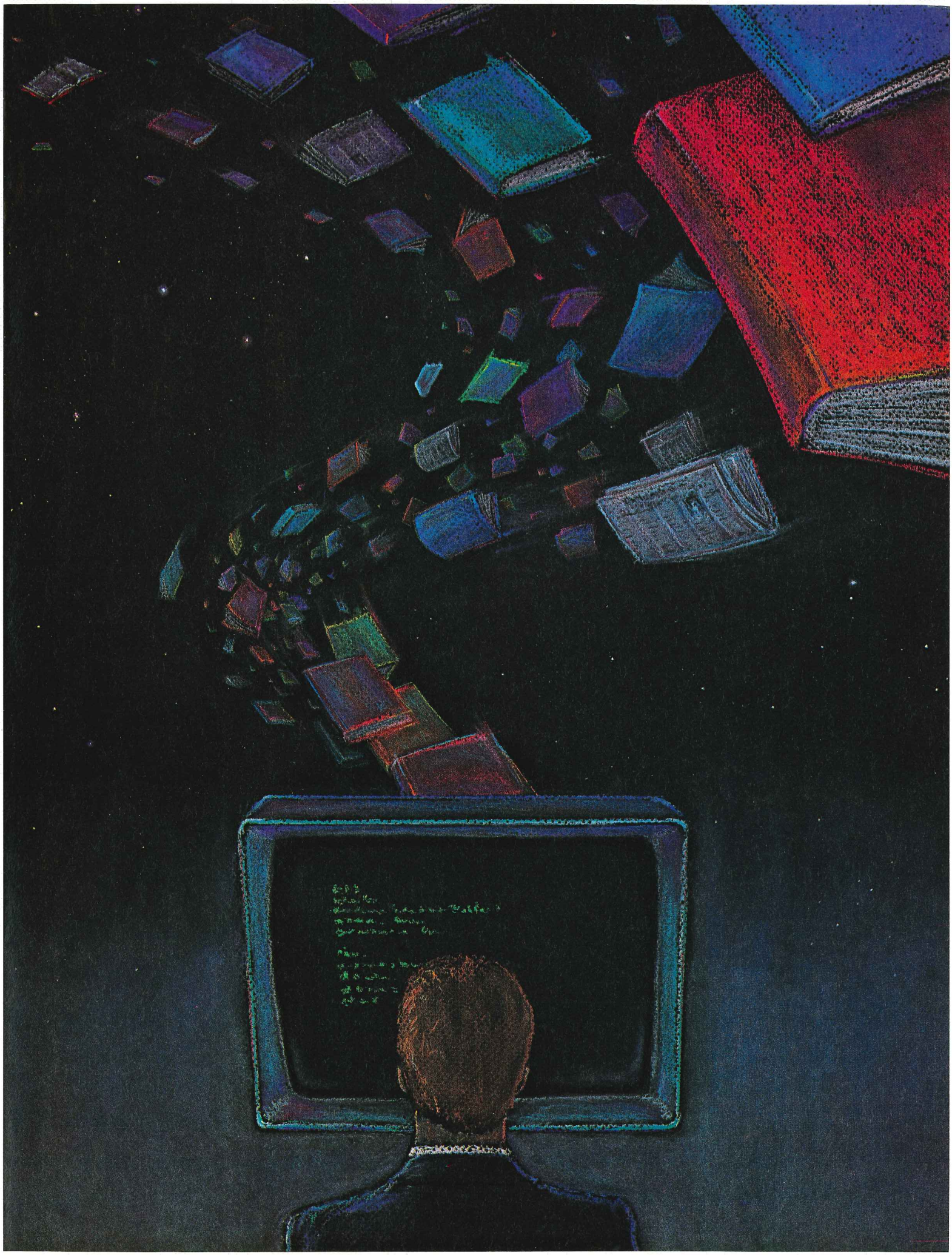

From accounting to zoology, everything is available at the touch of a keyboard.

Relatively speaking, it's all pretty cheap. The lowest-priced data base I know of costs six dollars an hour, and the most expensive runs about $300. The former gives you lots of time to browse. On the latter, you get five minutes for about $25—usually more than enough time to find what you want. Compare that to a half-day at the library, and you'll agree that online information is a real bargain.

Four kinds of services

Unless you manage information for a large company or university, you're not going to hook up to these 2,000 data bases directly. The average user—or even the average library—subscribes to a data base service. The service gives access to a selection of data bases, and provides a common set of commands for searching.

From accounting to zoology, everything is available at the touch of a keyboard.

This makes things a lot easier. You only have to learn one set of commands. And in some cases the service will even help you find the data base you need.

Four different kinds of data base services are available.

First we have general services—those whose main focus is networking, but which provide considerable information on the side. CompuServe, The Source, Delphi and Genie provide varying amounts of news, financial, historical and scientific data in addition to their special interest groups (SIGs), CB simulators and games. All let you use an online encyclopedia, and CompuServe and Delphi, especially, have much more. BIX and Edvent II—conference services devoted to microcomputers and education, respectively—don't have data bases per se, but carry enough specialized information to deserve mention here.

Second are news services—news junkies will favor Dow Jones News/Retrieval Service (DJNS) or NewsNet. DJNS carries *The Wall Street Journal* and *The Washington Post*, plus newsclips from the Associated Press, sports, weather, book and movie reviews, and more financial information than anyone knows what to do with. NewsNet carries *USA Today*, Associated Press (AP) and United Press International (UPI) wire services, plus about 300 newsletters on everything from food (*Washington Beverage Insight*) to pollution control (*Sludge Newsletter*). It's hard to imagine a subject that's not covered.

Third are library services—BRS, DIALOG, and Mead Data Central. DIALOG is the biggest—it handles more than 250 mainly academic data bases: everything from *Philosopher's Index* to *Coffeeline* and *Oceanic Abstracts*. BRS is similar, but differs in cost and options. Mead Data Central specializes in legal and medical data bases, though it is expanding into other fields. Library services are so important for serious searching that I'll cover them in detail below.

Last, for the occasional searcher, Telebase Systems, Inc. provides something called a "gateway." Marketed as I-Quest on CompuServe, InfoMaster from Western Union, or directly as EasyNet, Telebase packages over 700 data bases and provides access to them for a flat per-search fee. Searching is automated and covers several data bases at once, saving the user a lot of work. (See the box on page 26 for a more detailed description of a gateway.)

Library services

The best way to learn how an information service works is to take a test drive. We'll use DIALOG, the largest library service. I've listed the key parts of the session so you can follow along. (Everything I type appears in boldface; DIALOG's responses are in normal type.)

After we log on (through Tymnet, Telenet or DIALOG's own network) and give the password, the system prompts us with "?". Here we type either **BEGIN #** (where "#" is the number of the data base we want to use) or **FILESUM** to get a list of the possible data bases.

I'm going to look at the *Philosopher's Index* for articles on Mary Douglas, the aforementioned anthropological theorist.

```
? begin57
      4dec86 12:30:01 Userxxxx
File 57:PHILOSOPHER'S INDEX - 40/86/SEP

    Set    Items    Description
    ---    -----    -----------
?
```

On DIALOG, you search by typing **SELECT** (or **S**) and a keyword—in our case **Douglas** (upper or lower case doesn't matter). The system responds with the number of entries that contain matching words—usually in the title or abstract, as DIALOG is not a full-text service.

```
?select douglas
    S1        97    DOUGLAS

?select douglas and mary
              97    DOUGLAS
              94    MARY
    S2         5    DOUGLAS AND MARY
```

Using **AND** lets you combine terms. As you see, only five items contain both the terms "Douglas" and "Mary." To look at them, I enter **TYPE S/F/R** where "S" is the search number, "F" the format and "R" the range of items found.

```
?type 2/3/1-5

  2/3/1
128723
  IS BIG BEAUTIFUL?
  SAGOFF, MARK
  J. APPLIED PHIL,  1,269-280   0 84,

  2/3/2
127772
  WITTGENSTEIN: A SOCIAL THEORY OF KNOWLEDGE
  BLOOR, DAVID
  NY COLUMBIA UNIV PR  1983

...
```

Entering "7" instead of "3" for the format would give me abstracts with the citations—often a useful tool.

Let's jump to another data base—*Sociological Abstracts*—for something a bit more complicated.

```
?begin37
      04 dec86 12:42:03  Userxxxxx
File 37:SOCIOLOGICAL ABSTRACTS 63-86/1SS4
(COPR. SOC. ABSTRACTS)

    Set    Items    Description
    ---    -----    -----------
?select douglas and mary
            124     DOUGLAS
            141     MARY
     S1      16     DOUGLAS AND MARY

?type 1/3/all

...
```

Once again I look for "Douglas" and "Mary" and tell DIALOG to type the results. But since I know Douglas writes about cultural relativism, I can go a little farther. I'll use **?** as a wildcard to expand my search. With **cultur?** I'll get culture, cultural, culturism, etc., included in my search.

```
?select cultur? and relativ?
          31358    CULTUR?
           9213    RELATIV?
     S2    1958    CULTUR? AND RELATIV?
```

Obviously that's too many citations. Using **AND**, **OR** and **NOT** lets me pare things down a bit. I'll add a term to include anthropology/anthropologist, and focus on cognitive rather than ethical relativism, as Douglas does.

```
?select s2 and anthropolog?
          1958    S2
          5820    ANTHRO?
     S3    204    S2 AND ANTHRO?

?select s3 not ethic?
           204    S3
          2742    ETHIC?
     S4    198    S3 NOT ETHIC?

?select s4 and (cognit? or know?)
           198    S4
          2812    COGNIT?
         12143    KNOW?
     S5     37    S4 AND (COGNIT? OR KNOW?)

?type 5/3/all

...
```

If I enter "PRINT" rather than "type," the results will be printed offline and mailed to me. I have to pay for printing (about 2 cents a line) plus a mailing charge, but I save online costs.

Entering **.COST** at any prompt summarizes costs to date; entering **LOGOFF** ends the session.

I could go on, but I think you get the picture. I can save my search description for future use—in case I want to find similar material on another data base or locate new records on a topic I've already investigated. I can order copies of the articles I've

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found, saving myself a trip to the library. I can logoff for up to ten minutes to check something and pick up my search where I left it. The possibilities are truly awesome.

Day rates and night rates

BRS and the other library services are similar, though I like DIALOG because its command structure is more flexible than most. Unfortunately it is also more expensive—up to $300 per hour in some cases (the average data base costs "only" $70 per hour). Some data bases also charge a fee for each citation—more if they are printed offline and mailed to you (but then you save on connect charges). Telecommunications charges (through Telenet, Tymnet, etc.) can run as high as $11 an hour, though sometimes they are included in the data base fee. If you do a lot of searching, these costs really add up.

Both DIALOG and BRS offer low-cost alternatives to their full service, available evenings and weekends. DIALOG's Knowledge Index and BRS's After Dark offer more limited sets of data bases at considerably cheaper rates. After Dark, for example, offers about 85 data bases for between $6 and $31 per hour, with a three-cent charge per citation. Despite its $12 minimum monthly charge, it is the clear leader in cost-efficiency—*if* it carries the data bases you need.

Knowledge Index charges $24 per hour for each of its 39 data bases, but it is available longer hours and has no citation charges. Each off-hours service includes telecommunications charges in the basic fee. The two don't overlap much; I subscribe to both. BRS also provides Brkthru, an intermediate service available all day but with reduced rates at night.

DIALOG, BRS and Knowledge Index are command driven: you instruct the computer to conduct the search you want. Brkthru and After Dark are menu driven—easier to learn but less flexible. Each service has a different command set for information addicts to master. It pays to shop around: *Religion Index* costs $48 an hour on DIALOG (plus an $8-$11 telecommunications charge), $40 an hour on BRS (plus $9 for telecommunications), but only $13.50 (including telecommunications fees) on After Dark. Knowledge Index doesn't have that particular data base at all.

DIALOG and BRS both offer discounts to libraries and other high-volume users.

For professionals only

Mead Data Central is somewhat different. Aimed primarily at professional and corporate users, it has two price levels, depending on the data bases you choose.

Nexis, for business users, provides the full text of articles in several hundred newspapers, newsletters, magazines, and journals of interest to business people. It also provides detailed financial information on some 4,000 U.S. corporations, plus many of the more common bibliographic data bases from DIALOG and BRS.

The World's Smallest Battery-Operated Full-function Printer

(which also happens to be the world's best printer value)

This amazing printer weighs only 2.2 pounds (with batteries) and measures 11 by 4.5 by 1.75 inches. With its built-in parallel interface, the TTXpress printer can connect to any of your Kaypro computers including the II, IV, 16, 286i, and the Kaypro 2000 laptop. We even include a printer cable!

Because of its thermal technology, the TTXpress printer has fewer moving parts for greater reliability. It prints clear text (with true descenders) and graphics on either 8½" roll or single sheet paper at 50 characters per second, and 40, 80, or even 160 characters per line. It is compatible with the Epson MX-80 and prints condensed, enlarged, emphasized, and underline characters. It even supports bit-mapped graphics!

Whether you need a printer to carry in your briefcase or to sit on top of your computer in your home or office, you will not find a better value than our package. We include the TTXpress printer with 4 C batteries, A/C adapter, parallel printer cable, two rolls of paper, and even a leather-like printer cover. All this for the unheard of price of only: **$129**

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Physicians will be especially interested in Nexis because of its many specialized medical data bases.

Lexis, designed for lawyers, includes Nexis and additional full-text records of literally hundreds of law journals, court reports, government regulatory decisions, and so on. MDC claims that some cases are added to Lexis within 48 hours of a decision. It's like having a complete law library in your office, only better.

Each service has a different command set for information addicts to master.

MDC's search facilities are easier to use than those of some of the other services. Menus guide your searching, and the system will search several data bases at once, so you don't have to log on and off of each one. You'll have less connect time as a result, and you won't need special training. Getting the full text of articles rather than just references is also a real plus.

The drawback is expense. Nexis has a subscription fee of $50 per month, plus connect charges of $30 an hour, plus a fee of $3 to $30 per search, depending on the number of data bases used. If you want to print an article, it costs two cents per line.

A subscription to Lexis costs $125 per month; the other charges are the same as those for Nexis. Off-peak hours give you a 30 percent discount on the searches, but not on the other costs. Were I managing a law firm, I'd jump at this chance to cut research time. Even if it carried the data bases I wanted, however, it's too expensive for an independent sociologist.

The business of business

Most business people aren't going to spend their time with *Religion Index* or *Sociological Abstracts*. They want news and facts that make a difference to their company's performance.

While the library services do carry a lot of business information, corporate types may find Dow Jones News/Retrieval Service, NewsNet, or DIALOG's new Business Connection more to their liking.

In addition to newspaper and magazine articles, for example, DJNS carries considerable investment information—stock market quotes, Standard & Poor's profiles, Securities and Exchange Commission filings, and research reports from Wall Street analysts. A special service called "//QUICK" searches all the data bases for information on a specific company—your

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Gateway Services

Okay—you're sold on information services. But you aren't sure just how much you might use them, and you don't want to have to pay sign-up fees and learn complicated commands to get your facts.

In short, you're an amateur and want to get your information online as painlessly as possible.

Telebase Systems has packaged a "gateway" service for just such users. EasyNet, I-Quest, and InfoMaster—the same service under three different names—offers easy access to more than 700 data bases from 16 different vendors. You are charged between 15 and 20 cents per minute, plus a flat $8 per search. You pay only if the search is successful; otherwise you pay just for your time online.

EasyNet (the version I test drove) is menu-driven. It will choose the data base most likely to contain the information you want, or you can specify one.

For my test drive, I decided to look up articles by philosophers on Mary Douglas—so I could compare the results with my previous search. (Once again, my entries are in boldface, and the system's replies are in regular type.)

After signing on and setting some parameters, I saw the following:

```
PRESS        TO SELECT
  1    EasyNet-I        We pick the database
  2    EasyNet-II       You pick the database
  H    Help
Total charges thus far:          $0.20
-> 1

PRESS        TO SELECT
  1    Subject
  2    Person
  3    Place
  4    Organization
  H    Help
Total charges thus far:          $0.20
-> 1

PRESS        TO SELECT
  1    Current Events
  2    Business, Economics
  3    Computers, Sci/Tech, Medicine
  4    Law, Trademarks, Patents
  5    Social Sciences, Education
  6    Art, Literature, Entertainment
  7    Religion, Philosophy
  H    Help
Total charges thus far:          $0.40
-> 7
```

As you can see, these menus are relatively straightforward. From subsequent menus I selected "Philosophy" and "Scholarly Journals" before seeing:

```
Enter your philosophy topic.

->douglas and mary

Is:
DOUGLAS AND MARY
Correct?    (Yes/No) -> y
```

```
System is searching the Philosopher's Index
data base, copyrighted 1986 by the Philosophy
Documentation Center...

Accessing network . . . . . Connected
Accessing vendor . . . . . Completed
Logging on . . . . . Completed
Selecting database . . . . Completed
```

After a bit, EasyNet told me that it had found five items satisfying my search phrase and reminded me to turn on my capture buffer. Lo and behold, the same five citations I had found on DIALOG scrolled across the screen. My total cost was about $10—$8 for the search and $2 for 10 minutes online. Almost no skill was required.

And I didn't even need an account number before setting my modem to dial 800/EASYNET. I could have charged my session to VISA, Mastercard, or American Express when I logged on—a real convenience if you need a piece of information right away.

But there are a few drawbacks that potential gateway users should note.

First of all, your $8 only gets you the ten most recent citations—15 if the data base is full-text (such as an encyclopedia) rather than bibliographic. When I searched *Religion Index* through EasyNet, I only got the most recent ten of the 56 articles using "Douglas and Mary" as keywords. Each additional ten cost an additional $6, so the search that cost me $2 on BRS/After Dark cost me over $40 on EasyNet—or would have, if I hadn't been using a special journalist's pass. Abstracts cost $2, and you get only one full-text printout per search. Others are available for a fee.

Second, you are charged for every search, including those with too many "hits" to be useful. Repeating the search in the main article for keywords "cultur . . . ," "relativ . . . ," "anthro . . . ," and "cognit . . . " or "know . . . " would have cost me $32 for four searches, plus $26 for the citations, and it would have taken far longer online than I needed when dealing directly with the vendor.

EasyNet's fee structure provides a way to avoid this difficulty, though. You're only charged for searches in which you find something, so you're best off using as many search terms as possible the first time through. If you are *too* detailed, you won't have any "hits" and won't be charged. Then you can eliminate less important terms one by one.

Using "/"—EasyNet's wildcard character—I'd just search for "cultur/ and relativism and anthropology and cognit/ and knowledge and rational/ and . . . ." Then I'd drop terms from the end of the list until I got results. With a little luck I'd just pay $8 plus an online fee. No passwords to buy, no yearly memberships, no monthly minimums. Just information when I want it, at a flat fee.

Amateurs will like Telebase's gateways. Serious researchers, though, are better off skipping the gateways and going direct to the real thing. **—J. Spickard**

own or a competitor's. For reports on an entire industry, just use "//DJNEWS" and enter an industry code: Anything that has happened in that industry within the last 90 days scrolls across your screen.

NewsNet carries about 300 industry-specific newsletters, as well as several general business publications—probably the most concentrated way of getting information you'll find. It features a custom clipping service: You pick the keywords and the data bases to search, and every time something new appears on that topic, the article is saved in a file for you to read. You just log on, download the file, and log off again. Everything else is automatic.

DIALOG's Business Connection provides financial screens, product and market information, and background data on more than *10 million* public and private companies. It is menu driven, so you don't need to know which data bases you are using, nor do you need special training. Do you want the addresses and phone numbers of all the hardware stores in Minnesota? Or all the restaurants in the Northeast with 25 or more employees? The Business Connection will even deliver lists of potential customers on mailing labels—a sales department's dream!

I haven't personally used these services, but were I in a different line of work I could easily imagine doing so. Rates vary depending on the time of day you call, the baud rate of your modem, and the data base you search. They're not cheap, but offer information you probably couldn't get any other way.

Know what you need

I use information services a lot and subscribe to several, balancing cost against the different data bases I need. I try to avoid services demanding monthly minimum charges, though BRS/After Dark is so useful that I do subscribe. I use it enough to justify the monthly cost and use the other services for the data bases it doesn't contain.

Of course, every researcher has different requirements. Call up the services listed at the end of this article and ask for their free literature. See who's got what and how much it costs. Then log on and find the facts you need.

Jim Spickard is an independent sociologist specializing in social theory and the cross-cultural study of religion. He frequently writes for PROFILES.

Quick Reference Summary

Byte Information Exchange
1 Phoenix Mill Lane
Peterborough, NH 03458
(603) 924-9027
BIX (conference service)

BRS Information Technologies
1200 Route 7
Latham, NY 12110
(800) 345-4BRS
BRS/Search Service (library service)
BRS/Brkthru (library service)
BRS/After Dark (library service)

CompuServe Inc.
5000 Arlington Center Blvd.
Columbus, OH 43220
(614) 457-0802 inside Ohio and outside the U.S.
(800) 848-8199 rest of U.S.
CompuServe Information Service (general service includes **I-Quest** gateway)

Comshare Inc.
Wolverine Tower
3001 S. State St.
Ann Arbor, MI 48104
(313) 994-4800
Edvent II (conference service)

DIALOG Information Services Inc.
3460 Hillview Ave.
Palo Alto, CA 94304
(800) 3-DIALOG
DIALOG (library service)
Knowledge Index (library service)
Business Connection (financial service)

Dow Jones & Company Inc.
P.O. Box 300
Princeton, NJ 08543
(609) 452-1511 in New Jersey
(800) 257-5114 rest of U.S.
Dow Jones News/Retrieval (news/financial service)

General Electric Information Services Co.
401 N. Washington St.
Rockville, MD 20850
(301) 340-4000
Genie (general service)

General Videotex Corp.
3 Blackstone St.
Cambridge, MA 02139
(617) 491-3393 in Massachusetts
(800) 544-4005 rest of U.S.
Delphi (general service)

Mead Data Central, Inc.
P.O. Box 1830
Dayton, OH 45401
(800) 227-4908
Lexis (legal)
Nexis (library services)

NewsNet Inc.
945 Haverford Rd.
Bryn Mawr, PA 19010
(215) 527-8030 in Pennsylvania
(800) 345-1301 rest of U.S.
NewsNet (news/financial service)

Source Telecomputing Corp.
1616 Anderson Rd.
McLean, VA 22102
(703) 734-7500
The Source (general service)

Telebase Systems Inc.
134 N. Narbarth Ave.
Narbarth, PA 19072
(215) 296-1793 in Pennsylvania
(800) 841-9553 rest of U.S.
(800) EASYNET (modem number for searches)
EasyNet (gateway: same as I-Quest and InfoMaster)

Western Union Corp.
4230 Alpha Rd., Suite 100
Dallas, TX 75244-4401
(800) 527-5184
InfoMaster (gateway)

A First Session with WordPerfect

Getting to know the powerhouse

by Robert J. Sawyer

Is WordPerfect collecting dust on your shelf because you haven't had time to work through its giant manual? No problem. You'll be up and running with this powerhouse MS-DOS word processor by the time you finish this article.

Your WordPerfect software package contains a manual called "Installation and Appendices." Read and follow the installation instructions in the front of this book.

If you have a floppy-based system, put your working copy of the WordPerfect Program disk in drive A. If you have a hard disk (which I recommend if you intend to use WordPerfect's thesaurus or spelling checker), then start from the WordPerfect subdirectory, which is usually called \WP.

To load WordPerfect, type WP at the system prompt and press ENTER. If the screen fills with an introductory message, you haven't installed your printer yet. To do that, press ENTER to clear the message and then press SHIFT-F7, followed by 4 from the row of keys at the top of the main part of your keyboard. You'll be presented with a full-screen "Printer Control" menu. Tap 3 to select printers.

To choose from the more than 200 printers WordPerfect supports, press the PGDN key. (If you're using floppies, WordPerfect will ask you to insert its Printer disk at this point. Put it in drive B.)

Pressing PGDN again will scroll you through the menu of printers. When you find yours, type its number. Specify which port your printer is connected to (probably LPT1:) and what kind of paper you use. To exit installation, tap F7 twice.

WordPerfect has no main menu. Instead, you are deposited directly at the edit screen. The screen is blank except for the 25th line at the bottom, called the status line. The text in the right corner of the status line will look like this:

Doc 1 Pg 1 Ln 1 Pos 10

Doc 1 tells you the number of the document you are editing (you can edit more than one at the same time); Pg 1, the page that the cursor is on; Ln 1, the line of text the cursor is on; and Pos 10, the column of text the cursor is in. WordPerfect uses the status line in the program to tell you what the current settings for your document are—if boldfacing or underlining is on, for example.

You can't do word processing without any words, so type a few sentences. You do not need to press carriage return at the end of each line; WordPerfect automatically moves the cursor down to the next line for you. This is called *word wrap*.

Using the cursor pad

The cursor pad controls all WordPerfect cursor movement. To move by single characters, use the arrow keys (making sure that Num Lock is off). To move by words, use CTRL-LEFT ARROW (move a word to the left) or CTRL-RIGHT ARROW (move a word to the right). To jump to the left side of a line, push HOME, release it, then press LEFT ARROW. To hop to the right side, press END. Take a moment to try these keys now.

WordPerfect also has commands for more complex cursor movements. Since you won't be able to see their effects until you've got some more text, I'll save these for later.

Inserting and deleting text

To insert text, move your cursor to where you want to add new words, then type away. By default, WordPerfect is in the insert mode, so your new words will push aside the old. If you prefer to overwrite the existing text, press the INS key on the cursor pad. When you do so, note that the word "Typeover" appears on the left side of the status line. Pressing INS a second time will put you back in insert mode. To reformat text to fit the margins, push the DOWN ARROW key.

You can delete single characters with the BKSP and DEL keys. BKSP—the left-pointing arrow directly above the ENTER key—deletes the character immediately to the left of the cursor. DEL—located on the cursor pad—removes the character on which the cursor is positioned.

To delete the word containing the cursor, use CTRL-BKSP. To delete to the end of a line, use CTRL-END. And to delete to the end of a page, use CTRL-PGDN. For this one, you will be asked to confirm your intention before the deletion occurs.

If you've tried these commands, you're probably now staring

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at a nearly empty screen. Fortunately, WordPerfect generously forgives deletions. Press F1. The last chunk of text you deleted reappears in inverse video. Right now, it's just a ghost. To complete its resurrection, tap 1 (use the horizontal row of number keys, not the numeric keypad). Presto! Your words are restored to life.

WordPerfect's unerase feature is remarkable because it allows you to bring back not only your last deletion, but the two preceding deletions as well. Press F1 again to get back into unerase. By tapping 2 you can cycle through the last three deletions, and each of them in turn will appear in inverse video on your monitor. The 1 key will restore whichever one is currently displayed.

WordPerfect's unerase feature brings back not only your last deletion, but the two preceding it.

Figure 1, below, gives WordPerfect's cursor movement and delete commands, including the large movement commands that we'll try out a little later. For comparison, I've provided the WordStar equivalents, since most Kaypro users are familiar with that program.

FIGURE 1: WordPerfect's Cursor Movement and Delete Commands

FUNCTION	WORDPERFECT	WORDSTAR
Character Up	⟨Up Arrow⟩	⟨Up Arrow⟩ or ^E
Character Down	⟨Down Arrow⟩	⟨Down Arrow⟩ or ^X
Character Left	⟨Left Arrow⟩	⟨Left Arrow⟩ or ^S or ^H
Character Right	⟨Right Arrow⟩	⟨Right Arrow⟩ or ^D
Left Edge	⟨Home⟩⟨Left Arrow⟩	^Qs
End of Line	⟨End⟩	^Qd
Top of Screen	⟨Home⟩⟨Up Arrow⟩	^Qe
Bottom of Screen	⟨Home⟩⟨Down Arrow⟩	^Qx
Top of Previous Page	⟨PgUp⟩	
Top of Next Page	⟨PgDn⟩	
Beginning of Document	⟨Home⟩⟨Home⟩⟨Up Arrow⟩	^Qr
End of Document	⟨Home⟩⟨Home⟩⟨Down Arrow⟩	^Qc
Delete Character Left	⟨Bksp⟩	⟨Del⟩ or ^_
Delete Under Cursor	⟨Del⟩	^G
Delete Word	⟨Ctrl⟩⟨Bksp⟩	^T
Delete to End of Line	⟨Ctrl⟩⟨End⟩	^Qy
Delete to End of Page	⟨Ctrl⟩⟨PgDn⟩	
Unerase	⟨F1⟩⟨1⟩	

The function keys

WordPerfect uses 40 function keys: F1 through F10 alone and in combination with the CTRL, SHIFT, and ALT keys. WordPerfect gives each of these keys a name, as shown in Figure 2, below. You've already used three of them. SHIFT-F7, which let you install a printer, is the "Print" key. F7 on its own, which you used to leave printer installation, is the "Exit" key. And F1, which brought back your deleted text, is the "Cancel" key.

The most important function key is F10, the "Save" key. Press it now. You are prompted for the name under which you want to save the current file. Let's call it TEST. Press ENTER. The computer's drives will whir for a moment and you'll be returned to your document at the point at which you left it.

Even the most cautious computer user probably wouldn't immediately re-save the same text, but do so now anyway. Push F10. WordPerfect remembers the file name TEST, and, in good Rod Serling fashion, submits it for your approval. Press ENTER. Ah, but WordPerfect is timid! It now asks you to confirm that you really want to overwrite the existing TEST with a later version. Type Y for yes.

FIGURE 2: WordPerfect's Function Keys

KEY	ALONE	+ ⟨Ctrl⟩	+ ⟨Shift⟩	+ ⟨Alt⟩
F1	Cancel	Shell	Super/Subscript	Thesaurus
F2	Forward Search	Spell	Backward Search	Replace
F3	Help	Screen	Switch	Reveal Codes
F4	Indent Left	Move	Indent Both	Block
F5	List Files	Text In/Out	Date	Mark Text
F6	Bold	Tab Align	Center	Flush Right
F7	Exit	Footnote	Print	Math/Columns
F8	Underline	Print Format	Line Format	Page Format
F9	Merge R	Merge/Sort	Merge E	Merge Codes
10	Save	Macro Define	Retrieve	Macro

In case you're getting tired, now is a good time to learn how to quit WordPerfect. F7, the "Exit" key, will do the trick. You will be prompted through the same routine as when you used the "Save" key, then asked if you want to leave the program. If you were to answer Y for yes, you would be returned to the operating system. Instead, answer N for no. WordPerfect presents you with a fresh edit screen—ready for you to compose a new document.

But what if you want to add more to the deathless prose you were working on a moment ago? Use the "Retrieve" key, SHIFT-F10. The prompt "Document to be Retrieved:" will appear on the status line. Type TEST and press ENTER. In an instant, your words are pulled back from their magnetic resting place.

Help

Unlike WordStar, which has novice, intermediate, and advanced help levels, WordPerfect has only one kind of help, and it's not in the least context-sensitive. F3 is the "Help" key. Press F3 and you will see a short message on how to use help. From this screen simply press the key that you are curious about, and a complete description of what it does will appear (the exception to this is the alphabet keys—what they do is obvious). If you were curious about the HOME key, for example, you would press F3-HOME. Try it now.

Block commands

Block moving and copying with WordPerfect is tricky, at least for those of us raised on WordStar. In WordStar (or just about any other word processing program) a marked block of text is defined by moving the cursor to the beginning of the block, pressing a key sequence to mark the beginning, moving the cursor to the end of the block, and pressing keys to mark the

end. The defined block can then be moved, copied, deleted, or whatever.

WordPerfect does things differently. To mark a block's beginning, push ALT-F4. Note the words "Block on" winking at you from the status line. Move the cursor forward or backward to where you want the block to end. The marked text will appear in inverse video. If you type a character, instead of a cursor key, the block will grow to include the next occurrence of that character.

WordPerfect has an odd method for marking the end of a block; *how you mark the end is dependent on what you are going to do with it once it is marked.* Let's assume you want to move the block rather than copy or delete it. Press CTRL-F4. A menu that begins "1 Cut Block; 2 Copy Block" will replace the status line. Select 1 and the block will disappear from the screen. But it's not gone for good. WordPerfect has tucked it safely away in a part of memory it calls the paste buffer. Because you are *moving* the text, WordPerfect has removed it from its original location. Had you chosen "Copy Block" instead, the text you marked would have remained onscreen and a copy of it would have been placed in the paste buffer.

Move the cursor to the block's destination and press CTRL-F4 again. A new, almost incomprehensible menu appears: "Move 1 Sentence; 2 Paragraph; 3 Page; Retrieve 4 Column; 5 Text; 6 Rectangle." WordPerfect is trying to tell you that if you push 5, your text will be retrieved from the paste buffer. Do that now. To delete a block altogether, define it without marking the end. Then press BKSP or DEL. You will be asked to confirm your command before the deletion takes place.

Figure 3, below, summarizes the text marking, moving, and copying commands we've discussed.

FIGURE 3: WordPerfect's Block Commands

FUNCTION	WORDPERFECT	WORDSTAR
Mark Block	⟨Alt⟩⟨F4⟩ *	^Kb * ^Kk
Move Block	⟨Ctrl⟩⟨F4⟩⟨1⟩ * ⟨Ctrl⟩⟨F4⟩⟨5⟩	* ^Kv^Kh
Copy Block	⟨Ctrl⟩⟨F4⟩⟨2⟩ * ⟨Ctrl⟩⟨F4⟩⟨5⟩	* ^Kc^Kh
Delete Block	⟨Del⟩ or ⟨Bksp⟩	^Ky

An * indicates cursor repositioning. Blocks must be defined before they can be moved, copied, or deleted.

I promised we would try out WordPerfect's large cursor movement commands. To do this, we'll need some more text. Practice marking and copying blocks until you've filled several pages.

You can scroll up or down a screen using the plus and minus keys on the numeric keypad. To move to the top line of your screen, push HOME, release it, then push UP ARROW. To get to the bottom line it's HOME then DOWN ARROW. To go to the beginning of the document, tap HOME twice, followed by UP ARROW. To whisk to the end, use HOME-HOME-DOWN ARROW.

PGUP will move you to the top of the previous page. PGDN will move you to the top of the next page. Combining them (PGUP-PGDN) will move you to the top of your current page.

Underlining, boldfacing and centering

WordPerfect can show boldfacing and underlining onscreen. If you are using a monochrome monitor, you will see actual underlining and boldfacing; if you have a color monitor, WordPerfect will make use of it to denote the different print styles. Boldfaced text will be brown, underlined will be green,

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The big news is that with BGii you can load two programs at one time and switch between then at will. With the "cut and paste" command you can pass data between the two programs.

A demo version is available if you want to look over the program before you buy. All features work except the spooler . The demo is $10.00 and you can make copies of the demo for your friends.

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and text that is both underlined and boldfaced will be blue. You can change these settings from within the program. Look up COLORS in the index.

To boldface the next words you type, touch the "Bold" key, F6. The number following the word "Pos" in the status line will brighten to remind you that bold is on (if you have a color monitor it will change color). Type away. To turn bold off, press F6 a second time. Similarly, the "Underline" key, F8, toggles underlining on and off. When on, the "Pos" number is underlined. If you have a color monitor, it will simply change color.

To center your text on a line, press SHIFT-F6. Whatever you type on that line will be centered. If you type more text than the line can hold, WordPerfect will wordwrap, and subsequent lines will not be centered (unless, of course, you press SHIFT-F6 again).

To boldface or underline something you've already typed, you must first mark the words as a block. Pushing F6 or F8 once will boldface or underline all the marked text. Similarly, SHIFT-F6 will center an entire block, although for this one you will be prompted to confirm your intention before it actually happens. Try these commands out now.

Codes

WordPerfect inserts special codes into your text for boldfacing, underlining, and many other formatting functions. These are normally invisible, but you can see them by pushing the "Reveal Codes" key, ALT-F3. Do so. The screen will split into two windows. The upper one shows the text as it will print out. The lower one shows the same text as it is actually stored in your computer, peppered with WordPerfect codes.

Why reveal the codes in the first place? Because the only way to remove boldfacing, underlining and centering commands is to delete the codes. You can't change what you can't see. Using ALT-F3 you can edit many other codes, such as tab stops, superscript, and subscript.

Trying to read the lower screen always gives me a headache, but here goes: the flashing [^] represents your cursor position. The [SRt] you see at the end of most lines is a soft carriage return. The [HRt] at the end of each paragraph is a hard carriage return. A [B] marks the beginning of boldfaced text and [b] marks the end. Likewise, [U] and [u] mark the beginning and end of underlining, and [C] and [c] the beginning and end of centering.

You can move the cursor around as usual. To delete a code, position the cursor either just before or just after it and use either BKSP or DEL. Note that you only have to remove one member of each pair of codes for them both to disappear. (This prevents the 16-pages-of-underlined-printout syndrome familiar to WordStar users.) Centering commands appear at the beginning and end of each centered line, so you must delete one code from each line to restore all the text to flush left.

WordPerfect has more than 80 formatting codes, allowing for great control over the way text will print out. A complete list is found under "Codes" in the Reference Section of the WordPerfect manual.

Find and replace

WordPerfect devotes three function keys to find and replace operations. F2 is the "Forward Search" key. SHIFT-F2 is the "Backward Search" key. And ALT-F2 is the "Replace" key.

Press F2 and the prompt "Srch:" will appear on the status line. Type in the string you want to find, terminated by ESC. Your cursor will jump to the first occurrence of that string. To repeat a search, tap F2-ESC. To do a global search, you first have to go to the beginning or end of the document, then do a normal forward or backward search.

You can search for WordPerfect codes by typing the key that generates them at the search prompt. For instance, pressing "Forward Search" followed by "Bold" (F2-F6) and then ESC will find the next bold code [B] even if it's hidden. You can then delete the code by using the BKSP key without bothering with the split-screen reveal-codes display. WordPerfect will ask you to confirm your intention to delete an invisible code.

Printing

What you've now got on screen is probably a mess of random text, but let's print it anyway. First, save what you have by typing F10. You will be presented with the file name TEST. Press ENTER. When asked if you wish to overwrite the existing file, type Y. The file will be saved and you will return to the editing screen.

As we saw when installing a printer, SHIFT-F7 brings up the "Print" menu. Typing 1 will print the current document. WordPerfect can print in the background, so you can immediately continue exploring the program's features.

Advanced usage

Before winding up this first session with WordPerfect, I'd like to point you in the direction of some of the more advanced features of the program. These are not complete instructions, but they will give you an idea of just how powerful WordPerfect is.

First, there is a nifty file management utility, invoked by F5, the "List Files" key. Once you press F5 you will see a list of the files in the logged directory, with the first one highlighted in inverse video; that is the currently selected file. Using the cursor key you can change the selected file, moving down the list of files until you find one you like. Press ENTER and WordPerfect loads the file and presents you with the editing screen.

One of WordPerfect's most interesting features is its ability to work on two documents simultaneously, toggling between them with the "Switch" key, SHIFT-F3. To get a feel for how this feature works, try defining a block in the first document (identified as "Doc 1" in the status line) and moving it to the second.

Those who experiment, learn

WordPerfect is one of the most powerful word processors on the market. It's also one of the more difficult ones to learn. Don't be afraid to play around with it, though. The "Cancel" or "Exit" key (F1 or F7) will get you out of just about any tight spot, so go ahead and experiment. If you prefer a more structured approach, WordPerfect comes with an online tutorial.

Robert J. Sawyer is a freelance writer and word processing consultant in Toronto, Canada. His work has been published in The Village Voice, Sky & Telescope, Amazing Stories *magazine, and the July 1986 and March 1987 issues of* PROFILES.

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CAPACITIES: CP/M - 600 Accounts; MS-DOS - 2000 Accounts - 3-5 Digits for Account Numbers - 99 departments with 3.2 structure.

ACCOUNTS RECEIVABLE

$80.00 CP/M — $100.00 MS-DOS

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CAPACITIES of 600 Customers (CP/M) 2000 (MS-DOS) - no limit on transactions, multiple customer disks OK.

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ACCOUNTS PAYABLE

$80.00 CP/M — $100.00 MS-DOS

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CAPACITIES of 600 Vendors, (CP/M), 2000 Vendors (MS-DOS) - no limit on transactions.

HARDWARE REQUIREMENTS

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

CURRENT UPDATE:

NEW A/R STSTEM FOR CP/M AND MS-DOS USERS NOW SHIPPING. NEW FEATURES INCLUDE 4 LINE NAME AND ADDRESS, FINANCE CHARGES, VARIABLE AGEING, DESCRIPTIVE BILLING, ASCII OUTPUT FILES, MULTI-CLIENT PROCESSING. MANY NEW REPORTS, ITEM INVOICE FORMATS, SERVICE INVOICE FORMATS, STATEMENT FORMATS, ETC. FOR PLAIN PAPER AND MANY POPULAR PRE-PRINTED FORMS. TAXABLE AND NON-TAXABLE ITEMS ON SAME INVOICE. FLASH REPORTING TO SCREEN OR PRINTER; MORE . . .

Microsoft Mouse, Referee, and Webster's New World On-Line Thesaurus

Products that allow you to get more out of your computer

by Christopher M. Gordon, Jack Nimersheim, and John Crowell

Products reviewed this month by the Professional Software Programmers Association include Microsoft Mouse, which comes complete with a drawing program and a graphics presentation application; Referee, a utility program that helps you coordinate the activities of all your RAM-resident programs; and Webster's New World On-Line Thesaurus, a program that accesses a dictionary of 120,000 synonyms and phrases.

Microsoft Mouse, Paintbrush and Show Partner

Microsoft Mouse is a combination hardware and software package from Microsoft that enables the PC user to own and operate a "mouse"—that ingenious device that began its well-deserved popularity with Apple's Macintosh. Included with the Microsoft Mouse are two software packages: Paintbrush, an easy-to-use color-draw program, and Show Partner, an excellent graphics presentation application. While Show Partner may be harder to master than Paintbrush, it is a powerful tool worth the effort to learn. Both programs require 384K of memory and DOS version 2.0 or higher.

Features and Performance. First we'll take a look at the mouse itself, then Paintbrush and Show Partner.

Installation of the mouse is simple, with three different installation options possible—it can be installed by a serial, bus, or port interface. The serial hardware consists of only the mouse itself and an attached cable that plugs into a 25-pin serial port (or a 9-pin port if you use the included adaptor). The bus version consists of the mouse and a bus mouse adaptor (a printed circuit board) that is installed in one of the available expansion slots inside the computer. The mouse itself is essentially like all other mice—two buttons on the top serve for "clicking" (executing) screen-level commands.

The Startup software disk contains demonstrations that show the features and capabilities of the mouse and its application software. Also included in the package is Expert Mouse Menus, a system that allows the user to program some of the popular PC software, such as Lotus 1-2-3, DisplayWrite 3, and MultiMate, for use with the mouse. An optional *Microsoft Mouse Programmer's Reference Guide* may be purchased to allow the user to interface the mouse to other personal computer applications.

Paintbrush is the color drawing program included with the mouse, and it is one of the most enjoyable features of this package. Although Paintbrush lacks the sophistication of many other paint systems, it is easy to learn and contains all of the basic drawing functions. In fact, it looks and acts like the one that started it all, Macintosh's MacPaint, except Paintbrush has color and some interesting variations in its tools and menus.

The basic mouse techniques in Paintbrush include pointing, clicking, and selecting. The mouse controls a cursor, which can have a number of different shapes, though most often it's in the shape of an arrow. Button control sensitivity can be modified by the Control Panel, part of the included software.

Paintbrush makes use of "drop-down menus"—the user points to a menu and its options drop down onto the screen. The user may then pick an option or go on to another menu. Although the drop-down menus are an excellent way of navigating through the various command options, the menus could have been enhanced with a few more "double-click"

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commands, allowing the user to bypass the normal menu selection process and directly execute a command.

Paintbrush has a variety of tools to pick from: scissors or box with which to "capture" various parts of the screen; a spray can or brush for painting using the current pattern; a color or plain eraser; a paint roller with which to fill in objects; a straight-line or curved-line tool; hollow and filled boxes; rounded boxes; and circle tools. An "undo" function in the menu area is also available, providing a way to undo the last action taken.

Special effects include flipping an object horizontally or vertically, rotating an object, or dragging an object across the screen by using it as a brush (with either a transparent or opaque background). "Zooming" in and out of the screen is another special effect, allowing the user to paint individual points on a close-up screen. Cutting, pasting, and copying of selected areas is also possible.

Paintbrush patterns include solid fill, stripes, bricks, spots, checks, and weaves.

Various character font styles and sizes are available. The user may also design his or her own patterns and save them for future use. If the user has a PC with an enhanced graphics card, 16 different colors can be viewed on the screen, with control over the tint intensity. A total of 32 colors and/or patterns are available using an EGA or color graphics board with the appropriate monitor. These patterns include solid fill, stripes, bricks, spots, checks, and various weaves. The different patterns can be used for filling boxes, circles and other areas, for outlining, and for filling text.

An auxiliary program, Frieze, is included in the package. It is intended to work with Paintbrush (in fact, Frieze is RAM-resident and is automatically loaded into RAM every time Paintbrush is booted). Frieze captures screens for future use and loads a previously saved graphics screen from any application (e.g., Microsoft Word). To use Frieze, press the Shift-PrtSc key any time after loading, and a menu that accesses the save, load, or print-screen options of Frieze will appear at the top of the screen.

Show Partner, the other software mainstay of this package, is an excellent way to present screens of information to an audience. The screens may be "captured" from any application and can include graphics as well as text. Alternatively, a graphics screen may be created and/or edited within Show Partner. To assist the novice, Show Partner comes with a comprehensive online tutorial.

Show Partner is divided into four parts: Capture, Graphics Editor, Script Editor, and Show. Like Frieze, Capture is a RAM-resident program. It remains in memory while any other program is run, allowing it to come into action by pressing the appropriate "trigger" keys. When activated, Capture saves the current screen in either text or graphics mode. If the screen is saved in text mode, it will be an exact copy of the screen. However, it cannot be modified later with the Graphics Editor. If the screen is saved in graphics mode, it will be translated into a black-and-white image that can be edited later with the Graphics Editor.

The Graphics Editor is used to create a new graphics screen or modify an existing one. Although the editor is not as powerful or easy to use as Paintbrush, it does offer a wide variety of editing commands. The Graphics Editor limits the user to editing only one screen at a time, but there is a provision that allows a second screen to be loaded so that the user may alternate the display between the two screens. This can be especially useful for copying parts from one screen to another.

The Graphics Editor also has a large number of "clip art" screens to choose from; borders, titles, people, world land masses, and other miscellaneous shapes are available. These can be particularly helpful in making a professional looking presentation.

The Script Editor is basically a means of listing the available graphics files and determining their on-screen display time and whatever special effects the user desires. The time displayed is entered in tenths of seconds, and sound effects (called Noise, Slide, and Bomb!) are possible as well.

The user can also place parts of screens, or even an entire screen, on top of other screens. Some of the other options are: Replace, which replaces the whole screen; Wipe, which overlays the screen in a specified direction; H-Split or V-Split, which replaces or splits the screen toward or away from the center; Scroll, which scrolls the screen in a specified direction; Fade, which very effectively replaces the screen by random pattern substitution; and Weave, another "ooh-ahh" effect that splits the current screen into odd-even lines, pulls the screen apart, and then brings in the new screen in the same way.

The standard editing techniques are also available, among them cut and paste, and insert and erase rows. To modify an existing script entry, the user need only "point" to it and enter the new value. An entire script, or parts of it, can be edited in this fashion.

After the script is saved, the Show command is used to run the actual presentation. Microsoft allows the Show module to be distributed with the necessary script and graphics screens, with no restrictions other than displaying the copyright notice. This means that a presentation could be designed in California and shown at corporate headquarters in New York by simply creating a "Show" and sending it on a disk.

Although both software applications run smoothly, the reviewer did experience two problems with using the package. One minor problem involved re-installation. On a two-floppy system, the reviewer found it necessary to manually delete the previous "drivers" (monitor and printer) before new ones could be loaded by the Startup program. The other problem involved inadvertently trying to load a non-existent file while in Paintbrush using Frieze. The screen displayed an error message, but then dropped out of the program quite ungracefully, causing all the work done during that session to be lost.

One other thing should be noted when Paintbrush and Capture are both used during one session. If Frieze is loaded before Capture is used, Frieze must first be "unloaded." Unfortunately, this can only be done by rebooting the system. Capture, however, may be removed from memory quite easily.

Documentation and Support. There is a small but adequate hardware installation manual that shows how to set up any of the three hardware options. For software installation the user is told merely to type in "Startup" on the Startup disk, and

"follow the instructions." These instructions prove to be fairly straightforward, but it would be nice to know some more details in case one wants to customize an installation.

Informative, easy-to-read, and well-organized manuals are included for the Paintbrush and Show Partner software. The manuals are spiral bound, allowing them to be opened flat.

Telephone support is provided, but it is suggested that you do whatever research you can before asking for help. The support team wants to know specifics, so if there is an error, be sure to record error messages and know the exact circumstances that led up to the problem. An answer to a general question can usually be gotten quite readily. —*C.M.G.*

SCORECARD

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

Referee

Imagine someone inventing a complicated game with very few official rules. Next, imagine that game becoming highly popular—so popular, in fact, that everyone wants to play. Finally, imagine the unfair demands placed on anyone elected to referee this game with so many players and so few rules.

Referee, a new utility program from Persoft, Inc., promises to coordinate the activities of all those RAM-resident programs floating around out there for IBM PCs and compatibles: keyboard enhancers, spelling checkers, outline processors, print spoolers, and the like. In doing so, it bravely assumes the role of referee in a complicated game very similar to the one mentioned above. The surprise is that Referee actually accomplishes most of what it promises, with only a few exceptions.

Features and Performance. RAM-resident programs are nice, when they work. Unfortunately they often do not, for the rules governing RAM-residency are almost non-existent. For the unprepared user the resulting problems run the gamut from humorous to disastrous.

A popular spelling checker is totally incompatible with an equally popular word-processing program; a $99 desktop utility program crashes head-on into a similarly priced outline processor and, as a result, brings a $5,000 state-of-the-art PC to a screeching halt; a memeory-resident graphics generator switches its display to bit-mapped graphics mode and, upon returning to the spreadsheet over which it was loaded, makes the screen look like a garbled reproduction of a Picasso print. Such horror stories concerning incompatible RAM-resident programs surface more frequently than Stephen King novels and are just about as frightening.

Referee allows three operations that, while not eliminating the problems inherent to RAM-resident programs completely, do decrease the likelihood of their occurring. With Referee a user can selectively enable or disable any RAM-resident program already loaded in memory; specify in advance which resident programs are to be active within a particular application; and remove resident programs that are no longer needed, thus freeing up the extra memory often required for large applications. Ironically, Referee performs these functions with a (surprise!) RAM-resident program of its own. A second pop-up program included in the Referee package even allows limited control over other resident programs from within applications.

By far the most impressive of Referee's functions is its ability to define what it calls "RAM teams." Put simply, a RAM team is a group of resident programs the user identifies as being associated with a particular application. Once a RAM team is defined, only that group of resident programs will be activated whenever the user opens the application with which it is identified. All other resident programs, although still in memory and available at the touch of a few "hot keys," are temporarily disabled, thus eliminating incompatibility problems that often exist between specific application packages and some RAM-resident software.

Many resident programs have no command for unloading themselves from memory when no longer needed. Referee overcomes this problem, since it assumes direct control over the loading and unloading of all RAM-resident programs. One caveat: even Referee is subject to the DOS-imposed restriction that programs must be unloaded in the reverse order of their loading. This, however, is a shortcoming of DOS, not a programming oversight in Referee.

For the most part, Referee performs as advertised. There are, however, two limitations to its capabilities, each of which is outlined clearly in the program's documentation, if not in Persoft's advertising. First, Referee will not peacefully coexist with multi-tasking environments like Topview, Windows, DesqView, and GEM Desktop. Such environments modify DOS to such a degree that several of Referee's functions suffer, primarily its ability to create RAM teams.

The second documented limitation involves any RAM-resident operations that must be loaded from a CONFIG.SYS file, as is usually the case with device drivers such as RAM disks, print spoolers, mouse drivers, and the like. Since these are loaded into memory *before* Referee's control file, Referee does not recognize their presence and, therefore, cannot control them as it can RAM-resident programs activated after the boot process.

Like early versions of any program—Referee 1.0 was tested for this review—there are also some minor, undocumented bugs to be worked out. WordStar, the venerable word processor, requires an extra keystroke to activate Referee's pop-up control program. Referee also has trouble with Enable, a popular integrated package that bypasses some standard DOS calls to improve its overall performance. Persoft admits the existence of these and other problems and hopes to provide fixes in future updates. The user should, however, be aware of such bugs before purchasing the current version of Referee.

Referee performed flawlessly on both the Big-Blue-blooded PCs and popular clones this reviewer used for testing, so hardware compatibility seems to present little cause for concern. If a particular machine runs MS-DOS 2.0 or higher, it's likely that machine will run Referee as well.

Documentation and Support. Well-written and well-organized manuals are a rarity in the software industry. Referee's documentation qualifies as one of the exceptions to this

disappointing rule. Only 60 pages long, Referee's *User Manual* contains all the information necessary for getting the program up and running quickly and correctly. It is concisely written and includes enough screen diagrams to satisfy even novices.

Help screens available from within the program would be nice, seeing as how they are finally becoming the standard modus operandi for newer software packages. Even without these, however, Referee's well-written and well-indexed manual compensates enough for this shortcoming that the package warrants a very good rating for documentation.

Persoft does not provide a toll-free support number. Once you register your Referee package, however, knowledgeable and very courteous technical assistance is available between 8:30 a.m. and 5 p.m. Central Standard Time, Monday through Friday. This information, along with the number to be called for such assistance, is mentioned several times throughout the manual. Persoft seems committed to supporting its product, a welcome exception in today's market. —*J.N.*

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

Webster's New World On-Line Thesaurus

A slick, nearly flawless implementation makes Webster's New World On-Line Thesaurus from Simon & Schuster Inc. a program that is easy to use and hard to give up. A memory-resident program that accesses a dictionary of 120,000 synonyms and phrases, the Thesaurus is intended for anyone who does word processing on an IBM PC, AT, or compatible computer. A touch of the Thesaurus Entry Key quickly produces a list of synonyms for the word or phrase at the cursor position, and a few more keystrokes will automatically substitute the chosen replacement into the text. A minimum configuration of 128K RAM, one floppy disk drive, 80-column display, and MS/PC-DOS 2.0 or higher is required.

Features and Performance. Webster's Thesaurus is designed to work with most word processors, and about 24 of the most popular ones can be installed through a simple menu selection. Customizing the Thesaurus for other programs is easy. Word processors that use bit-mapped graphics display are also supported, but the user must type the word to be searched for, and the ability of the Thesaurus to insert synonyms into the text is crippled within these programs, making user editing necessary to delete the original word. Once installed, the memory-resident access program uses 44K of RAM, while the 360K dictionary can reside on a floppy disk, a hard disk or in a RAM disk.

With the user's word processor loaded, the Thesaurus is

Thoughtline Special $49.95
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That's right, the same great outline processor we sold for $69.95 is now available for $49.95 when you mention this ad. ***Thoughtline*** has hundreds of fans and great reviews. It's time for you to experience it's powerful features - at a great price.

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Fabulous Freebies: With any two products ordered get our latest and best **"Greatest Hits of the Public Domain"**. Any three products get Greatest Hits **and** five free disks! MS-DOS buyers can choose the latest version of **PC-Write**, the great shareware word processor, instead of the five free disks. Free 48 page Catalog with any order.

Other Super-Hot Specials

Our customers know we generally don't discount, but we have decided to experiment with deep discounts in this issue.

You must mention this ad to get these special prices

Spite		
SuperDex	$59.95	**$39.95**
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Biz-Letters	$39.95	**$29.95**
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Corporate	$49.95	**$39.95**
Two Versions	$89.95	**$69.95**
All Three	$124.95	**$99.95**
Telion		
Free Filer	$79.95	**$49.95**
Computer Edi-Type		
Magic Bind	$250	****$144.95**
Magic Index	$295	****$194.95**
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EDWP		
FileBase	$150	**$89.95**

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Rembrandt	$79.95	**$34.95**
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Twist & Shout	$34.95	**$29.95**
Workman & Assoc.		
FTL Modula	$49.95	**$39.95**
W/editor toolbox	$79.96	**$64.95**
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We will extend this super low pricing to MS-DOS versions as well, with the exception of Printmaster (add $10) and SmartKey (add $10)

Price Breakthrough $69 Printer Buffer

Hook it up and forget it. That's how easy it is to use this printer buffer. There's nothing to it. In fact, since this full featured buffer comes with its own cable, you don't have to buy a special cable to hook it up to your printer either. That means, three easy steps get you going right away:

1. Unhook the parallel cable on your printer port and plug it into the connector on the back of this buffer.
2. Plug the parallel cable that comes with this buffer into the connector on your printer's parallel port.
3. Send files to your printer all day long. Your buffer eats up the files and feeds them to your printer.

with cable

Frees Your Computer For More Productivity

"You didn't say enough good things about it."
— Robert Bruce
— Fort Worth, Texas

Works with Any Computer

$69

- Self-test
- Reset button
- Auto diagnostics
- Multi-copy function

That's it. That's all there is to it. Your printer buffer will receive print data from your computer automatically. Then it sends this data to your printer as fast as the printer can accept it. That frees your computer up in no time. You can get back to work faster.

Incredible Price

This brand name printer buffer comes with a full 64k of usable RAM. This means it has enough memory to hold approximately 45 pages of doublespaced text or numerous pages of detailed graphics. Feed it big spreadsheets or any other kind of data. It comes with its own power supply, so it will continue to hold data even if your computer or printer is turned off, or is off line. This buffer also comes with a built-in repeat function that allows you to print up to 255 copies of the data in the buffer's big 64k memory.

Wow. No more going back into the program to get another copy out. It's all automatic now. Even has an indicator light to let you know when the buffer is full. It also comes with a reset button, auto diagnostics, and memory self test.

Incidentally, this top rated printer buffer works with all computers, printers, modems, and plotters too. In fact, this buffer works with any standard Centronics parallel interface. If you've got a serial printer there's an inexpensive $49 serial adapter available too.

Buy Now and Save

If you've been waiting for a full-featured printer buffer that doesn't sacrifice performance for price, this is it. Stop waiting. Due to the nature of this sale, Central Computer must reserve the right to raise the price of this product. To avoid disappointment, please order immediately. Full featured 64k printer buffer. Only $69. Satisfaction guaranteed or money back. Order today.

Attention: This hard working buffer comes with a full 90 day warranty. But it will probably last forever. After all, there are very few moving parts. Just one switch and two buttons. Order today.

Critics' Corner

"This 'little beige box' is fantastic! Saves all kinds of time so I can work and not sit and watch the screen say 'printing.'"
— Arthur Swerdlove
— Wichita Falls, Texas

"This buffer seems to work exactly as intended. Congratulations on a good product."
— Duane Patten
— Austin, Minnesota

"Good product, well built, good price. As good as ones for $500."
— Fred Butzen
— Chicago, Illinois

"A good product, especially for the price."
— Andrew Shapiro
— Chicago, Illinois

"Nice gizmo: it takes 6 minutes to load 45 minutes worth of printing."
— Muriel Solar
— Cheltenham, Pennsylvania

"Buffer gives me more computing time. Works just like ad said. A modern miracle."
— Adrian J. Carl
— East Lansing, Michigan

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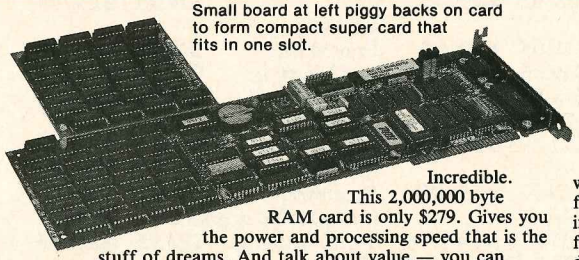

Small board at left piggy backs on card to form compact super card that fits in one slot.

Step Into the Future

with a Giant 2 Megabyte RAM Disk

$279

- 2 megabytes per board
- Supports up to 8 megabytes
- Includes parallel port
- Includes serial port
- Includes games port
- Includes clock calendar
- Includes print buffering
- Intelligent Memory System
- Factory Installed DRAMs
- Lotus/Intel/Microsoft EMS
- Works in PC, XT, and AT
- One year factory warranty

Incredible. This 2,000,000 byte RAM card is only $279. Gives you the power and processing speed that is the stuff of dreams. And talk about value — you can spend $895 for an Intel or AST Expanded Memory Board with 2 megabytes and not get as much performance or as many extra software and hardware features.

FastCard makes the Kaypro PC perform 10 times better than an IBM PC AT on typical I/O operations. And that's not all. FastCard lets you use up to 8 megabytes of RAM with split memory mapping. That's right — use one FastCard with 2 megabytes of RAM or put four in your computer for an incredible 8 megabytes of RAM. Backfills memory on your motherboard too.

FastCard uses a unique disk caching technique for completely natural operations. So natural, all you notice is the incredible speed — screens snap into place — and searches are almost instantaneous when you have your programs and files in RAM. FastCard also includes custom password security features that you can enable or disable anytime, comes with big print buffering features, and built-in diagnosis and automatic fault tolerance capabilities.

Best of all, FastCard IV is fully compatible with the industry standard Lotus/Intel/Microsoft Expanded Memory Specifications (EMS). It also comes with a serial port, parallel port, game port, clock calendar with battery, setup instructions, manual, software, and one year warranty. Installation is super simple. All this for only $279. Satisfaction guaranteed or money back. Order today.

Attention: This is a special sale. Offer only good while quantities last. Price is subject to change. Please order today. $279. 30 day money back guarantee. Order with confidence. You will love the power of FastCard IV. Order today.

Kaypro PC MSDOS Software

Description	Price
Accounting	
Checks & Balances	$ 64
DAC Easy GL, AR, AP	$ 45
DAC Easy Payroll	$ 45
Dollars & Sense	$135
Home Inventory Plus	$ 37
Managing the Market	$121
Managing Your Money	$137
One Write Plus	$199
Winning Wall Street	$159
Business	
Bottomline V	$199
Decision Analyst	$ 79
Landlord	$495
MarketFax	$595
NWA Statpak	$219
Resume	$ 49
Time Slips	$ 89
Walonick StatPak	$429
Walonick Forecast +	$495
Will Writer	$ 47
Communications	
Carbon Copy	$159
Crosstalk	$145
Mirror	$ 55
Mite	$ 49
Database	
dBase II	$389
dBase III Plus	$459
Filebase	$ 99
FYI 3000 Plus	$339
InfoStar	$179
Reflex	$119
Reflex Workshop	$ 65
Reflex & Workshop	$159
VP Info	$ 79
DeskTop Publishing	
Click Art Publisher	$149
Desktop Publisher	$495
NewsMaster	$ 89
NewsRoom	$ 59
Educational	
Art of Negotiating	$379
Evelyn Wood Reading	$ 75
Family Roots	$159
I Ching	$ 29
Language Tutor	$ 47
Memory Tutor	$ 47
Mind Prober	$ 45
Mind Over Minors	$ 53
The Word (Bible)	$179
Typing Tutor III	$ 45
Quiz Writer	$ 47
Entertainment	
Ancient Art of War	$ 43
ChessMaster 2000	$ 45
Flight Simulator	$ 45
Jet	$ 45
Karateka	$ 35
Lotto Master	$ 25
P. W. Teaches Chess	$ 79
Wizard of Wall Street	$ 43
Graphics	
Certificate Maker	$ 55
Chart Master	$279
Diagram Master	$259
Dr. Halo	$ 89
Energraphics	$279
Fancy Font	$155
Fontasy	$ 67
Fontrix	$139
FontStar	$ 49
Form Tool	$ 89
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Generic CADD 2.0	$ 87
Generic Dot Plot	$ 25
Graphtrix	$ 99
MapMaster	$295
PrintMaster	$ 49
Art Gallery I	$ 39
Art Gallery II	$ 29
PrintShop	$ 55
Graphics Disk 1	$ 33
Stella Bus. Graphics	$159
Integrated Software	
Ability	$ 79
Enrich	$279
Framework II	$479
PFS Write	$121
Q&A	$279
Symphony	$539
Languages	
Let's C	$ 79
Macro Assembler	$121
Basic Compiler	$279
Turbo Pascal w BCD	$ 89
Turbo Tutor	$ 45
Turbo Database	$ 65
Turbo Gameworks	$ 65

— continued next page

MSDOS Software

Description	Price
Turbo Graphix TBox	$ 65
Turbo Prolog	$ 89
Project Management	
Harvard Project	$359
Milestone	$ 95
Super Project Plus	$359
Timeline	$359
Utilities, General	
Bookmark	$ 69
Desqview	$ 89
dFastest	$ 49
DS Backup	$ 65
DS Recover	$ 45
DS Backup & Recover	$ 95
FastPak Mail	$ 74
Free Filer 5.0	$ 79
Homebase	$ 69
Hot	$ 69
Idea Generator	$159
Keyworks	$ 79
Little Black Book NCP	$ 75
Media Master	$ 37
Memory Typewriter	$ 39
Note It	$ 69
Poly Boost	$ 75
Poly Windows Desk	$ 79
PRD Plus	$ 65
Pro Key	$109
Print Q	$ 79
SideKick	$ 69
Sideways	$ 53
SmartKey 5.11	$ 59
SmartNotes	$ 69
SmartPath	$ 29
SmartStuff	$ 59
StarIndex	$ 89
SuperKey	$ 65
SuperSort	$127
Twist & Shout	$ 31
Uniform	$ 59
Utilities, Disk	
Backup Master	$ 84
Cubit	$ 45
FastBack	$125
Carousel	$ 45
1DIR	$ 79
Disk Optimizer	$ 45
Double Dos	$ 45
Le Menu	$ 75
Mace Utilities	$ 69
Norton Commander	$ 69
Norton Utilites	$ 79
SQZ!	$ 69
Xtree	$ 45
Spreadsheets	
Javelin	$159
Lotus 123	$395
Multiplan	$149
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SuperCalc3	$295
SuperCalc4	$359
Twin	$ 99
VP-Planner	$ 84
Training	
ATI dBase III	$ 57
ATI Framework	$ 57
ATI Lotus 123	$ 57
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ATI SuperCalc4	$ 57
ATI Word Perfect	$ 57
DAC Acctng Tutor	$ 20
Project Management	$ 65
Using dBase III Video	$ 69
Using DOS Video	$ 69
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Mathstar	$ 49
Microsoft Word	$349
Multimate	$359
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Punctuation & Style	$ 95
Ready	$ 89
Reference Set	$ 79
Thoughtline Outline	$ 59
Turbo Word Wizard	$ 65
Webster Writer	$121
Wordfinder	$ 69
Word Perfect	$279
WP Library	$ 99
WordStar 2000	$349
Supplies	
3M SSDD Kaypro/Box	$ 12
3M DSDD Kaypro/Box	$ 14
3M Head Cleaning Kit	$ 21
3M KeyBd Static Mat	$ 34
Board Disk Mailers/10	$ 9
10 ft Parallel cable	$ 29
10 ft Serial cable	$ 23
Smart Cable RS232	$ 47
Juki Printwheels	$ 19
NEC ELF Thimbles	$ 22

SmarTeam 1200AT Modem

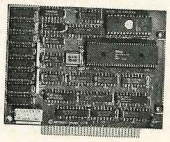
$179

Features include: auto-answer, auto-dial. Touch tone or pulse. Switch selectable with auto speed selection. Varible speaker volume. 300-1200. Bell 103, 212A. 8 LED display indicators. Quality components throughout. 30 day risk-free trial. 2 year warranty. Order today.

Attention: SmarTeam 1200BH internal modem card. Same great quality and compatiblity. Just plug in. 100% Hayes compatibility and free Mite communications software: $159. Order today.

SmartNotes Like Post-It Notes? Put little electronic notes anywhere you want in your computer work. SmartNotes lets you stick notes on database records, spreadsheet cells, accounting records, directory listings, and even on any phrase or passage in your word processor. Capture an idea. Add supporting information anywhere. Works with all popular software. Lift up these electronic notes and toss them out anytime. Call or hide them from view anytime. $69.

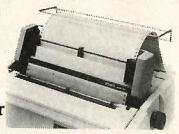
RUN 5MHz CP/M in Your PC



Plug this bargain priced half-size card into one of the open slots of your Kaypro PC or compatible. In seconds you can be running the CP/M software you have now 300% faster in your PC than in a regular CP/M computer.

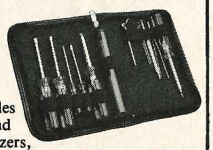
The Micro Interface RUN CP/M Z80 Co-Processor lets you share your PC hardware with CP/M software. Use PC ram resident programs like SideKick on top of CP/M programs. Operate CP/M programs from any floppy disk, ram section, or hard disk on your PC without resetting or exiting programs. Completely natural operation. It's just like putting a 5 MHz 64k Z80 computer in your PC. Run any CP/M software as is. Save software replacement costs. Does everything $595 co-processors do but only costs $195. One year warranty. Fully guaranteed. $195. Order today.

Kaypro Printer and Juki 6100 Tractor



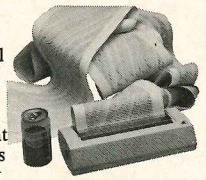
Bidirectional tractor with an exclusive anti-blacklash drive for precise positioning of continuous paper and clear printing. Tractor clips right on your printer. Totally mechanical and streamlined with few moving parts. Trouble free performance. Flips forward and up for easy loading. One year warranty. 30 day trial. Thousands sold. $125. Order today.

Personal Computer Toolkit



This is the perfect PC Toolkit. It has all the tools needed to add peripherals, cards, and hard disks to your PC. Kit includes nut drivers, phillips and flat screwdrivers, tweezers, chip retriever and inserter extractors. Includes a black vinyl zipper case. $27. Order today.

Hush 80 Portable Printer



This may be the world's quietest printer. You can see it is very small and prints up a storm. This is not a toy printer that uses flashlight batteries. It comes with a heavy duty internal rechargeable battery and weighs less than five pounds complete with internal 90 foot roll of thermal paper. $159 with rechargeable battery. $139 without rechargeable battery. Money back guarantee. Order today.

Includes 90 foot roll of 3M thermal-type paper • 90 day warranty • 100,000 characters between recharges • Bidirectional 80 CPS • 80 character line on 8 1/2 thermal paper • Comes with 2 foot cable • available in both parallel and serial versions. Specify computer type and interface. Extra paper: six 90ft rolls: $29. Auto adapter plugs into lighter: $13. Order today.

Dynamic Disk Utilities

Xtree. Hard disk organizing program. Displays all subdirectories and files in a tree diagram. Zip around the whole tree with your cursor arrows. Call up, delete, view, move, list, copy, and print single or multiple files in any or all directories and subdirectories with the push of a key. Makes using your computer natural — no more cryptic DOS commands. $45.

SmartPath. Load programs from any directory on your disk drive without crashing. Put one copy of WordStar or any other program on your hard disk and use it from any directory. Works with copy protected software too. $29.

Mace Utilities. Unformat and read an accidentally formatted hard disk! Get back erased files, lock out bad sectors, reclaim files from unreadable disks, squeeze and sort directories, and condense files so they are contiguous. Powerful. $69.

Bookmark. Memory-resident. Automatically takes a snapshot of RAM memory and saves it to a reserved area on the hard disk. Work in progress can be resumed within seconds after accidental reset, power down, or power failure. $69.

Sharp PC 7000

$979

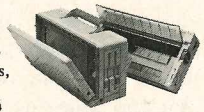
Includes 2 full size floppy disk drives.

Free. $79 travel case

Roomy Keyboard

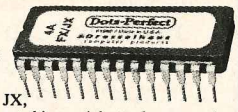
The lightweight built-in tilt screen of the Sharp PC 7000 has a standard 80 column by 25 line screen that is super readable from any angle. It has a bright, clear, high-contrast image that you can control with the touch of a knob. So, you don't need special lighting or x-ray vision to read it. In fact, *PC Magazine* editors found it "absolutely the best LCD-based display yet seen...perhaps the first LCD that would be comfortable to work on all day." Order today.

Specifications: 8086 CPU switchable to 4.77 or 7.37 MHz • 8087 socket for math chip • 320k RAM expandable to 704k on the motherboard • 1 parallel printer port • 1 serial port • Full size 84 key AT-style keyboard • Backlit LCD flat screen • Built-in carrying handle • MSDOS 2.11 operating system • Built-in diagnostics, calendar, time clock, and two 5¼ DSDD floppy drives • Runs all popular IBM PC software • Optional features include internal modem card, companion printer, color CRT adapter card, and external 20 megabyte hard disk. Order today.



Shown with optional companion printer. $329

Epson Upgrade



If you have an Epson MX, RX, JX, or FX printer — get this special attachment and do beautiful things just by touching a button. Dots Perfect is a smart hardware upgrade that gives your printer all the latest Epson printer enhancements and capabilities. Why buy a new printer? Upgrade it. $74. Order today.

Attention: Okidate 82A and 83A users. *PC Write* is a similar hardware upgrade that makes your printer a new machine too. $89. Order today.

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Dear Central,

Please send me the items listed below. I want fast, friendly service. My check, money order, or credit card number is enclosed. Thank you.

Description	Price
Computer _____ Sub Total	
CA Resident 6% Tax	
Firm Money Back Guarantee Order With Confidence — Postage & Handling	$ 3.50
Total	$

☐ Check ☐ Money Order

☐ Visa/MC # _____

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Exp. Date _____ Sig. _____

Name _____

Address _____

City _____ State ____ Zip _____

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Seagate Hard Disk Kits for Kaypro PC

Kaypro Uses Seagate and Western Digital

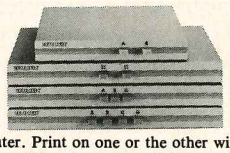
20 megabyte Seagate Kit. You get a factory fresh Seagate 20 meg hard disk, Western Digital controller, and all necessary software. Includes park command. Boots off hard disk. $399. One year factory warranty.

30 megabyte Seagate Kit. Comes with a factory fresh Seagate 30 meg hard disk, Adaptec RLL controller, and all necessary software. Includes park command. Boots off hard disk. $499. One year factory warranty.

Attention: Save hundreds on hardware and installation fees. Central Computer will show you how with step by step instructions for easy at home or in office installation. Really easy. Order today.

Slimline Data Switches

Lifetime Guarantee



These rugged slimline switch boxes are built to last. Save wear and tear on cables. No more switching cables back and forth to get a job done. Hook up two printers to your computer. Print on one or the other with the push of a button. Serial and parallel models. The AB Parallel two switch model is $89. The ABC parallel three switch unit is $129. Please call on other configurations including cross-switching units. Remember these Data Spec switch boxes include lifetime factory warranties. Built to perform a minimum of 20,000 switches. Satisfaction guaranteed. Order today.

transparent until the Thesaurus Entry Key (usually Alt-F10) is pressed. Instantly, the access program begins searching the dictionary. The user can choose whether the Thesaurus searches only for the word at the cursor position or for a phrase of three to five words. When a dictionary entry has been found, a page of the Thesaurus, which looks much like a page from a printed thesaurus, is displayed over half of the screen. If the target word cannot be found in the dictionary, a list of similarly spelled words is displayed, suggesting alternate searches. The search process is not blazingly fast, and can take from two seconds using a RAM disk and word search up to an agonizing 15 seconds of disk grinding for a phrase search on a floppy.

The Thesaurus page shows the word that has been found with several synonyms below it, separated into nouns, verbs, and modifiers. The user selects a synonym with the cursor arrow keys and by pressing F10 replaces the original word in the text. If none of the words shown is acceptable, selecting one and pressing RETURN requests synonyms for it. During the search process, capitalization, prefixes, suffixes, pluralization, and pronouns are stripped, and they are restored during replacement. If no acceptable synonyms are found, pressing the ESCape key immediately returns the user to the word processor.

The Thesaurus is capable of displaying two pages of entries at once, and it allows the user to chain from one page of synonyms to others, to browse through the pages, or to look up any word by typing it. A retrace path is automatically maintained, allowing the user to back out of unproductive searches or to repeat a previous search, and a notepad is available to store words for further consideration. Other useful functions include the opportunity to edit a replacement word before insertion, and a chance to restore the original text if desired.

A concise but clear help screen is always available, and several program options can be adjusted to suit your taste.

Webster's Thesaurus has been designed to avoid conflict with other memory-resident programs, and the Thesaurus Entry Key can be changed easily if the Alt-F10 combination is otherwise occupied. When the user has finished using the word processor, the Thesaurus can be deactivated to avoid potential conflicts with other software, and it can be removed altogether in order to release the memory it occupies.

Webster's Thesaurus is not perfect. It can make editing errors when making substitutions, and some commonly used words do not appear in all of their forms or meanings. But these are minor flaws and easy to work around compared to the one major problem: During an attempt to save new text with the write-protected dictionary disk in the data drive, the computer locked up completely. This indicated two problems—one, poor design, because the program did not issue a prompt to insert a non-write-protected disk. And two, no program can write to a write-protected disk, but Thesaurus should have used error trapping. Once the program encountered the write-protect tab it should have returned to the word processor, displayed its own message, or done something to ensure the continued operation of the computer. Instead it was necessary to reboot, thereby losing a file.

Of course, this problem would not trouble hard disk users, it may not occur with all word processors, and it did not occur with previously saved files, but users with floppy disk systems would be well advised to try a test file before risking important new work.

Documentation and Support. The user manual for Webster's New World On-Line Thesaurus includes 49 pages of clear, literate instructions and five appendices about correct word usage. There are start-up guides for experienced and novice users, along with a thorough reference guide.

Simon & Schuster does not provide a toll-free technical support number. When called collect, support personnel accept the charges, then inform the caller that they usually do not do so. This effectively gives the user one free assistance call. The technicians are polite and helpful, but not able to handle obscure problems immediately. However, if they do not know the solution to the user's problem, they call back quickly with the correct answer. —*J.C.*

SCORECARD

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

Christopher M. Gordon is a full-time systems software support specialist for a leading research and development laboratory in the Los Angeles area.

Jack Nimersheim is an independent computer consultant and technical writer in Cincinnati, Ohio. He has worked with microcomputers since early 1980 and specializes in training support and application programming for the professional environment.

John Crowell is an independent computer consultant who specializes in starting newcomers with their first computers. He has worked in mail order and in computer marketing, and he has studied digital electronics and microcomputer repair.

Quick Reference Summary

Product: Microsoft Mouse
Manufacturer: Microsoft Corporation
16011 NE 36th Way
P.O. Box 97017
Redmond, WA 98073-9717
Phone: (206) 882-8088
Sugg. List Price: $195 (serial version), $175 (bus version)

Product: Referee
Manufacturer: Persoft, Inc.
465 Science Drive
Madison, WI 53711
Phone: (608) 273-6000
Sugg. List Price: $69.95

Product: Webster's New World On-Line Thesaurus
Manufacturer: Simon & Schuster, Inc.
Computer Software Division
Simon & Schuster Building, Rockefeller Center
1230 Avenue of the Americas
New York, NY 10020
Phone: (201) 592-2900
Sugg. List Price: $69.95

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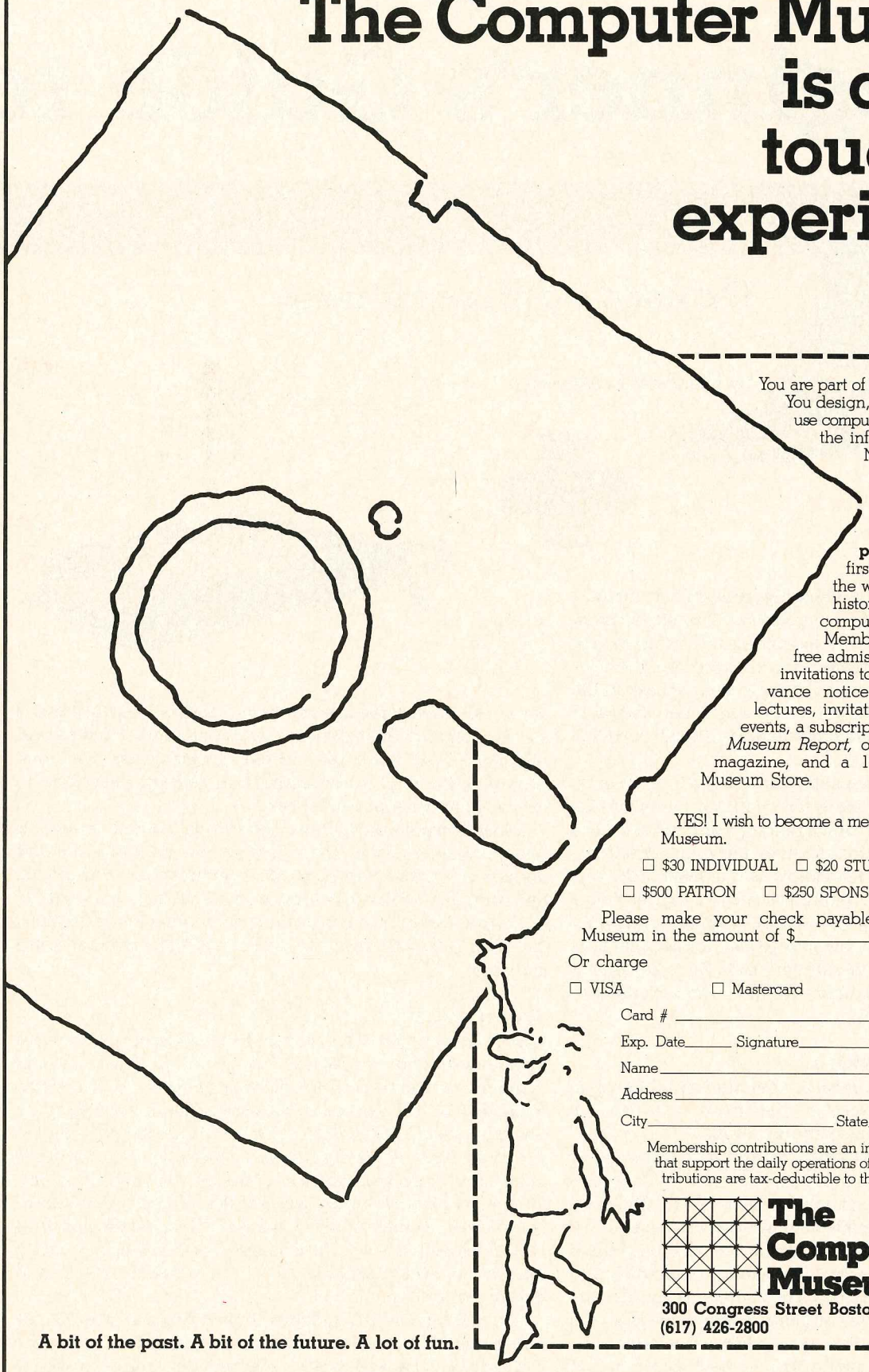

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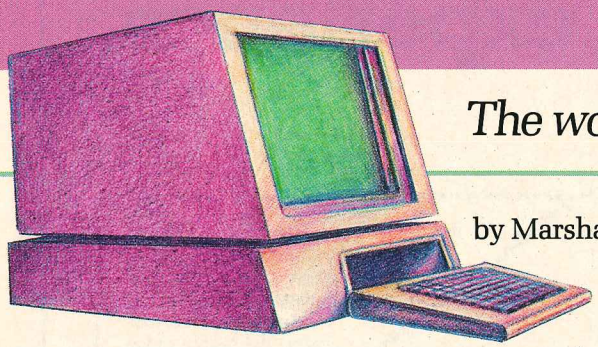
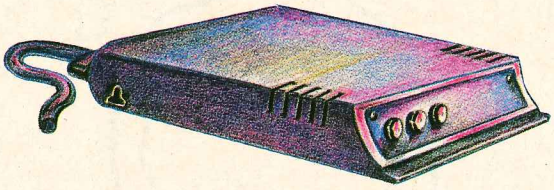


The world is a phone call away

by Marshall L. Moseley



You've probably been hearing for years that computers will change the way you live. Through telecommunications, they're beginning to live up to that promise. By linking your computer to the telephone system you can have instant access to the latest products and the freshest information, all at electronic speeds. With telecommunications you quite literally have the world at your fingertips.

Yet to many people, telecommunications is still a mystery. Beginning computer users are often confused by terms like "RS-232," "baud rate," and "downloading," and several have asked for an elementary introduction to telecommunications. The purpose of this article is to allow you to make informed decisions concerning telecommunications by giving you a basic working knowledge of the subject. You will learn what telecommunications is and what its applications are, and how a computer is set up to use telecommunications, what type of software and peripherals are involved, and what is available to you via telecommunications.

What is telecommunications?

Telecommunications is any form of communication using an electronic device. When you use a television, a radio, or a telephone, you are using telecommunications.

Telecommunications involving computers began after World War II. After 1945, computing devices linked by telephone lines were used extensively by the military. The commercial use of computers in telecommunications began in the late 1950s. A single computer (usually the size of a small building) could receive data from throughout the country and act upon it—issue invoices, track costs, order materials, etc.

Twenty-five years later the computer that was as large as a building is now the size of a typewriter (or a briefcase). Telecommunications has come of age as well. Every day it becomes a more pervasive part of our world. Some businesses survive solely on their ability to receive and transmit data over telephone lines. Engineers, writers, programmers, and other professionals rely on computers linked by telephone to exchange information and ideas.

Using telecommunications, the personal computer user has instant access to data and services that were once the exclusive domain of large corporations. We'll get to those services later, but first, to understand telecommunications, you should understand what your computer is, what a modem is and how it works, and some basic theory behind telecommunications software.

The computer

One of the most important concepts to understand about your computer is that of "devices." A device is a part of your computer system from which data can be received or to which data can be sent. The computer views just about everything as a device. A disk drive is a device; so are the keyboard, monitor, and printer. In a very real sense your computer exists simply to pass information from device to device. For example, when you print a letter you have written, the information is passed from a device called A:, which is a disk drive, to a device called LPT1:, which is the parallel data port and to which a printer is usually connected. (Under CP/M the parallel data port is designated LST:.)

Some of the devices attached to your computer are on the rear panel. They are communication ports that allow the computer to send and receive information. One of these, the

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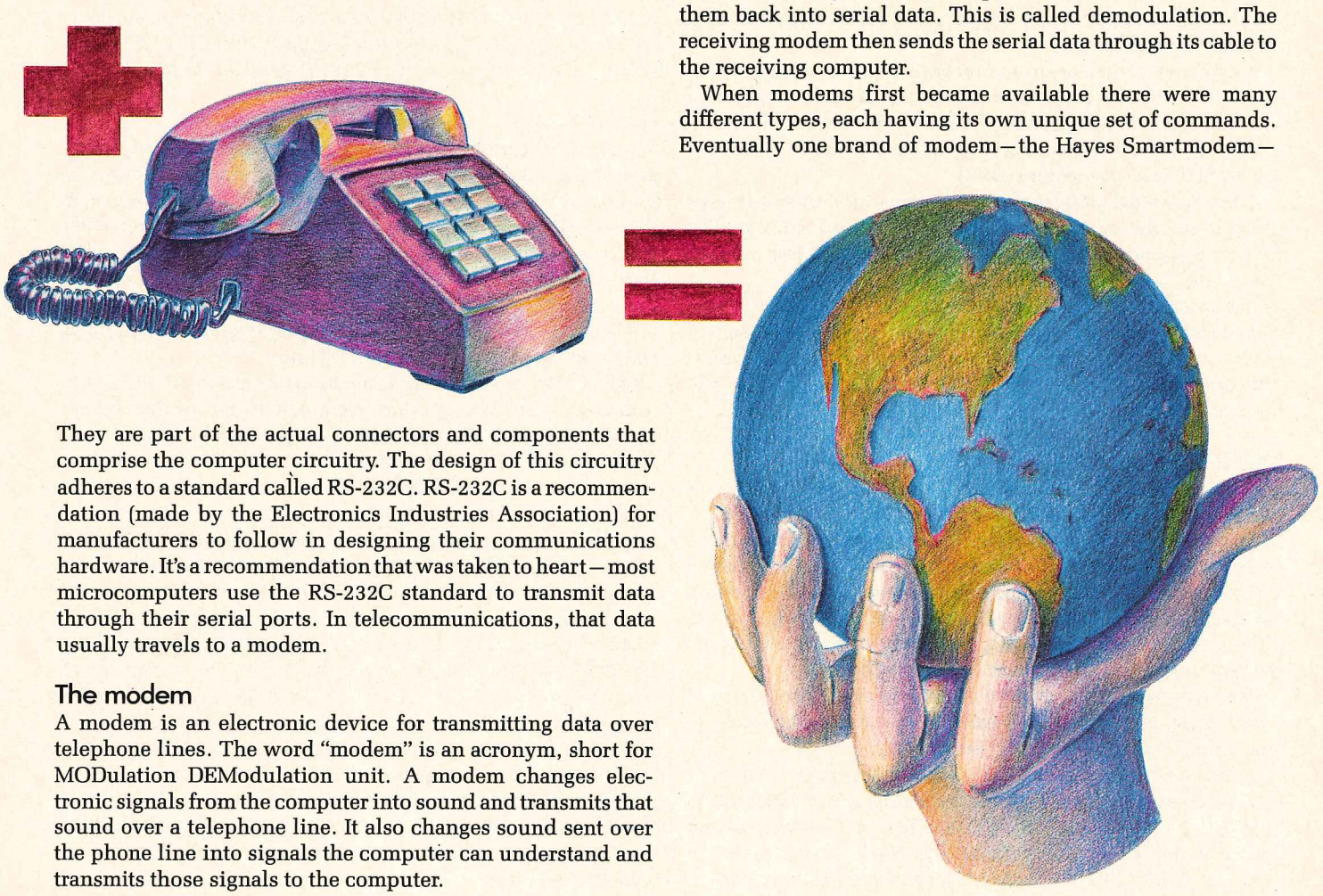
ILLUSTRATION BY A. WASIL

Telecommunications

parallel data port, is used with printers. The other, a serial data port, is used for just about every other peripheral device on the market—modems, plotters, even robots. Under MS-DOS the *device name* for the serial port is COM1:, under CP/M it is TTY:. Telecommunications data is almost always transmitted and received via your computer's serial port.

The rules that govern data transmission—how the computer knows when to send a signal, when to wait to receive one, and when transmission is over—are built into the computer itself.



They are part of the actual connectors and components that comprise the computer circuitry. The design of this circuitry adheres to a standard called RS-232C. RS-232C is a recommendation (made by the Electronics Industries Association) for manufacturers to follow in designing their communications hardware. It's a recommendation that was taken to heart—most microcomputers use the RS-232C standard to transmit data through their serial ports. In telecommunications, that data usually travels to a modem.

The modem

A modem is an electronic device for transmitting data over telephone lines. The word "modem" is an acronym, short for MODulation DEModulation unit. A modem changes electronic signals from the computer into sound and transmits that sound over a telephone line. It also changes sound sent over the phone line into signals the computer can understand and transmits those signals to the computer.

A modem cable runs from your computer's serial port to the modem, which in turn is connected to the telephone system by a standard phone line. Serial data, in the form of electric signals of very low voltage, leaves the serial port and travels through the cable to the modem. The modem converts each signal into a tone that corresponds to the signal that was sent. This is called modulation. The tones are then sent over the telephone lines to a receiving modem.

The receiving modem interprets the tones and converts them back into serial data. This is called demodulation. The receiving modem then sends the serial data through its cable to the receiving computer.

When modems first became available there were many different types, each having its own unique set of commands. Eventually one brand of modem—the Hayes Smartmodem—

became the most popular on the market. Hayes's popularity increased so much, in fact, that to remain competitive other modem manufacturers began to copy the Hayes commands and settings in their modems. In effect, they made their modems *Hayes compatible*.

Now the Hayes command set is the unofficial standard for modems, in much the same way that the IBM PC is the unofficial standard for 16-bit microcomputers. When shopping for a modem, it's a good idea to choose one that is Hayes compatible.

Modem speeds

To understand how fast a modem transmits data, you must first understand exactly what it is that a modem transmits.

Modems send and receive data in the form of bits. Between the modem and the computer, bits are represented by differing voltage levels—one level represents a 1, and another represents a 0. Between the two modems, bits are represented by changes in audio carrier tones, with changes in the tones and the state of the tones designating what bits are being transferred.

Eight bits make a byte and 1,024 bytes make a kilobyte. A 5-1/4-inch, double-sided, double-density floppy disk holds 354 kilobytes (not 360, as is commonly believed), so one floppy holds 2,899,968 bits (8 x 1024 x 354 = 2,899,968).

Look at it this way: A single byte is used to represent a letter. The letter A, for example, is represented by the bits 01000001. Eight bits comprise a byte, so you might think of a bit as one-eighth of a single letter.

A modem's transmission and reception rate is called its baud rate. The baud rate is the measurement of the exact number of signal events in one second. Usually each signal denotes a single bit, so that the baud rate is equivalent to the number of bits transmitted per second (BPS).

A few years ago 300 baud was the transmission speed most often used, but modem technology improved rapidly. The current popular speed is 1200 baud, and as of this writing 2400-baud modems are becoming widely used.

The standard is constantly shifting, changing in the direction of more and more speed. Fortunately modem manufacturers have made each improved modem compatible with older modems—a 1200-baud modem can send and receive at 300 baud as well as at 1200.

Internal and external modems

There are many different types of modems, but they fall into two major categories: external and internal.

An external modem is a stand-alone device that connects to your computer via a modem cable. To enable you to keep both a telephone and a modem connected to one phone jack, many external modems have an additional connector for a telephone. When you are not using it for telecommunications, the modem routes signals through to the telephone.

The advantages to having an external modem are:

1) Repair: If the modem breaks down, you do not have to disassemble your computer to remove it.

2) Indicator lights: Many external modems have a series of lights on their front panels called indicator lights. These lights display the status of various settings within the modem and the current status of communications. This can help when you run into problems. For example, a Hayes-compatible modem might have a light on the front panel that indicates whether or not the modem is set to answer the phone. If you cannot get your system to answer the phone and that light is lit, then you know the modem is not at fault and you can look elsewhere for the cause of the problem.

3) Accessibility: There are times when you need to set switches inside a modem, and with external modems you can usually get to the switches without much fuss. To get to an internal modem you have to disassemble your computer.

Internal modems, as you have no doubt deduced, are installed inside your computer; there are no serial cables or power cords to deal with. In MS-DOS based computers, internal modems usually take the form of an expansion board that is plugged into an expansion slot. In most laptops and in many Kaypro CP/M computers, they are built right into the computer circuitry. Once an internal modem is installed, you can plug the telephone line directly into the computer using a standard Bell RJ-11 telephone jack (the kind that plugs into your phone).

The advantages to having an internal modem are:

1) Portability: With the modem installed inside the computer you don't have to worry about packing and unpacking another electronic appliance.

2) Freedom: If you have an MS-DOS computer and an external modem, then you must dedicate your serial port to using the modem. Not so with internal modems. They are commonly adjusted to function as the *secondary* serial port, called COM2:. This frees up the primary serial port (COM1:) for use with a serial printer or any other serial device.

The software

Telecommunications software is the linchpin around which everything else works. It interprets the signals coming in through the serial port, translates them into characters, and presents those characters to you onscreen in the manner the sending computer desires. Also, telecommunications software allows you to send or receive entire files over telephone lines.

When you run a telecommunications program, it will be in one of two conditions: online or offline.

Online. When a telecommunications program is online it is communicating with another computer. The telephone line is active, the telecommunications software is in touch with the other computer's telecommunications software, and information is being exchanged. Every moment that you are using the other (remote) computer, you are online.

Offline. When a program is not communicating with another computer, it is offline. For example, when you initially run a telecommunications program, you will prepare it for use by setting the *communication parameters*, which are settings within the program that affect and/or control communications. The baud rate and the phone number to dial are communications parameters. During this operation the program is running but it is offline—it is not in touch with any other computer. Once you establish contact with another computer, the program goes from being offline to being online.

The concepts of offline and online are important to understand for two reasons: First, when the computer is online you are spending money, either on the telephone bill alone, or on both the telephone bill and on an online service (explained

below). So knowing when you are connected is important. Second, if you run into trouble, it is valuable to know whether the problem is being caused by your computer, the other computer, the modem, or the software. Again, knowing the status of communications is essential.

Once online, telecommunications software operates in one of two distinct modes: terminal mode or command mode.

The terminal computer

When you first use a telecommunications program you will run the program, dial the phone (or have the modem dial it), and wait for contact with the other computer. When contact is established, text transmitted from the other computer will scroll across your screen. At this point your keyboard acts as the other computer's keyboard. Your screen is its screen. You can use its disk drives, read its files, and run its programs. This is called *terminal mode*.

A "terminal" is a device for communicating with a computer, usually a large mainframe. Most people who work with mainframe computers use terminals. Each terminal is composed of a keyboard, a screen, and a minimal amount of control circuitry. A single computer may have many terminals, and the terminals may be located a great distance from the computer—several hundred feet or more. Communications software running on your microcomputer *emulates* a terminal. In other words, it makes your computer behave like a terminal. You can display text, edit files, run programs, and so on.

Different programs emulate different types of terminals; some emulate many. But the terminal every telecommunications program emulates is an ASCII terminal. ASCII (American Standard Code for Information Interchange) is a standard most computer and software manufacturers follow so they can design equipment and software that will work together. ASCII terminals transmit and receive ASCII codes, which are numbers that denote different letters and characters. Any character you can type has a unique ASCII code and can be displayed on an ASCII terminal. When you first contact another computer, unless you have specified otherwise, your communications software will emulate an ASCII terminal.

While terminal mode is great for *using* someone else's computer, what about retrieving files, sending files, or saving the messages that you read during your telecommunications session? For that you use *command mode*.

Command mode

In command mode you remain online, but go out of terminal mode, gaining access to the different features of your telecommunications software. You get from terminal mode to command mode by pressing a specific sequence of keys—a sequence that is different for each telecommunications program.

Typically, command mode allows you to perform some operating system functions, like reading a directory of your disk, typing a file, or copying a file. Command mode is also where you initiate file transfers, which are explained below.

What you can do in command mode depends on how powerful your telecommunications software is, and some of it is very powerful. Certain programs have text editors built-in. So, for example, you could be in terminal mode, switch to command mode, compose a quick note using the editor, send the note over the telephone line, and switch back to terminal mode.

The most common use for command mode, however, is to initiate the transfer of files.

File transfers

There are two methods for transferring files when you are online: ASCII transfers and binary file transfers.

ASCII transfers. In a straight ASCII transfer only seven bits

Communications software emulates a terminal.

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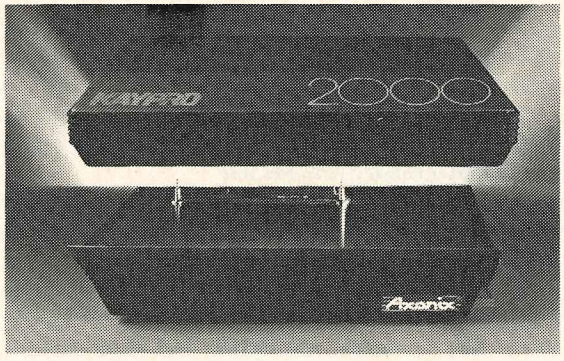

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are transmitted in each byte, and these seven bits can only comprise printable characters (letters, numbers, etc.), certain formatting codes (carriage returns, line feeds, form feeds, etc.) and a limited number of control codes (control codes are characters that do not get printed. They do things like control the printer—make it move up a page or a line). For these reasons ASCII transfers only work with text files.

Receiving a file by an ASCII transfer is done by setting your communications software to "capture," meaning that you remain in terminal mode, but anything that appears on your screen is automatically placed in a text file. If, for example, you find a text file on another computer and you want a copy of it, you can set your software to "capture" and issue the command to display the file on your screen. Your software will capture the text to a file as it appears. Once your session is done you can go back to that file and edit it or view it with your word processor.

There are two methods for transferring files: ASCII and binary file transfers.

Sending a file by an ASCII transfer involves using your telecommunications software to read a text file from your disk, translate it into serial data, and send it out the serial port to the receiving computer.

While ASCII transfers work, they are inefficient. Capturing a file from the screen is a slow process, and you are limited to text files. Executable programs—those with COM or EXE extensions—cannot be viewed onscreen. You can, however, send or receive *any* kind of file using a second method of information exchange called a binary file transfer.

Binary file transfers. In a binary file transfer all eight bits of a byte are transmitted. One computer is designated the receiver and the other the sender. Each computer user leaves terminal mode for command mode; one issues the command to receive a file, the other to send. The sending computer reads a portion of a file from disk (usually 128 bytes) and then signals the receiving computer, asking if it is ready for the data. The receiving computer signals ready and the data is sent. Once the data is received the whole process begins again with the next 128 bytes, until the entire file is transferred. In a binary file transfer the programs running on each computer check and double check each other to make sure that each 128 byte packet of information is transmitted correctly.

There are several different techniques (called transfer protocols) for binary file transfers. The most popular is Xmodem, so named by its creator, Ward Christensen. Some other protocols are Ymodem (one-kilobyte packets,. rather than 128 bytes), the Crosstalk protocol, the CompuServe "B" protocol, and the Kermit protocol. Each protocol has its uses. Kermit, for example, was created at Columbia University specifically for transferring files from a mainframe to a microcomputer. The Crosstalk protocol uses 256-byte data packets, adjustable up to 63.75 kilobytes, thus insuring speedy file transfers. The hitch in Crosstalk's protocol is that both the sending and receiving systems must have it available—and that's not always the case. (That's why Xmodem is the most popular; it isn't necessarily the best transfer protocol, but it was the first widely used one, and *every* system you call will support Xmodem file transfers.) Transferring a file to another computer is called "uploading"; receiving a file is called "downloading."

In summary, when you are issuing commands to another computer you are in terminal mode—the other computer accepts commands from your keyboard and displays text on your screen. In command mode you issue commands to your computer—commands to read your disk directory, set your software to "capture" the text that appears on screen, or transfer files using a transfer protocol.

These are the mechanics of telecommunications, and at times it's a pretty dry subject. Now comes the interesting part—what you can do once you are online.

Online services

An online service is a computer that performs the functions of a shopping mall, a newspaper, a social club, a library, and a post office. You can call an online service and use it to order products, retrieve information, confer with fellow computer users, or send and receive electronic mail. *(Ed. Note: For more information on online services, see the article "Information, Please?" in this issue.)*

Two of the most popular online services are CompuServe and The Source. Both are general-interest services, and both have a multitude of features. Through either one you can order appliances, sporting goods, gifts, or clothing. You can consult news services for the latest information on current events, sports, or weather. Data base libraries containing information on many subjects are available.

Perhaps the most valuable part of each service is the clubs, called SIGs (Special Interest Groups), that allow you to exchange information with other computer users. Each SIG is devoted to a specific interest, such as Computer Aided Design (CAD) software, computer graphics, or professional writing. The Kaypro SIG on CompuServe is one of the most valuable resources I know of for finding specific information on all Kaypro computers. Also, each SIG usually maintains one or more data libraries containing help files and free software that can prove invaluable. *(See "The CompuServe Forums" in the November 1986 issue of* PROFILES *for more details on the Kaypro SIG.)*

Additionally, both services offer electronic mail services; The Source has SourceMail, and CompuServe offers EasyPlex. With either of these services you can send a message across the country in less time then it takes to seal an envelope.

Financial services are also available, the most popular being the Dow Jones News/Retrieval Service. In addition to offering up-to-the-minute stock quotes, DJNS has stock analysis software available that you can use for a fee (on top of the fee you are already paying for being online with the service).

Most online services charge you so much per minute for the time you are connected; the amount depends on the baud rate that you use. The lower the baud rate, the lower the connect rate. However, the lower the baud rate, the longer you stay connected, so the more you are charged. Before deciding on

(continued on page 63)

Use Your Feet!

Adding a footkey to your keyboard

by Bob Keith

How often have you been tapping away furiously at your keyboard, wrapped in a creative glow, and had your concentration shattered by the need to hit an obscure sequence of control keys? At those times you wished desperately for some extra fingers, just so you wouldn't have to interrupt your typing.

Lacking extra fingers, people command their computers in other ways. For example, some advanced computers are designed so that a spoken word triggers a command. In a few years they say we will forget about keyboards and simply tell our computers what to do.

Meanwhile, you can get a jump on the future by adding a footkey to your system. A footkey is a pedal that sits on the floor and acts as any key on the keyboard, letting you type with your feet as well as your fingers. Why not? We use our feet to help drive cars, control sewing machines, pound bass drums, and pedal organs. As I write this, I am using a footkey in place of the CTRL key.

When a key is pressed, two low-voltage traces are connected, closing a circuit.

I added a footkey to boost writing speed. Any time a finger can stay on the "home" keys, fewer errors are made and time is saved. (Typing instructors say that a finger leaving home costs three keystrokes in time.) And when playing games, the footkey helps zap ghouls and monsters.

This article will describe step-by-step how to attach a footkey to your keyboard. Though these instructions are for a keyboard from a CP/M Kaypro, they are equally applicable to most MS-DOS computers (with the exception of the Kaypro 2000—do not even *think* about modifying its keyboard).

I will assume that you are familiar with the basics of soldering. If you are not, but you still wish to make this modification, then talk to friend who does have experience soldering. Ask him (or her) how it's done and try to have that person present when you make the modification. Barring the presence of a knowledgeable friend, go to the library or the bookstore and read up on soldering, and perhaps elementary electronics (though the latter is not necessary for this simple procedure, it couldn't hurt). Before you attempt this procedure, practice soldering. Use two scraps of wire and just solder them together a dozen or so times. When soldering, heat the objects being soldered, not the solder itself.

Parts and preparation

These are the things you need to purchase before you can begin.

1. Footkey, with wire to reach up from the floor (Radio Shack part # 44-610, $2.99).
2. Sub-mini phone jack, closed circuit type (Radio Shack part # 274-292, 2 for $1.19; this particular jack will need slight modification).
3. A drill and a 1/4-inch drill bit, or a drill bit just slightly larger than the body of the jack.
4. Small wire cutters. (*Very* small—the type usually called "diagonal clippers.") The head of the clippers should be an inch or less across.
5. Twelve to 18 inches of 22-gauge stranded, insulated wire. The package should say "22 AWG."
6. A soldering pencil. Because these connections are delicate, *do not* use a higher heat soldering gun.
7. Resin core solder.

Prepare the work area. You should have a wide, flat, stable table with a surface that can withstand a burn or two (soldering pencils are hot and accidents do happen). Make sure the work area is well lit and that there is a power outlet nearby.

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How it works and what you'll do

First, an explanation of what happens inside the keyboard is in order. Under every key, two tiny metal traces end without touching. These traces are like wires in that they carry electric current. When a key is pressed, the traces are connected, closing a circuit. Power flows through that circuit, and the computer detects it and prints the desired character on the screen. When the key rises, the traces are disconnected, opening the circuit and disconnecting the power.

What you are going to do is solder two wires from the footkey to the points immediately beneath the CTRL key where the traces end. This will enable the footkey, as well as the CTRL key, to complete the circuit. You will connect one wire to one trace, and one to the other trace, creating a *parallel circuit*.

Where the wires pass through the side of the case you will install a jack so that the footkey can be removed at any time.

Disassembling the keyboard

Unplug the keyboard from the computer and place it on the table. Remove the tiny screws that hold the top of the keyboard case in place. After lifting the top off the case, you will see the keyboard mechanism attached to the bottom. Remove the four screws that secure the keyboard mechanism to the bottom half of the case. Now, lift the keyboard out of the case slowly and carefully. As you do this, detach the plastic housing that fastens the keyboard wiring to the case. Pull the keyboard mechanism free and put it aside.

Installing the jack

Look at the bottom half of the keyboard case and decide where along its side you want the jack to come through. Drill a hole at that point to mount the jack.

There are two types of jacks: open circuit and closed circuit. "Open" and "closed" refer to whether the connections to the jack are joined or open when there is no plug in the jack. You want an open jack, because the circuit will be closed by the footkey.

Closed jacks are easier to find than open jacks; the Radio Shack jack described above is a closed jack, which needs modification. To modify it, hold the closed jack in your fingers while pushing the plug in and out a few times. You will see the tip of the plug open and close a breaker-arm that sticks in from the jack. Using a pair of small wire cutters, clip off the outside arm of this breaker-arm.

You must place insulation around the jack where it passes through the metal case. (Of the four wires that come from the computer to the keyboard, two carry information, and neither of these is grounded.) From thin, insulating cardboard, make washers to insulate the jack from the metal case. It is still possible that the shaft of the jack could touch as it goes through the case wall. That's why you drilled a hole a little bigger than the shaft of the jack. Wrap a few layers of sewing thread or other insulation around the shaft where it passes through the case until the jack sits firmly in the hole.

Turn on the soldering pencil. Once it is hot, clean it by dipping the tip in flux and wiping it on a wet sponge.

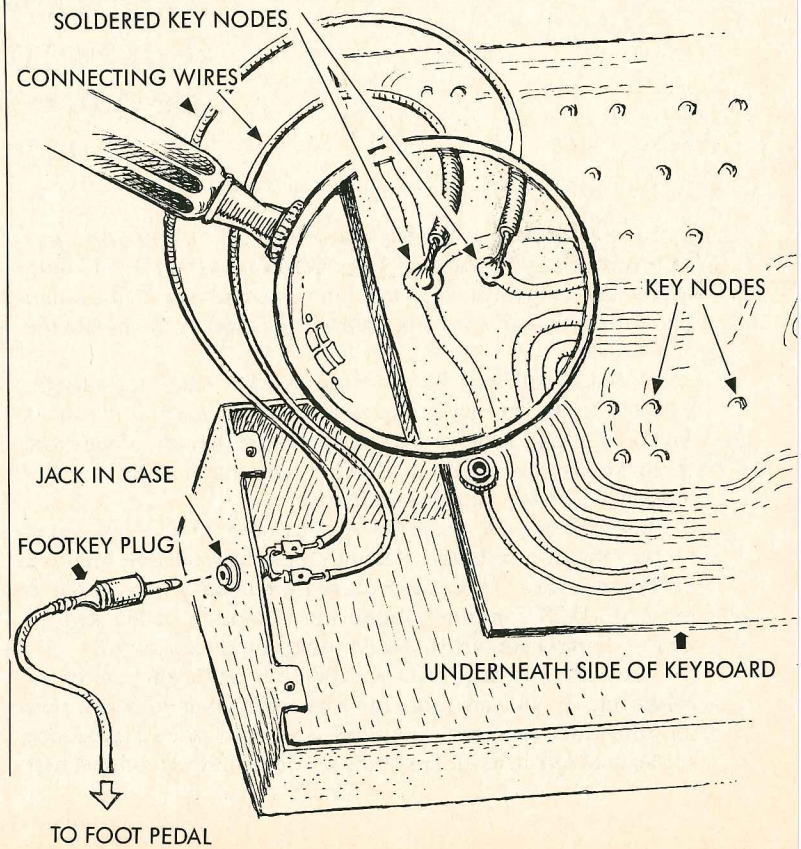
Finish by soldering a six- to nine-inch piece of wire to each node of the jack. Push one piece of wire up against one of the nodes. Where the two touch, apply the tip of the hot soldering pencil. Once the node and wire are as hot as the pencil, touch the solder to the connection until a small amount melts around the juncture, then pull the solder away. You will know that the solder is completely melted around the connection when it (the solder) takes on a mirrored appearance, like mercury. Hold the connection until the solder cools to a dull, pitted sheen.

You can test the nodes in question with the probes of an ohmmeter.

Soldering the keyboard

Move the keyboard case aside then place the keyboard mechanism in front of you and turn it over.

On the bottom of the circuit board you will see many nodes of solder connected by traces—one unconnected pair beneath each key. Locate the pair immediately beneath the CTRL key. They should look very similar to the nodes in the figure below.



(To make sure you have the correct pair of nodes, you can test them with the probes of an ohmmeter. Resistance drops to zero when the key on the other side of the board is pressed).

Now you are going to solder one wire from the jack to one of the nodes beneath the CTRL key, and the other wire to the other node. Place the first wire on top of one of the nodes. Then apply the soldering pencil to both the wire and the node until both are heated (the solder comprising the node will melt). Do not heat the wire-node combination for more than eight to ten seconds. Again, let the solder take on a mirrored appearance, then let it cool until it is hard. Do not let the pencil's tip stray to another node, or to any of the traces. And make sure not to drip any solder onto the PC board. The correct connections are illustrated in the figure.

Once you have visually triple-checked the connections (do *not* tug on them), place the keyboard mechanism back into the case and screw it down. Insert the jack through the hole in the case wall, and screw it down also. Put the plastic housing holding the the keyboard wiring back in place, but do not replace the top of the case yet.

Testing

Take the keyboard back to the computer and connect it, then connect the footkey to the jack. If both keys work, fine. Take the keyboard back to the work table and attach the top of the case.

If it doesn't work, go back to the table and go over your work. Make sure you soldered the correct nodes, then make sure all the soldered connections are firm. Go over these instructions and make sure you followed them exactly.

If you turn on the computer and every character you type produces a control character on the screen (i.e., typing A produces ^A), you may have failed to modify the jack correctly. It is still closed; with the computer on this is the equivalent of holding the CTRL key down without stopping. Reread the section on installing the jack.

Once you have the footkey working, there is one more step to take: customizing the pedal to make it feel right to your foot. A footkey, as it comes from the store, may be so light that it moves around. A block of wood cut at an angle solves the problem. When fastened to the slant-side of the wood block, the footkey stays in place and sits at a comfortable angle.

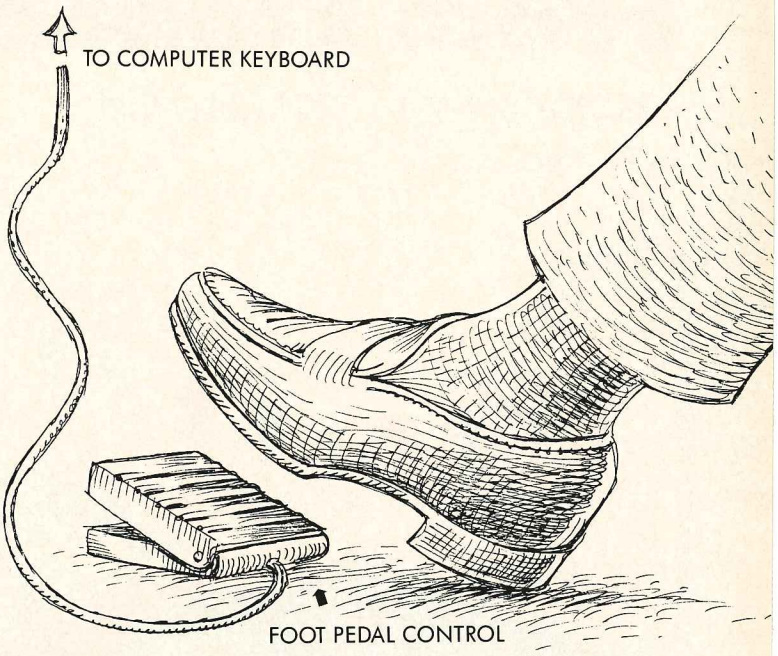
Detailed advice

The footkey: One chain of electronics stores always stocks inexpensive, low-voltage foot-switches, as electronics buffs want them for many uses. Every electronics store carries a variety of button-switches and micro-switches that could be adapted to make a footkey. The key you want remains closed only when held down.

The jack: A sub-mini jack works well, but any size will do. Closed jacks are easier to find than simple open jacks, which is why these instructions describe the modification and installation of a closed jack. If you find an open one that works, by all means use it. That will save a step in the installation.

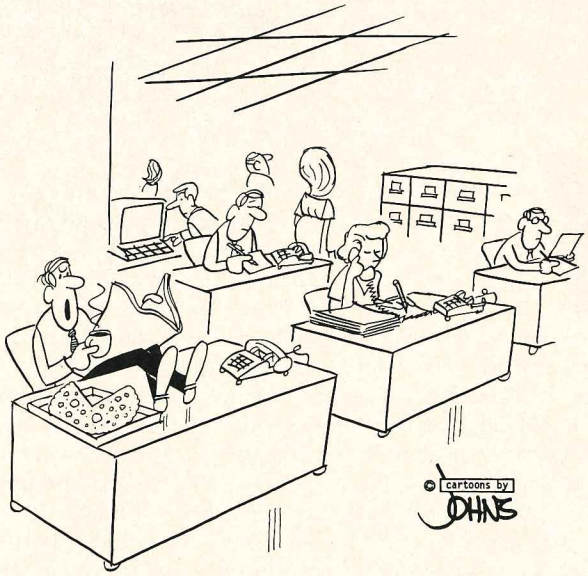
Soldering: Use resin core solder. If you are not used to soldering, a local shop will do it for a small charge. Also, they can convert a closed jack to an open one in two seconds.

Keyboard types: I have described modifying the standard 8-bit Kaypro keyboard. Kaypro PC keyboards should allow similar modification because, like 8-bit keyboards, they have straightforward contact keys. If the keyboard is not standard Kaypro issue, watch out—some computers read keyboards through fancy sensing, not by simply noting the closing of a circuit by a key.



A final caveat: wiring through the side of an MS-DOS type keyboard case poses a small problem, as the top boxes down over the bottom. The hole must go through the top of the keyboard case, not the bottom.

Bob Keith is a psychiatrist and former Navy electronics technician who uses a Kaypro 2X for writing, bookkeeping, and going online.



"Hey, what's going on here? My job is listed in the want ads!

From Economy to Luxury

Shopping for a CP/M hard disk

by Fred Ray

You've probably all heard about the advantages of hard disks. Usually no larger than a half-height floppy drive, they run up to 20 times faster and hold scads more information—from five to more than 100 megabytes. That's between 14 and 278 times as much information as a double-sided, double density floppy will hold. Disk clutter can be a thing of the past.

Except for the remote possibility of data loss (when you lose with a hard disk, you lose big—ten to 20 megabytes at a time) the hard disk is superior to the floppy in almost all ways.

If you have a CP/M computer *without* a hard disk, and have been trying to decide whether to upgrade the old machine or buy a new one, this article is for you. We'll look at three different hard disk systems with various capacities and prices. (I'll also tell owners of Kaypro 10s how to improve the efficiency of the hard disk they already have, and how to add two megabytes to its data storage capacity.)

But first, why bother to upgrade the old war horse? If you did any of the modifications described in "Megahertz Madness" (*PROFILES*, June 1986) you have already made your machine a fast, super-efficient word processor, quite capable of giving MS-DOS PCs a run for their money. Simply adding a hard disk, whether or not you have added anything else, can provide a further speed increase—by cutting disk access time by more than 75 percent. When combined with the 5 MHz speedup, this creates an impressively fast machine.

But how about cost? Older computers fall in price almost every day, with the current market value of an '83 series Kaypro II sitting in the under-$500 range. Some of the hard disk add-ons described here cost more than $1,000. Why sink that kind of money into a box that's worth less than half that, especially when it has an "obsolete" operating system?

But changing machines has costs, too. A new machine will almost certainly mean going to MS-DOS, and you'll have to

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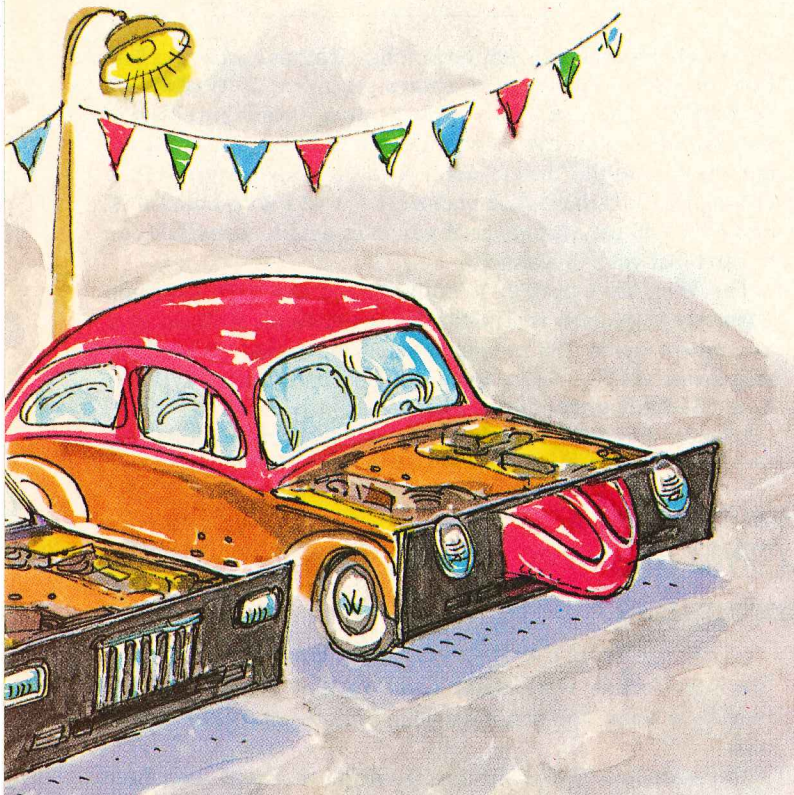
ILLUSTRATION BY MIKE DORMER



learn that operating system. If you're a busy writer or businessperson, what will that learning time cost you?

And what about new software? Some CP/M programs, like WordStar and dBASE, are available in MS-DOS, but you may find to your chagrin that they are slower in the 16-bit world. If you buy newer programs, you will find them *much* more expensive. And if your productivity drops, even for a little while, what will that cost you? If you miss a deadline or a market opportunity, $1,000 may be cheap by comparison.

In fact, considering the speed and capacity increases, adding a hard disk may be the most cost-effective change that you can make to your computer. So unless you need something that your CP/M computer just doesn't have, like color graphics, you may well want to stay with your old friend.

Consider also that the prices of hard disks are dropping, and the systems tested here may well be cheaper by the time you read this. Or you can save money by assembling your own system, though this approach requires some mechanical expertise.

Since my goal in this article is to give readers an idea of the range of hard drive systems available, I have tried not to make direct comparisons, especially in regard to speed. Advanced Concepts, for example, was asked to supply its least expensive low-end hard disk, although they also market faster, larger, more expensive systems. Comparing this system directly to the top-of-the-line WestWind Turbo-Trantor would be like comparing a Volkswagen with a Mercedes: it isn't a valid comparison.

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While it helps to know something about the technical side of hard disks if you want to install your own system from parts, you don't have to know much at all to install any of the kits discussed in this article. All the ones I tested came in a separate enclosure, although many people prefer to mount the hard disk on board the computer in place of one of the floppies. This gives identical performance but requires a bit more time and expertise.

Advent Products

Advent produces a series of well-designed products for 8-bit Kaypros that form an integrated system. Hard disks combine with clock/calendars, speed-up boards, RAM disks and the TurboROM to create a truly versatile machine.

The system begins with the Advent TurboROM, which has become the de facto standard for upgrading older 8-bit Kaypros

Hooking a hard disk in is extremely simple—just plug the ribbon cable into the adapter board.

(The TurboROM and the Advent Speedup Board were reviewed in the June 1986 *PROFILES*). In addition to handling up to four double- and quad-density floppies, the TurboROM can also operate a hard disk and a RAM disk without additional software. (Unlike MS-DOS, CP/M does not come with built-in hard disk support—see accompanying article on page 54.)

All of Advent's other add-ons plug into an adapter board that fits under the Z-80 CPU—really the only place to put things in the Kaypro II or IV, which lack expansion slots. The host adapter is $69.95 by itself and $99.95 with the clock/calendar—the cheapest add-on. (If you want both the adapter and Advent's speedup board, for $25 they will rework the speedup board so that both items will fit under the chassis cover.)

If you already have the clock/host adapter, hooking a hard disk in is extremely simple—just plug the ribbon cable into it. My test hard disk was delivered in an external cabinet with the disk already formatted and ready to run, so all I had to do was

plug it in and turn it on. However, Advent manager Greg Fischer says that the "vast majority" of hard disks he sells are mounted internally, and that all Kaypros except the very earliest IIs should have adequate power supplies to run an internal hard disk.

If you have a TurboROM and obtain the formatting software from Advent ($44.95) you can install a drive of your choosing. The installation menu contains more than 50 drives and provision for custom installation of drives not listed. For $195 Advent will sell you the basic kit (TurboROM, host adapter, and software) and let you add your own controller card and drive.

The Advent Hard Disk Formatter will allow you to do almost anything you like as far as formatting and setting logical block size, the number of directory entries, and partitions (up to seven per drive), as well as testing the formatted disk. This is really only necessary if you want to change something, since the default parameters should satisfy most users. Some other useful utilities are also included to allow you to optimize the size of the operating system for the number of drives present.

The Hard Disk Formatter can also be used to reformat the hard disk on the Kaypro 10 to give an additional two megabytes of capacity (from nine to 11 megabytes), as well as speed up its operation. This requires the formatting software and the TurboROM ($125). It also lets the user daisychain another internal hard disk to the first.

Once the hard disk is formatted and partitioned to your liking and the operating system is installed on it, operation is handled by the TurboROM. This is the only system tested that will boot from the hard disk (that is, it will boot the operating system and access the hard disk at the same time) when turned on. The others require that you initially boot the operating system from a floppy disk and then run a program to gain access to the hard disk. On startup the TurboROM will "look" for a hard disk controller and boot from that if it finds one. If not it will boot from the A: floppy drive. If you need more capacity, the TurboROM will handle two hard drives of up to 56 megabytes each, as well as a RAM disk. The Advent kit comes with ZCPR1, but will work with PluPerfect Systems' Enhanced CP/M and DateStamper if you have them.

The Advent Hard Disk system is a mature, well-integrated, tested package and comes highly recommended. Prices continue to drop, but at the time of this writing they were $968.80 for the 11 megabyte and $1,013.80 for the 22 megabyte internal drives. An external cabinet and cables are $179.50 more.

I have found Advent's technical support to be excellent.

WestWind Trantor series

Fans of Isaac Asimov will recognize Trantor as the Imperial homeworld of the "Foundation" series. In many ways the hard disk system that bears its name is as remarkable as the novels.

Unlike the Advent, the Trantor hard disk is available only as an external system of either ten or 20 megabyte capacity. Although the hard disk may be purchased alone and works fine that way, the system really shines with one of WestWind's "Drive C2" RAM disks. This Turbo System—available either as the TurboPac with the RAM disk mounted internally in the computer or as the TurboTrantor with the RAM disk mounted externally in the hard disk enclosure—works with both CP/M and MS-DOS computers, so if you ever decide to switch you haven't lost your investment.

The WestWind system is built around the WW Interface (formerly $100, now included with the system). It allows you to connect up to 128 megabytes of hard disks, up to three megabytes of RAM disks, and a tape backup to your Kaypro 2, 4, or 10—truly phenomenal storage.

Like the Advent system, the WestWind interface plugs into the Z-80 socket. Hard disks come in ten, 21, 45 and 110 megabyte sizes. You can even get a removable five megabyte unit.

The Turbo System works with both CP/M and MS-DOS computers.

The standard WestWind configuration of the 21 megabyte disk is four partitions—A:, B:, E: and F:, with the RAM Drive C2 as M: and the floppies as C: and D:. The partitioning, block size, directory entries and other variables are all easily reconfigured by the user. If you need more storage space you can connect another drive (hard disk or cartridge) to the WestWind subsystem you are already installing, and yet another drive to that one, for a total of three subsystems (this is called "daisychaining").

The RAM Drive C2 serves several functions, which space does not permit me to do full justice to here: It may be used as a RAM disk/cache buffer, a print buffer, or both at once. Drive C2 units come in 512K and one megabyte sizes and may be combined for a total of up to three megabytes.

And you get software: WestWind's PrintPac utility partitions Drive C2 to handle up to four printing jobs at once. MENUPAC can almost completely replace your operating system with a configurable menu-driven system—a significant consideration if untrained people are using the computer. It is completely transparent, and it interacted perfectly with the both Advent TurboROM and the Micro Cornucopia ROMs.

Another useful utility is ARKIVE, which allows selective hard disk file backup and restoration. You get a commercial program, Superfile, which is a text data base with sort and file capabilities (reviewed in the April 1986 *PROFILES*).

You also get a WestWind exclusive: "Supersize" SuperCalc2, a spreadsheet that can create up to 9,000 cells (64 columns with 140 rows) on a one-megabyte RAM drive. The demo programs ran perfectly, but I didn't have time to try a monster spreadsheet.

This system has been around for a good while (WestWind started with Osbornes) and has obviously been thoroughly tested. The software and hardware work reliably together and make an excellent combination for the business user. The only glitch I found was that the popular public domain program Super Directory (SD) would stop the system cold and require a

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LANGUAGE KIT (MSDOS ONLY) $54.50 Now you can display foreign languages or any alternate font on your PC compatible computer screen and print them from nearly any program. Switch between English and your choice of font with one key. Buy our fonts or design your own. Each Font Set is $20.00 and includes matching Screen and Printer fonts. Russian, Greek, Hebrew, Scientific available. Hardware required QUADVUE® card, monochrome monitor and a dot matrix printer that we support.* Ask about hardware prices.

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CHARACTER DESIGN KIT $44.50 Easily design your own printer characters right on your screen. Includes graphics character sets and works with Printer Character Set fonts (use them as a base for your own fonts). So easy to use, designing characters becomes fun.*

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PROMAILER $59.95 A menu driven mailing system powerful enough for a small business but easy to use. Just call it up and it's ready to go. Virtually unlimited sorting choices with no set up required. Prints one, two and three across labels, lists, envelopes in order by zipcode, name, address, city/state. No other programs required.

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TRADEMARKS—Okidata, Epson, Star Micronics, Kaypro (Kaypro Corp.), Quadvue (Quadram Corp.).

reboot. All other software I tested ran with no problems.

WestWind sells its ten-megabyte hard disk in an external cabinet for a very reasonable $645 and the 20-megabyte model for $895. The Drive C2 RAM disk sells for $349 in 512K and $499 in one megabyte configuration, and WestWind will include the one megabyte Drive C2 for $400 extra with the purchase of a hard disk. Considering the amount and sophistication of the bundled software, this is a bargain—especially if you need huge spreadsheets.

WestWind also takes the prize for the best manual—a large, thorough, non-technical explanation of all the features of the Trantor system. Technical support was prompt and excellent.

Advanced Concepts "Mini-Winnie"

But what about those of us who don't have or don't want to spend $800 to $1,200 for a hard disk system, and don't want or need the sophistication of the Advent or WestWind systems? Is there a cheaper alternative? As I mentioned above, the prices of hard disks have been falling, and yesterday's state of the art is today's surplus. I asked Advanced Concepts (which also sells more expensive systems like those from Advent and WestWind) for a low-end hard disk.

What I got was a small (3-1/2 x 6 x 13-inch) metal box that complimented the Kaypro's portability well. Like the others, the Mini-Winnie interfaces with a small host board that fits in the Z-80 socket. The cable is easily detached for travel. The hard disk is an older full-height Tandon five-megabyte model, which is slower and more power hungry than the newer drives. The power requirements preclude internal mounting without replacing the power supply, but the package is small enough so as not to be in the way.

The bundled software for the Mini-Winnie was sparse compared with the WestWind offering, but was certainly adequate and gave no problems with either the Micro-C or Advent ROMs. A few initial hookup problems were solved very quickly over the phone. The documentation, however, was skimpy and on the technical side. One nice feature of the Mini-Winnie software is that you can boot it by simply typing "HARD" after booting from the floppy and "de-boot" back to the floppies by typing (I am not making this up) "HARD OFF." You don't have to reset the machine.

The software did hang up occasionally, such as with the public domain program CLS (clear screen), but all of my major programs ran with no problems. As expected, the elderly Tandon was noticeably slower than the drives from Advent and WestWind, but was still far faster than a stock floppy drive. One thing that did not work was installing the Advent speedup board with the Mini-Winnie host adapter. The computer functioned, but there was no difference in speed.

The best thing about this system is the price—it's only $465 complete and ready to run. (That's for five megabytes; 10- and 20-megabyte models are also available.) Considering its small size, low cost, and easy installation, this would be just the thing for the owner of an older Kaypro II looking for a quick and inexpensive way to add speed and storage.

These are just a few of the CP/M hard disk systems available. If you need a hard disk, now is the time to start looking.

Freelance writer and photographer Fred (Slim) Ray lives in the mountains of western North Carolina, where he photographs rivers and writes about the outdoors with his veteran (and much

(continued on next page)

modified) '83 series Kaypro II. He is a frequent contributor to outdoor magazines, a contributing editor for Canoe *magazine, and co-author of the book* River Rescue.

Quick Reference Summary

Manufacturer: Advent Products, Inc.
3154 E. La Palma Avenue
Anaheim, CA 92806

Orders: (800) 821-8778 (national), (800) 521-7182 (California)
Info: (714) 630-0446

Manufacturer: WestWind Computer
33447 Western Avenue
Union City, CA 94587
Phone: (415) 489-5566

Manufacturer: Advanced Concepts Engineering and Consulting
8926 S.W. 17th Street
Boca Raton, FL 33433
Phone: (305) 482-7302

What's In a Hard Disk?

Today's half-height hard disks differ little in appearance from a floppy drive, except that they lack an opening to insert a disk. What's inside that makes it work so fast and hold so much data?

If you looked inside the drive's enclosure you'd see an aluminum platter coated with a thin layer of magnetic media. This platter—5.25 or 3.5 inches in diameter—spins at 3,600 rpm, or about ten times as fast as a floppy. It might have up to six read/write heads that skim quickly over the disk's surface on a cushion of air.

Since the disk is rigid it can be engineered so that only a few microns separate the head(s) from the platter, which is both a strength and weakness. This closeness allows extremely fast data transfer, but the distance is so small that even a cigarette smoke particle can interfere enough to cause serious problems. That's why the housing is sealed.

If a head ever does somehow land on the platter, it gouges the surface of the disk and causes the dread phenomenon of "head crash," which is virtually guaranteed to wipe out everything on the disk. If this ever happens, you will understand why hard disk owners obsessively back up everything (or should).

Information can be stuffed in a smaller package and accessed more quickly.

All this technology means that more information can be stuffed in a smaller package and accessed more quickly—up to 20 times faster than a floppy. While most floppy drives hold around 360K (about 240 double-spaced pages), with a few going up to 1.2 megabytes (1,200K, or about 800 pages of text), the smallest capacity hard drive tested here, the Mini-Winnie, holds five *mega*bytes (5,120, or about 3,250 pages of text). The largest, the WestWind Turbo-Trantor, holds 20 megabytes, or about 13,000 pages.

Yet a 20-megabyte half-height hard drive takes up no more space than a 360K floppy drive.

Before a hard drive can be used, it must—like a floppy—be formatted. Typically, the formatting process will take up ten percent of the data capacity. (For example, a ten-megabyte drive has about nine megabytes of usable space.) Since CP/M 2.2 can only address eight megabytes of space, if the drive capacity is larger than that it must be divided into two or more partitions (logical drives).

If a 20-megabyte *physical* drive is partitioned into four *logical* drives (A:, B:, C:, and D:), each drive will act as if it were a separate physical drive apart from the others. Under CP/M, each of these logical drives may have up to 16 user areas to keep things organized. Unlike the drive partitions, which are fixed in size (in our example they might be eight, six, four, and two megabytes apiece) the user areas are like file folders that expand and contract as needed.

The better formatting software will allow you to select logical block size and the number of directory entries. CP/M 2.2's logical block size can be two, four, eight, or 16 kilobytes, depending on the size of the partition. The size of this logical block represents the minimum size of a file, regardless of its actual length (e.g., if the logical block size is 4K and the file is only 1K, it will still be allocated a 4K block. If it is 5K it will be allocated two 4K blocks for 8K total).

The ability to set this block size can markedly affect hard disk performance. For example, if you have a lot of small files 1 to 4K in size and your block size is 16K, you waste a lot of disk space. Small files using 2K blocks require more directory entries to keep track of, which takes more time to sort and slows down the system. Also, with small blocks and small files, you can exceed the maximum number of files before all the storage space on the drive is used.

In a data base containing only files of 20K or more, using larger blocks (say 16K) and fewer directory entries would enable it to sort much faster. Some software allows setting up partitions of the same physical drive with different block sizes. That way you could keep all your utilities on A: with 2 to 4K blocks to conserve disk space and keep your data base on B: with larger blocks for quicker sorting.

If this capability is important, you should check with the vendor before buying. The interrelation of partition size, block size, and directory entries is much more complex than I have been able to cover here. But the manufacturer's defaults will cover the needs of most users.

(For more information, see Tom Enright's article, "Adding a Hard Disk," in the October 1985 issue of *PROFILES*.)

—F. Ray

Kaypro CP/M
Software and Supplies

Description	Price
Accounting	
Checks & Balances	$ 64
Financial Calculator	$ 34
Home Inventory Plus	$ 37
Business	
Bottomline V	$199
Decision Analyst	$ 79
Landlord	$495
MarketFax	$395
NWA Statpak	$219
Walonick StatPak	$429
Walonick Forecast+	$495
Communications	
Crosstalk	$145
Mite	$ 49
Database	
dBase II	$389
Filebase	$ 99
FYI 3000 Plus	$339
InfoStar	$179
Notebook	$ 64
Personal Pearl	$149
SuperFile	$ 79
Educational	
Family Roots	$159
I Ching	$ 29
Home Appraiser	$ 34
Language Tutor	$ 47
Memory Tutor	$ 47
Reading Professor	$ 57
Self Search	$ 39
The Word (Bible)	$179
Touch & Go Typing	$ 28
Quiz Writer	$ 47
UnderStand Yourself	$ 24
Entertainment	
Best of Wok Talk	$ 27
Computer Chef	$ 27
Chocolate Bytes	$ 27
Deadline *	$ 45
Eliza	$ 22
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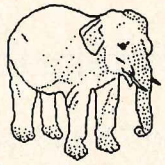

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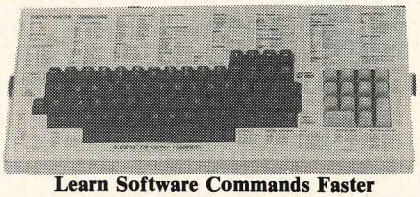

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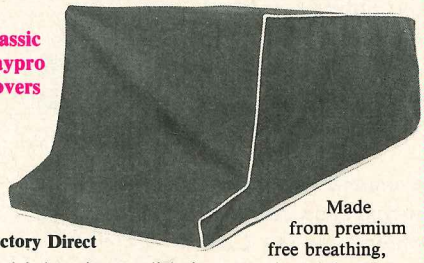

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Getting to CP/M's Graphics

Putting the flashy side of your Kaypro to use

by T.F. Chiang

Do you remember the advertisements for the '84 series CP/M Kaypros? Besides the real-time clock and the internal modem, a selling point was the graphics capability. The photograph always showed off the graphic clock program, with the snazzy Kaypro logo and time display.

When you actually bought one, though, you may have wondered where the graphics were. The clock program was still there, and WordStar had its menus in inverse video now, but that seemed to be about all. A rumor circulated that you could access the graphics through SBASIC, but the SBASIC manual didn't mention it, and only some of the user's guides for '84 series machines included that information. (The Kaypro 10—the first CP/M machine to have graphics—did come with information on how to get at the graphics. Aside from the manual, there were two disk files called GRAPHICS.DOC and GRAPHICS.BAS.)

Unfortunately, many owners of other '84 series machines that came later—the 2'84, 4'84, and 2X—never knew that such information existed. For many users, there was no apparent way to use the graphics that the machine offered. Then came drawing programs like DDRAW and Rembrandt (described in the March 1986 *PROFILES*), and people remembered that their machines *were* capable of graphics, and their interest was renewed. So now let's see how to access graphics through Turbo Pascal and MBASIC for use in your own programs. I'll suggest some practical applications at the end of this article.

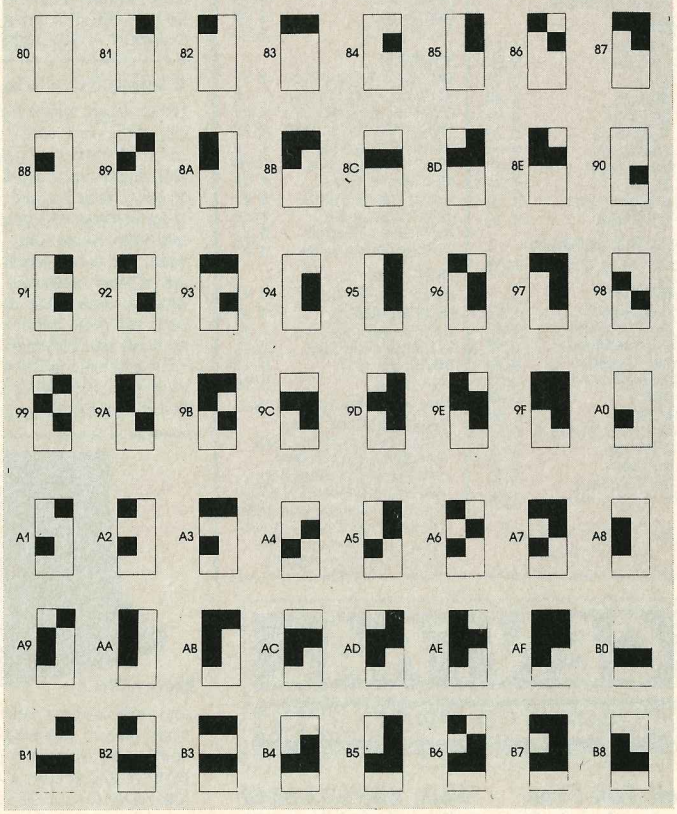
The graphics character set

What did Kaypro do to give its '84 series computers graphics? First of all, it filled the upper half of the character set with graphic characters. The official ASCII set only uses up the character codes from 0 to 127; 128 to 255 are left for other uses. On '84 series machines they were used for a graphic character set.

Each graphic character is formed on a matrix two pixels across and four pixels high, the same as normal characters. To write any particular character to your screen, use the CHR function of Pascal or the CHR$ function of BASIC. Each of these functions requires a numeric argument that corresponds to the ASCII number of the character that you want to print. For example, the BASIC statement PRINT CHR$(221) prints the graphic character with the ASCII number of 221 on your screen.

Each value from 128 to 255 represents a different pattern of lighted pixels. Figure 1 (below) shows the graphic character set. At first glance, it may seem that the pixel patterns are random, but they're actually in a definite order. Each pixel lit in a character corresponds to a bit set in the byte representing that character. The lowest order bit controls the top right pixel, the next bit controls the top left pixel, and so on down the line. (This was discussed in "Technical Forum" in the March and April 1986 issues of *PROFILES*; please refer to those issues for more information.)

FIGURE 1: Kaypro Graphic Character Set for '84 Series



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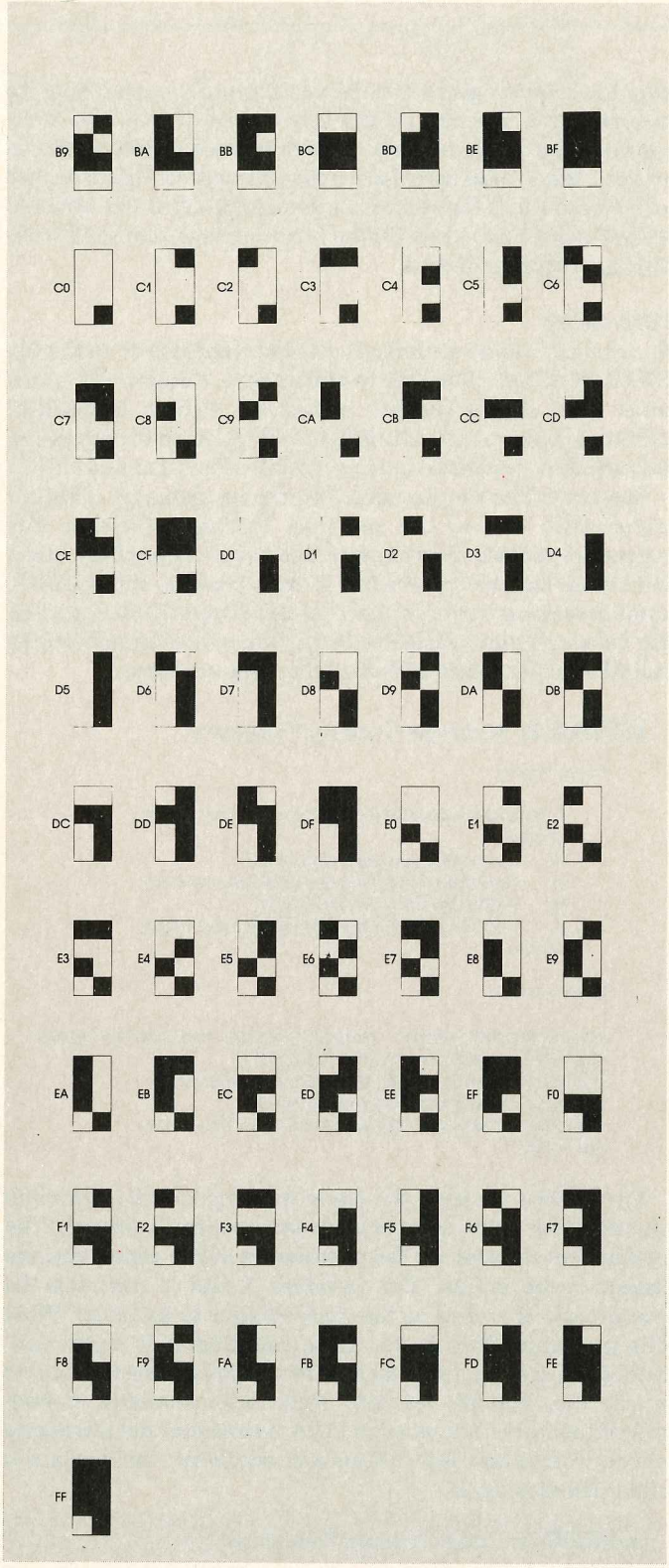

If you're the type who keeps track of numbers, you'll realize that the number of possible patterns made of eight pixels is 256 (two raised to the eighth power), but we only have 128 patterns. All of the patterns appearing in the character set are missing the lowest left-hand pixel. This corresponds to the seventh bit in the byte, which is always set because we're looking at the upper half of the character code set. If you want a graphic character in which that lowest left-hand pixel is on—one of the 128 that are missing—there are a couple ways to get it. One is to use inverse video, setting the opposite bits in the character you're printing. The other is to use video mode, where you send two bytes to describe the graphic character you want; the first byte's high bit is the one that sets the low left pixel, and the second byte's bits set the rest of the pixels.

To get inverse video, video mode, and the other attributes, you'll need these commands:

ESC B 0 inverse video on
ESC C 0 inverse video off
ESC B 1 half intensity on
ESC C 1 half intensity off
ESC B 2 blinking on
ESC C 2 blinking off
ESC B 3 underline on
ESC C 3 underline off
ESC B 4 cursor on
ESC C 4 cursor off
ESC B 5 video mode on
ESC C 5 video mode off
ESC B 6 remember current cursor position
ESC C 6 return to last remembered position
ESC B 7 status line preservation on
ESC C 7 status line preservation off
ESC = <V1+32> <H1+32> move cursor to (V1,H1)

To execute a particular command from the list above, just use Write statements in Pascal or PRINT statements in MBASIC to send the appropriate character sequence to the console. Be aware that these attributes work only for *character* graphics; you cannot set attributes using the graphics commands described below.

To use a particular command, just use Write in Pascal or PRINT in MBASIC.

Let's say you want to design a graphic pattern. For every graphic character you want to display as part of your pattern, you can figure out which bits would have to be set and use the CHR function to print the byte you want. Sometimes this is the easiest way to do it, and sometimes, if you're using those video attributes, this is the *only* way to do it. However, it can be quite tedious, so let's turn our attention to another way to get the graphics you want.

Graphics procedures

What else did Kaypro do to create a graphics capability? Basically, it added four simple graphic commands: to draw a pixel at a particular location on the screen, to erase a pixel, to draw a line extending from any two points on the screen, and to erase a line. The first two in particular are very powerful commands. They are all you'll need to do simple screen graphics because they allow you to address any location on the screen. Otherwise, using just the graphic character set, you'd need rows of carriage returns and spaces to reach a desired position.

Like the commands for the video attributes, these commands are executed by writing an ESCape sequence to the console output. Take a look at Listing 1 (below) to see how these commands are implemented using Pascal procedures and MBASIC functions. The ESCape character is *Chr(27)*, the second character specifies which command you want, and the last two characters are the vertical and horizontal coordinates (respectively) of the pixel. V1 and H1 are the displacements from the upper left hand corner of your screen (which is 100 pixels high by 160 across). Fortunately, the pixels on the Kaypro screen are square; if they were rectangular, you'd have to adjust the horizontal and vertical coordinates to draw an undistorted figure (this is known as the compensating for the *aspect ratio*).

The horizontal and vertical coordinates must have 32 added to them because CP/M's BDOS doesn't like you sending it characters whose ASCII values are below 32. (Characters whose ASCII values are below 32 are control functions—they do things like form feeds, carriage returns, etc., but *not* graphics.)

LISTING 1: The Four Graphic Commands

```
Pascal version:

PROCEDURE PixOn(y,x:integer);
BEGIN
   Write(Chr(27),'*',Chr(32+y),Chr(32+x));
END;

PROCEDURE PixOff(y,x:integer);
BEGIN
   Write(Chr(27),' ',Chr(32+y),Chr(32+x));
END;

PROCEDURE LineOn(y1,x1,y2,x2:integer);
BEGIN
   Write(Chr(27),'L',Chr(32+y1),Chr(32+x1),
                     Chr(32+y2),Chr(32+x2));
END;

PROCEDURE LineOFF(y1,x1,y2,x2:integer);
BEGIN
   Write(Chr(27),'D',Chr(32+y1),Chr(32+x1),
                     Chr(32+y2),Chr(32+x2));
END;


MBASIC version: (Lines are broken for convenience here;
enter them on a single line.)

100 DEF FNPIXON$(V1,H1)= CHR$(27) + "*"
                       + CHR$(32+V1) + CHR$(32+H1)

150 DEF FNPIXOFF$(V1,H1)= CHR$(27) + " "
                        + CHR$(32+V1) + CHR$(32+H1)

200 DEF FNLINON$(V1,H1,V2,H2) = CHR$(27) + "L"
                              + CHR$(32+V1) + CHR$(32+H1)
                              + CHR$(32+V2) + CHR$(32+H2)

250 DEF FNLINOF$(V1,H1,V2,H2) = CHR$(27) + "D"
                              + CHR$(32+V1) + CHR$(32+H1)
                              + CHR$(32+V2) + CHR$(32+H2)
```

Thus, to turn on a pixel in the middle of your screen in Pascal, you'd just make the procedure call **PixOn(50,80)** and in MBASIC you'd use **PRINT FNPIXON$(50,80);**. To draw a line from that point to the lower right corner of your screen, you'd call **LineOn(50,80,100,160)** in Pascal or use **PRINT FNLINON$(50,80,100,160);** in MBASIC. Unlike the convention in Cartesian geometry, the y-coordinate comes *before* the x-coordinate. You can switch this around if you like, but I retained this order because that's how the ESCape command expects them. Also note that a *write* was used in Pascal instead of a *writeln*, and that there is a semicolon after the MBASIC PRINT statement, so that there is no carriage return after the ESCape sequence is sent.

Let's draw

So what can we do with these graphic commands? In the file GRAPHICS.BAS that was included with Kaypro 10s, there were some simple graphic procedures written in SBASIC utilizing these commands. What we'll try to do for the rest of this article is duplicate them using Turbo Pascal and MBASIC.

Rectangle. The simplest one is to draw a rectangle. This is a trivial task, as you can see from Listing 2 (below). The procedure accepts as parameters the coordinates of the lower left corner and the dimensions of the rectangle. For MBASIC, make these lines a subroutine to be called by a GOSUB, and set the values of these variables *before* you make the subroutine call (the same applies with the following routines).

LISTING 2: Rectangle Drawing Procedure

```
Pascal version:

    1: PROCEDURE Rectangle(ypos,xpos,height,width:integer);
    2: BEGIN
    3:    LineOn(ypos,xpos,ypos+height,xpos);
    4:    LineOn(ypos,xpos+width,ypos+height,xpos+width);
    5:    LineOn(ypos,xpos,ypos,xpos+width);
    6:    LineOn(ypos+height,xpos,ypos+height,xpos+width);
    7: END;

MBASIC version:

1000 REM RECTANGLE ROUTINE - YPOS,XPOS,HIGHT,WDTH MUST HAVE BEEN DEFINED
1010 PRINT FNLINON$(YPOS,XPOS,YPOS+HIGHT,XPOS);
1020 PRINT FNLINON$(YPOS,XPOS+WDTH,YPOS+HIGHT,XPOS+WDTH);
1030 PRINT FNLINON$(YPOS,XPOS,YPOS,XPOS+WDTH);
1040 PRINT FNLINON$(YPOS+HIGHT,XPOS,YPOS+HIGHT,XPOS+WDTH);
1050 RETURN
```

Circle. Next we have the circle drawing routine, which is significantly more complicated (see Listing 3 below). The parameters we pass are the coordinates of the center and the length of the radius. The variables X and Y maintain the coordinates of a point on the circle relative to its center. What this procedure does is use those coordinates to draw symmetrically, at eight points around the circle's perimeter. It starts at the top, bottom, left and right, and proceeds in both directions from each location. This means that the procedure not only calculates how to draw a 45 degree arc, but draws it in eight places at once!

LISTING 3: Circle Drawing Procedure

```
Pascal version:

    1: PROCEDURE Circle(ycoord,xcoord,radius:INTEGER);
    2: VAR
    3:    x,y:integer;
    4: BEGIN
    5:    x:=0;
    6:    y:=radius;
    7:    REPEAT
    8:       PixOn(ycoord+y,xcoord+x);
```

continued

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```
    9:       PixOn(ycoord-y,xcoord+x);
   10:       PixOn(ycoord+y,xcoord-x);
   11:       PixOn(ycoord-y,xcoord-x);
   12:       PixOn(ycoord+x,xcoord+y);
   13:       PixOn(ycoord-x,xcoord+y);
   14:       PixOn(ycoord+x,xcoord-y);
   15:       PixOn(ycoord-x,xcoord-y);
   16:       x:=succ(x);
   17:       IF abs(sqr(x)+sqr(y)-sqr(radius))>
   18:          abs(sqr(x)+sqr(y-1)-sqr(radius)) THEN y:=pred(y);
   19:    UNTIL y<x;
   20: END;
```

MBASIC version:

```
1000 REM CIRCLE ROUTINE - YC,XC AND RADIUS MUST HAVE BEEN DEFINED
1010 X=0: Y=RADIUS
1020 REM REPEAT LOOP
1030   PRINT FNPIXON$(YC+Y,XC+X);
1040   PRINT FNPIXON$(YC-Y,XC+X);
1050   PRINT FNPIXON$(YC+Y,XC-X);
1060   PRINT FNPIXON$(YC-Y,XC-X);
1070   PRINT FNPIXON$(YC+X,XC+Y);
1080   PRINT FNPIXON$(YC-X,XC+Y);
1090   PRINT FNPIXON$(YC+X,XC-Y);
1100   PRINT FNPIXON$(YC-X,XC-Y);
1110   X=X+1
1120   IF ABS((X^2)+(Y^2)-(RADIUS^2))>
         ABS((X^2)+((Y-1)^2)-(RADIUS^2)) THEN Y=Y-1
1130 IF Y>=X THEN GOTO 1020
1140 RETURN
```

Line 17 in the Pascal code and line 1120 in the MBASIC code are the ones that do the calculating. If you recall your geometry, a circle is described by $x^2 + y^2 = r^2$. Now, drawing a precise curve on any screen is impossible; all you can do is turn on the pixels that come closest to the curve you want. Our line does just that: whenever it's time to find more of the curve, it decides which of two pixels comes closer to fitting the equation. This is known as the Bresenham method and is a better technique than the one given in the GRAPHICS.BAS file. The Bresenham method produces a nice round circle and does it *rapidly*. (A note on languages: the REPEAT loop is simulated in MBASIC by using an IF..THEN construct for the exit condition at the end, with a GOTO if it's not satisfied.)

Three-dimensional box. Now we come to a rather unconventional routine, the bar drawing routine, which draws a 3-D box (a parallelepiped). Be aware that this isn't a representation of a *true* 3-D object; it's just a square and two diamonds slapped together. (See Listing 4 below.) This procedure requires a whopping seven parameters. It needs the coordinates of one corner of the box; the box's height, width, and depth; and two flags indicating the vertical and horizontal directions for the illusion of depth (-1 for left or upward, 1 for right or downward). It is a moderately long segment of code, but it is mostly drawing and not much calculation is required. (Note: you may find that this procedure won't work properly in MBASIC unless you clear the screen with **CHR$(26)** beforehand.)

LISTING 4: "3-D" Box Drawing Procedure

Pascal version:

```
1: PROCEDURE Bar(ypos,
2:               xpos,
3:               height,
4:               width,
5:               depth,
6:               vert,
7:               horiz:integer);
8: VAR
9:    i,
10:   temp,
11:   x,
12:   y:integer;
13:   ref,
14:   center,
15:   rear:ARRAY[1..2] OF integer;
16:
17: BEGIN
18:   x:=1;
19:   y:=2;
20:
21:   ref[x]:=xpos;
22:   ref[y]:=ypos;
23:   center[x]:=xpos + (width * horiz);
24:   center[y]:=ypos + (height * vert);
25:   rear[x]:=center[x] + (depth * horiz);
26:   rear[y]:=center[y] + (depth * vert);
27:
28:   i:=ref[x];
29:   REPEAT
30:      LineOff(ref[y], i, center[y], i);
31:      i:=i+horiz;
32:   UNTIL i=xpos+(width+1)*horiz;
33:
34:   i:=0;
35:   REPEAT
36:     LineOff(center[y], center[x]-i, rear[y], (rear[x]-i));
37:     i:=i+horiz;
38:   UNTIL i=(width+1)*horiz;
39:
40:   i:=0;
41:   REPEAT
42:      LineOff(center[y]-i, center[x], (rear[y]-i), rear[x]);
43:      i:=i+vert;
44:   UNTIL i=(height+1)*vert;
45:
46:   LineOn(ref[y],ref[x],center[y],ref[x]);
47:   LineOn(ref[y],ref[x],ref[y],center[x]);
48:   LineOn(center[y],center[x],center[y],ref[x]);
49:   LineOn(center[y],center[x],ref[y],center[x]);
50:
51:   LineOn(center[y],center[x],rear[y],rear[x]);
52:   LineOn(ref[y],center[x],(rear[y]-height*vert),rear[x]);
53:   LineOn(center[y],ref[x],rear[y],(rear[x]-width*horiz));
54:
55:   LineOn(rear[y],rear[x],(rear[y]-height*vert),rear[x]);
56:   LineOn(rear[y],rear[x],rear[y],(rear[x]-width*horiz));
57:
58: END;
```

MBASIC version:

```
1000 REM  BAR ROUTINE - REQUIRES XPOS,YPOS,HIGHT,WDTH,DEPTH,HORIZ,VERT
1010 PRINT CHR$(26)
1020 X=1: Y=2
1030 DIM REF(2),CENTER(2),REAR(2)

1040 REF(X)=XPOS
1050 REF(Y)=YPOS
1060 CENTER(X)=XPOS + (WDTH * HORIZ)
1070 CENTER(Y)=YPOS + (HIGHT * VERT)
1080 REAR(X)=CENTER(X) + (DEPTH * HORIZ)
```

```
1090 REAR(Y)=CENTER(Y) + (DEPTH * VERT)

1100 REM  BLANKING THE VISIBLE FACES


1110  FOR I=REF(X) TO CENTER(X) STEP HORIZ
1120    PRINT FNLINOF$(REF(Y), I, CENTER(Y), I);
1130  NEXT I
1140 FOR I=0 TO (WDTH*HORIZ) STEP HORIZ
1150   PRINT FNLINOF$(CENTER(Y), CENTER(X)-I, REAR(Y), (REAR(X)-I));
1160 NEXT I
1170 FOR I=0 TO (HIGHT*VERT) STEP VERT
1180  PRINT FNLINOF$(CENTER(Y)-I, CENTER(X), (REAR(Y)-I), REAR(X));
1190 NEXT I


1200 PRINT FNLINON$(REF(Y),REF(X),CENTER(Y),REF(X));
1210 PRINT FNLINON$(REF(Y),REF(X),REF(Y),CENTER(X));
1220 PRINT FNLINON$(CENTER(Y),CENTER(X),CENTER(Y),REF(X));
1230 PRINT FNLINON$(CENTER(Y),CENTER(X),REF(Y),CENTER(X));
1240 PRINT FNLINON$(CENTER(Y),CENTER(X),REAR(Y),REAR(X));
1250 PRINT FNLINON$(REF(Y),CENTER(X),(REAR(Y)-HIGHT*VERT),REAR(X));
1260 PRINT FNLINON$(CENTER(Y),REF(X),REAR(Y),(REAR(X)-WDTH*HORIZ));

1270 PRINT FNLINON$(REAR(Y),REAR(X),(REAR(Y)-HIGHT*VERT),REAR(X));
1280 PRINT FNLINON$(REAR(Y),REAR(X),REAR(Y),(REAR(X)-WDTH*HORIZ));

1300 RETURN
```

First, in lines 21-26 of the Pascal and lines 1040-1090 of the MBASIC code, the coordinates of three points are stored in two-element arrays. *Ref* is the starting corner, *Center* is the corner diagonally across the front face of the box, and *Rear* is the distant one on the rear face. Note that the relative positions of these points will depend on whether the horizontal and

Drawing a precise curve on-screen is impossible; all you can do is turn on the pixels that come closest.

vertical flags are positive or negative—thus the box can be drawn facing one of four possible directions.

The next thing to be done is to blank out the three visible faces of the box in case there's something on the screen where the empty box is going to be. To do this simply use repeated LineOns. Lines 28-44 (Pascal) and lines 1110-1190 (MBASIC) are the three loops to perform this. The first one is for the front face and the next two are for the two perspective faces. Finally, the edges are drawn in. Nine are drawn: four for the front face, three for the perspective edges, and two for the rear face (Pascal

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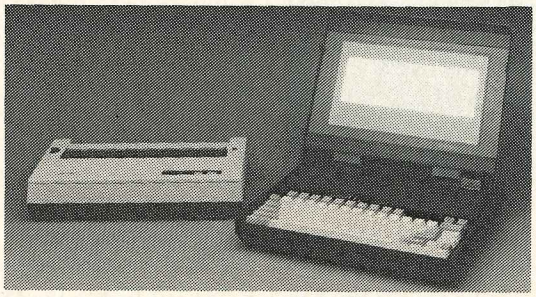

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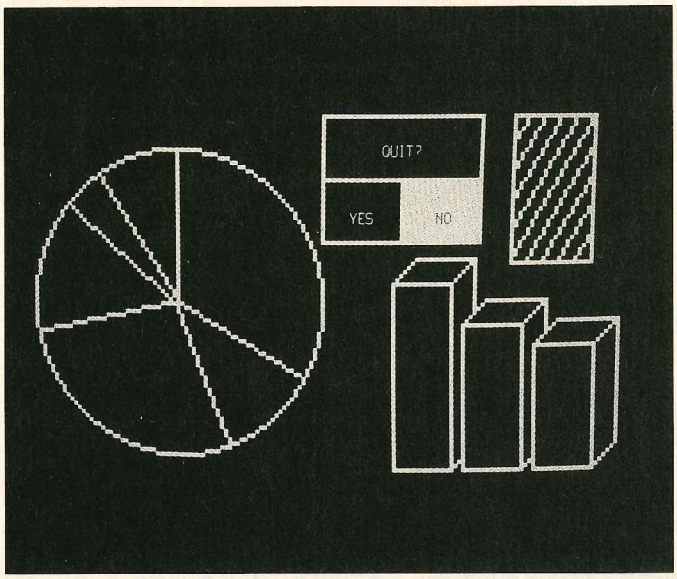
lines 46-56 and MBASIC lines 1200-1280).

(Another note on languages: the loops to blank faces are an example of something that is easier to do in MBASIC than in Pascal. The STEP in the FOR..NEXT loop allows the loop counter to be altered by a specified increment, which may be positive or negative [the horizontal and vertical flags in our case]. Pascal's FOR structure lacks a STEP, so a REPEAT loop with the increment explicitly added is used instead.)

Basic graphic commands are tools with which you can construct all kinds of programs.

Figure 2 (on page 62) shows some graphic designs like the ones I've just described.

It's quite easy to rewrite all of these routines to produce a filled rectangle, circle, or box. A filled rectangle simply needs a FOR loop containing a LineOn. As for the circle routine, just replace every pair of PixOn statements whose x-coordinates are the same with a LineOn connecting those two points. This will draw a full circle using vertical lines. Finally, to draw a filled box, you have to exchange the LineOns and LineOffs. This initially fills out the space that will be occupied by the box, and then turns off some lines to draw in the edges. (Shading a box with diagonal lines is not difficult either; however, shading a circle is something else entirely.)



Using graphics for work or play

A great many possibilities suggest themselves once you have these basic graphics procedures to work with. We don't have room in this article to cover all of the various applications of graphics, but here are a couple of ideas to get you started.

Many people would like to be able to draw business graphs. Simple filled rectangles or the 3-D boxes can be used for bars in a bar graph. To draw a bar graph, you'll have to read in all of the pieces of data and find the one with the largest value, so you can calculate the scale required for each axis. Then simply label the axes, compute the height of each bar according to the scale you arrived at, and plot the bars.

A pie chart is more difficult. For this, once you've read in all the data, you have to find the fraction of the whole that each slice constitutes. Then you must convert these fractions into angular measures and keep a running total of the angles you've already plotted whenever you're about to plot a new slice. Use the sine and cosine functions to find the x and y coordinates of the endpoint of each slice division.

If you want to save or print your graphics, you'll have to store a representation of the screen into an array. One possibility is an array of 100 by 160 Booleans, where each Boolean describes whether a particular pixel is on or not. Then you output this one row at a time. How you imitate these pixels on paper will depend on your printer. This method needs a fair amount of memory, but plotting graphs directly on the printer would need a whole new set of algorithms.

Or perhaps you'd just like to design a nice graphic screen. This will require mapping out your screen on a sheet of graph paper. There is no really easy way to draw out giant graphic letters—you just have to do lots of PixOns and LineOns, or print out the proper graphic characters. You may want to have an attractive input routine if your graphic screen is a boxed menu; try reading the cursor arrow keys and then highlighting various segments on your screen as the user moves around (i.e., rewriting with inverse video).

Graphics for the pure fun of it are generally more difficult to program. Writing a graphics drawing program is a formidable programming task, but fortunately, the source code to the public domain programs DRAW and DDRAW is available from Micro Cornucopia for $8 (P.O. Box 223, Bend OR 97709). You can use that as a starting point and reference aid. Programming a graphics game is also quite difficult, since you need to read from the keyboard and update the screen very rapidly. The screen image itself will probably require much calculation (to compute the trajectory of a flying saucer, or whatever). You might want to consult a text for advanced techniques on graphics and animation before trying such a project.

As you can see, these basic graphics commands are tools with which you can construct all kinds of programs. With some thought, you can devise your own graphics procedures and find scores of possible applications. Good graphics aren't easy to program, but the visual enhancement they can give to the finished product is well worth the effort.

T.F. Chiang is a student at Brown University and an active member of the International Kaypro Users Group.

(continued from page 46)

what baud rate to use, you should make a careful appraisal of your needs, keeping in mind what you will be doing and the amount of time you will spend connected.

Remote Bulletin Board Systems (RBBSs)

A remote bulletin board system is a computer—usually maintained by a computer hobbyist—dedicated to telecommunications. An RBBS is a place to post and read messages (like an actual cork bulletin board) and to send and receive free software. Beginners use RBBSs to pick up tips on software and gain expertise with their computers. More advanced users use them to trade programs, discuss programming techniques, and share tips concerning applications software. RBBSs are depositories for free software and free information.

There are thousands of RBBSs scattered throughout the United States—probably at least one in every city. Some RBBSs are dedicated to special interests, such as writing, medicine, religion, and sports. There are even RBBSs dedicated to the beginning computer user.

The most valuable resource to be found in an RBBS is not a program, or a piece of documentation. It is the person who runs the RBBS, the system operator, called a sysop. Sysops donate their equipment, which is valuable, their time—even more valuable—and their knowledge, which is priceless.

When you first call an RBBS, you might leave a message for the sysop explaining that you are a beginner, thanking him (or her) for the use of his computer, and relaying any problems you had. Not only is this common courtesy, but he (or she) will probably give you some help in getting started.

Free software

Most RBBSs and online services have entire sections dedicated to the collection and distribution of free software. Many programmers write software, either as an exercise or for their own purposes, and then release it for public use. Some of these programs are designed for very specific technical purposes and are of no use to the average computer user. On the other hand, many of them are quite useful, and a few are gems.

There is a difference between public domain software and free software. Public domain software is not only free, its up for grabs. It carries no copyright and may be copied and distributed by anyone for any purpose (including profit). True public domain software is very rare. Most of what the computing public refers to as "public domain" is simply free; its authors do have a copyright on it, but have given the public permission to use the software as long as it is not resold or distributed for profit.

Wrapping it up

In the business world, telecommunications can pay for itself by speeding up the exchange of vital information and by allowing users to communicate instantaneously. For the home computer user, telecommunications can provide thousands of useful programs and, potentially, uncounted hours of enjoyment.

The true value of telecommunications is in what it gives you: freedom. If you want to know something, buy something, or contact someone, you don't have to leave your desk. The world is a phone call away.

Marshall L. Moseley is the assistant technical editor for PROFILES *Magazine.*

Coming Up in PROFILES

May Issue

The Electronic Shopping Mall

This article will provide an overview of how shopping via computer works and will also look at the popular services, such as CompuStore, Fantasy Plaza, the Delphi On-Line Exchange, and Menutronics System 2000.

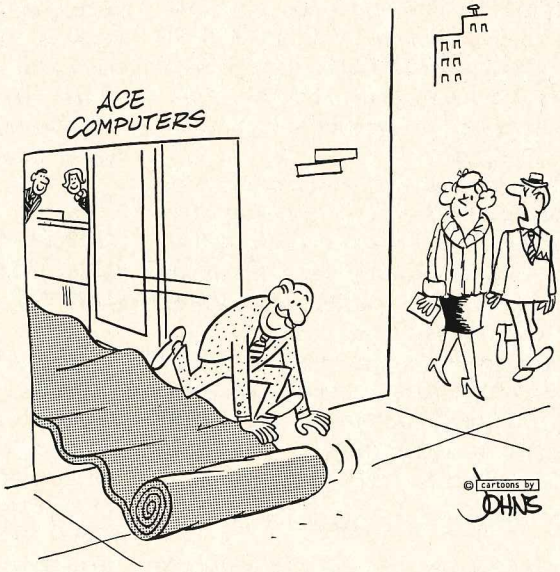
Bar Code Technology

Bar code technology is being put to more and varied uses. This article offers both an overview of the technology and an understanding of its uses in personal computing.

June Issue

Project Management Software

This overview will take a look at the history, techniques, uses, and features of this software genre. More than a dozen programs—including Harvard Total Project Manager, Milestone, and Primavera Project Planner—will be described, and alternatives like spreadsheets and outline processors will be discussed.



"Marge, just how much are you spending on accessories for that computer I bought you?"

Tip Trader

edited by Marshall L. Moseley

If you have a tip you'd like to share with other readers, please send it to Marshall Moseley, "Tip Trader" editor, PROFILES *Magazine, 533 Stevens Avenue, Solana Beach, CA 92075.*

This month I'll tell you about a hidden feature of the CP/M public domain program NewSweep, how to get more printing power using an MS-DOS command, and how to make your modem answer the phone when—and only when—you want it to.

Sweep it all

A little-known feature of NewSweep is its ability to access all the user areas on a disk at the same time. For example, if you want to access every user area on drive B, then from the NewSweep main menu type **L**, for Log New Disk, then type **B*** and press **RETURN**. The NewSweep file list will now include every file on drive B. The user area for each file will appear to the left of the file name.

The power of print

Many people who have MS-DOS systems notice the file PRINT.EXE on their system disk, but never find out what it is for. PRINT is one of the most powerful and useful commands in MS-DOS. It will print an ASCII file on your printer while you are running other programs. This is called "background spooling," or simply "spooling."

Most applications programs have the ability to create a text file containing the information you want printed, rather than simply printing the information out. Lotus 1-2-3, WordStar, and dBASE III all have this ability.

You can create such a text file, print it using PRINT, return to your application program, and continue to work while your file is being printed.

The syntax for PRINT is

PRINT D:FILENAME.EXT

where *D* is the drive on which the file you wish to print resides and *FILENAME.EXT* is its name along with its extension. PRINT will prompt you to provide a "Name of list device [PRN]:." If your printer is connected to your parallel port, press **RETURN** (if it is not, designate the device your printer is attached to—COM1:, COM2:, etc.) Your document will start printing and you can return to work.

PRINT is even more powerful because it supports *print queues*. A print queue is a series of files designated for printing. With a single PRINT command you can specify multiple files to print. To specify a queue, delimit the file names with spaces. The command to print three files in succession would be:

PRINT FIL1.EXT FIL2.EXT FIL3.EXT

If you wish to stop printing, from the system prompt type **PRINT /T** and press **RETURN**. For more information on the PRINT command, consult your *MS-DOS User's Guide.*

De-initializing your modem

I ran into a problem recently with the modem initialization string in my telecommunications software. When using the software, I wanted the modem to automatically answer the phone, so I placed the Hayes command S0=1 in the initialization string.

Unfortunately, my modem remained on even when I was not doing telecommunications, and the answer-the-phone setting remained active. People called my desk and got a high pitched screeching whine in their ears. (This did not endear me to my co-workers.)

I solved the problem with a batch file that *de-initializes* the modem. Here it is:

```
MITE
ECHO BLANKSTRING>NULL:
ECHO ATS0=0>COM1:
ECHO ATH>COM1:
```

The first line runs MITE, which sends the initialization string to the modem. Once you leave MITE the second line sends an ASCII string to the NULL device. I have no idea why I have to do this, but the batch file wouldn't work with MITE until I did (I originally set it up for Procomm).

The third line causes the modem not to answer, and the fourth line hangs up the phone. When writing your own batch file *do not* set ECHO OFF. (That disables the echo feature entirely.)

The Word Plus revisited

I would like to offer an alternative answer to Glen Thompson's question about how to use the S option in WordStar to run The Word Plus. Just rename TW.COM to SPELSTAR.OVR. After using the checker, if there are any corrected words that changed length, you will be deposited at the beginning of your file.

Eunice Williams
Summer Shade, Kentucky

The Kaypro internal modem

Regarding your reply to Banner Segraves' letter in the February 1987 issue of *PROFILES*—MeX (Modem EXecutive) works with any Kaypro 4, 2X, or 10 that has a Kaypro internal modem. There is a public domain version of MeX available on many bulletin boards (including mine, Hacker Central, 201/783-3298). The commercial version with printed documentation, additional modules, and extended terminal emulations is available through Nightowl Software, Route 1 Box 7, Fort Atkinson, WI 53538.

Reese Kaplan
Montclair, New Jersey

A BASIC solution

BASIC has the ability to do loops, but using them to write characters to the screen is slow. This is because the BASIC interpreter has to translate many instructions to do the job. For example, this loop will draw a series of dashes across the screen.

```
10 FOR N = 1 TO 79
20     PRINT CHR$(45);
30 NEXT N
```

You will actually see the dashes being placed on the screen. A much faster method is the STRING command, which has the syntax STRING$(*N*,*C*), where *N* is the length of the string and *C* is the character in the string. Using STRING, the above example can be written in one line:

```
10 PRINT STRING$(79,45)
```

The first number within the parentheses

designates the length of the string (79 characters); the second number, 45, is the ASCII decimal value for a dash. You can also insert the character directly:

```
10 PRINT STRING$(79,"-")
```

Using this method, characters are written much faster; they seem to simply appear onscreen.

Mark A. Richards
Fort Walton Beach, Florida

Letter quality from a dot matrix

The Gemini 10-X printer has many features to enhance the appearance of text. For example, it can print in six different pitches.

The problem is that when WordStar is installed for the Gemini, all printed material is in 10 cpi (characters per inch). You might as well have a draft printer. You can change the default setting from 10 cpi to 12 cpi (which looks much more like letter-quality printing) by patching the *printer initialization string* within the file WS.COM. The printer initialization string is a series of codes that WordStar sends to the printer whenever a document is printed.

The easiest way to patch the initialization string is to use WordStar's installation program WINSTALL. (*Ed. note: For complete instructions on using WINSTALL see "Custom-tailored WordStar" in the March 1987* PROFILES.) From WINSTALL's main menu, choose "Custom Printer Installation." Then from the next menu choose **D** "Initialization."

Patch the hexadecimal values **1Bh**, **42h**, and **02h** as the first three characters of the initialization string. Then *make sure that the rest of the string is blank* by entering **00h** over any remaining codes. If you don't do this, the remaining codes are sent along with the new ones, and who knows what your printer would do.

WINSTALL will then ask you for a de-initialization string. Enter the values **1Bh**, **42h**, and **01h**, again making sure the rest of the string is blank. This will set the Gemini back to 10 cpi.

Hal Vogel
Willingboro, New Jersey

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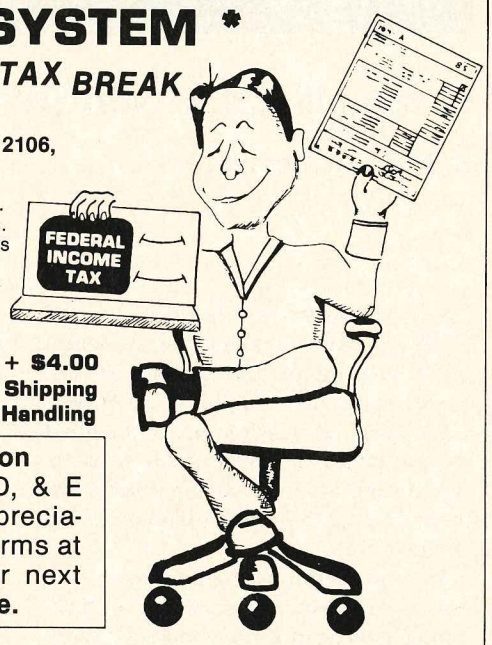

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Addenda — $39.00 Wordstar Package now includes WInstall with Entry Codes Listing, Keytops and Manual. $28.00 Personal Pearl now is a non-machine specific Version and now includes Install Control Codes Listing. Earlier shipments may be upgraded accordingly at $7.00. Ask about 3X $25 Special!. $5 special with order: Money Maestro Accounts Manager (Ex. Manual)

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Beginner's Luck

Getting to know NewSweep

by William Murdick

NewSweep is a public domain (free) disk management program written by Dave Rand. If you don't own it—or a similar piece of software—you are missing one of the great conveniences for microcomputer users. NewSweep is for CP/M computers, but there is an MS-DOS look-alike called CWEEP.

You can get these programs from users groups, bulletin board systems, or from mail-order organizations that sell public domain disks. You can also find them on KUG ROS (Kaypro Corporation's BBS—619/259-4437). (See the December 1986/January 1987 *PROFILES* article, "Accessing KUG ROS," for navigation details.)

I'm going to tell you how to use NewSweep in this column. If you own an MS-DOS system, follow along. The MS-DOS CWEEP program is very similar, and you should be able to learn enough from this discussion to handle CWEEP.

What NewSweep is

To begin with, NewSweep is a combination directory program and disk status program. When you load NewSweep (type its file name and press RETURN from the A0> prompt), the program will display on your monitor an alphabetized directory listing of all the files on drive A and information about disk space.

Take a look at the figure below, the "NewSweep Menu," which shows you what NewSweep looks like when it's in operation. In the example represented by the figure, you can tell from the line just below the menu that 32 disk files use up 332K, and that there is 58K of unused space left.

Notice also in the numbered listing of files that the amount of space taken up by each file is also displayed. That's useful when copying files to a nearly filled disk. At any time when using NewSweep, you can determine the amount of free space left on any disk by typing **S** ("Check remaining space"—see the figure).

FIGURE: New Sweep Menu

```
NSWEEP  -  Version 2.05     04/11/1984
        (c) Dave Rand, 1983, 1984
            Edmonton, Alberta

A - Retag files              Q - Squeeze/Unsqueeze tagged files
B - Back one file            R - Rename file(s)
C - Copy file                S - Check remaining space
D - Delete file              T - Tag file for transfer
E - Erase T/U files          U - Untag file
F - Find file                V - View file
L - Log new disk/user        W - Wildcard tag of files
M - Mass file copy           Y - Set file status.
P - Print file               ? - Display this help
X - Exit to CP/M             cr, sp - Forward one file

 332K in   32 files.    58K free.
 Tagged files =    0K (   0K).

   1. A0: DF      .COM    2K :
   2. A0: DICT    .DIC   56K :
   3. A0: DICT    .LTR    4K :
   4. A0: FINDBAD .COM    2K :
   5. A0: FIXKEY  .COM   18K : d  Delete file?
```

Positioning the cursor

When you first load NewSweep, you see only the first file name displayed and no menu. To get the menu display that you see in the figure, you type a question mark. The way you display more files is by tapping the spacebar. Each tap brings into view another file name, and the list gradually scrolls upward. To create the example, I tapped the spacebar four times. Holding down the spacebar causes the whole list to stream upward.

When NewSweep first comes up, the blinking cursor is positioned on the screen to the right of the first file—in the figure, that would be to the right of 2K, like this:

1. A0: DF.COM 2K <CURSOR>

When you tap the spacebar, the first file name (DF.COM) will roll up and the next file—in our example, DICT.DIC—will appear below it, *and the cursor will now be next to the second file.* That is important because in order to do something with a file, such as copy it or erase it, the cursor has to be next to it. The most obvious way to get the cursor next to a file is to tap the spacebar (or the RETURN key) until the file name appears. The cursor sits stationary at the bottom of the screen while file names flow past it. If you accidentally go too fast and the file you are looking for flies past the cursor, you can back up by pressing the **B** key.

You can also jump directly to a file if you know its name. For example, suppose you wished to delete the file JONES.LET. You would type **F** (for "Find file") and then the first few characters in the file name, such as **jon**, and then press **RETURN**. Instantly, the program will display that file next to the cursor. (CWEEP uses **J** instead of F to jump to a file).

Deleting and copying

Once the cursor is next to a file, you can delete the file by typing **D**. The program will ask you: "Delete file?" (in the figure, the user has decided to delete FIXKEY.COM). You then type **Y**, or **N** if you've changed your mind.

If you wanted to copy FIXKEY.COM to drive B, you would type **C**. NewSweep responds to that command with "Copy to (filespec)?" Type **B** and press **RE-**

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you might do if you wanted to erase them from the original disk after copying them to another disk.

If you wish to tag all files that begin "WS" or all files that end with a "BAK" extension, you can do so quickly with the wildcard option. Computer wildcards are like wildcards in poker—a wildcard can stand for anything. The two conventional wildcards are the asterisk (*), which stands for "any number of characters and any characters at all," and the question mark (?), which stands for "any one character."

To tag all BAK files—perhaps to erase them and thereby clear some space on your disk—you would first enter the wildcard option command: **W** ("Wildcard tag of files"). NewSweep responds with "Tag what?" You would type ***.BAK**, and then press **RETURN**, and all of your backup files would be tagged.

To erase all tagged files (such as the BAK files in our example), enter **E** ("Erase T/U files"). NewSweep responds with "Erase Tagged or Untagged files (T/U)?" In this case, you would enter **T** because you wish to erase the tagged files. NewSweep then asks you if you want to be prompted. Prompting is a tiresome safety device for the diffident and cowardly; a determined, confident person like you would enter **N**.

Squeezing files. There is a method (called "squeezing") for compressing files into even smaller files. Squeezing allows more files to be placed on a disk and cuts down on transfer times if the files are transmitted via modem.

You can use NewSweep to squeeze files so that they take up less space on your disk and to unsqueeze squeezed files that people give you. First, tag the file you want squeezed; then type **Q** ("Squeeze/Unsqueeze tagged files"). NewSweep responds with "Copy to drive/user"; you can indicate the same drive you're logged onto or a different one. You type in the drive letter and press **RETURN** and the process begins.

When the squeezed file is created, it will be given the same file name as the original, except that the middle letter in the extension will be changed to "Q." Thus if you are squeezing a file called JONES.LET, NewSweep will create a smaller copy of it called JONES.LQT. NewSweep doesn't erase the original file, it makes a second, squeezed, version of your file, so if you're copying to the same disk, make sure you have some room for the squeezed version. You will have to use NewSweep to erase the original unsqueezed version if you want to save disk space. A 6K text file typically squeezes down to about 4K.

You can make any of your files "Read Only" by using the Y option.

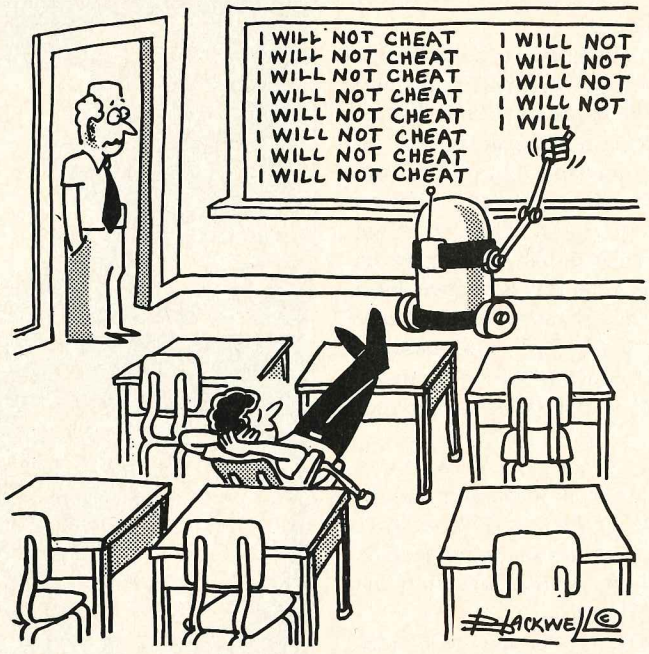
Making files read-only

You can use NewSweep to make files "Read Only," meaning they cannot be erased or changed in any way, like the files on a master disk. Tag the appropriate file(s)—tag them all, if you want to protect your whole disk—and then enter **Y** ("Set file status"). NewSweep responds with this high tech query: "Which flags (1-4,R,S,A)?" You type **R** (for Read Only) and press **RETURN**.

To undo what you have done, returning your file(s) from R/O ("Read Only") status to R/W ("Read and Write") status (the R/W status allows you to erase or edit), tag your file(s) again. Enter **Y** and then any letter *except* R, S, or A and then press **RETURN**.

NewSweep can be loaded using the R option ("Run a program") on WordStar's Opening Menu. To exit NewSweep and return to the A0> or WordStar's Opening Menu, type **X**.

William Murdick is an English professor at the California University of Pennsylvania, and he runs a word processing lab on campus.



TURN, and the file is copied to drive B.

If you own a CP/M hard disk, you can use NewSweep to copy files to different user areas. After entering **C** for "Copy file," type **A5** (instead of just A) and press **RETURN**, to send the file to user area 5 on drive A.

If you type **C** and then **B: [V] RETURN**, NewSweep will copy your file to drive B and then perform a verification of the transfer to determine if it went okay.

To do your own verification of the transfer to drive B, type **LB** and **RETURN** to "log on" to drive B. You will then get a listing of the files on B. Tap the spacebar or use the F ("Find file") option to get the cursor next to your transferred file. If it is a text file, you can view it by typing **V** ("View file"). NewSweep will display one full screen of text at a time. Hit the spacebar to see the next screen. Type **^X** to exit from the viewing and return to the file name listing.

Changing focus

The log-on procedure just described is very important. You use the L command to switch your focus from one disk to another. If you're looking at the files on drive A and you wish to copy a file from drive B, you will first have to log on drive B by typing **L**, then **B**, then **RETURN**, so that you're looking at the files on the B drive. If you change disks in a drive, you will have to register that new disk by using the L command to either log on to the new disk or to re-log on to your other disk (it doesn't matter which).

The logging procedure allows NewSweep to examine all disks and, importantly, to map out the new disk and find out where it has free space, as well as pull the new disk's directory into the computer's memory.

The NewSweep program itself resides in the computer's random access memory (RAM), once it is loaded. Therefore, you can use NewSweep to copy NewSweep from one disk to another.

Common uses

Finding lost files. One of the common uses of NewSweep is to find "lost" files. When searching for a lost document whose name you're not quite sure of, use NewSweep to list file names on a disk and then the V option to quickly view likely suspects until the one you're looking for shows up.

Tagging and untagging files. You can deal with files in groups by tagging them. Let's say you want to transfer half a dozen files from drive B to drive A. Log on drive B, then use the spacebar to get the cursor next to the first file name you're looking for, and then type **T**. Continue until all appropriate files are tagged. Then type **M**, then **A**, then **RETURN** ("M" for "Mass file copy" and "A" to designate drive A as the destination for the files).

You can untag a wrongly tagged file by getting it next to the cursor and typing **U** ("Untag file").

Once you have done something with a group of tagged files, such as mass copy them, they are no longer tagged. However, you can instantly retag the same set by typing **A** ("Retag files"), something

If you change disks in a drive, you must re-log onto the new disk with the L command.

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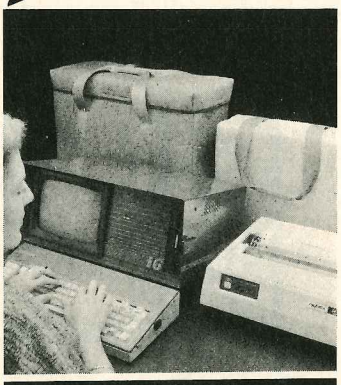

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Q&A

by Marshall L. Moseley

A Z-question

I own a [Kaypro] New 2 with the 2.2u ROM, and I am interested in running a BBS. I have been looking for a version of ZCPR that will install correctly. Do you know if such a program exists?

Shawn Mammon
Laramie, Wyoming

I suggest that you begin by adding more storage to your system. You need at least two disk drives to run a BBS; the single drive in your New 2 simply won't cut it.

There is no commercially available ZCPR system for the Kaypro 2.2u ROM computer. Echelon Inc., the supplier of ZCPR, tells me that its software works with all ROMs except *the 2.2u and the ProMax from Micro Cornucopia.*

There is, however, a public domain version of ZCPR that works with the 2.2u system. On the KUG ROS board the file is K1Z3IN.LBR (Kaypro 1 ZCPR3 Installation). You can reach KUG ROS at (619) 259-4437.

A cryptic message

I have a Kaypro PC-10, and from time to time the following message appears on my screen:

8087 NMI Int, CS:IP = F000:EF79
(S) Shut off, (R) Reboot, Other Keys

Sometimes I type S and I am able to continue. At other times the computer locks up and I have to reboot.

I talked to Kaypro Technical Support and was told to check the settings on the multi-function board to make sure that the computer did not think there was a math co-processor installed. The settings were correct, and I am still in the dark as to what is going on. Can you help me?

Kennith H. Cates
Little Rock, Arkansas

That error message does indicate that the computer thinks there is a math co-processor installed. That means one of three things: that a dip switch is set incorrectly, that the switch itself is faulty, or that you have a bad chip.

The evidence points to an incorrect switch setting, because the support technician you spoke with directed you to the wrong board. The switch that disables/enables the 8087 math co-processor is located at position SW1 on the processor board, not the multi-function board.

The first step is to disconnect the power cord from your computer. Then take the cover off and stand facing the computer. You can see the processor board in the far left slot. It has a speaker mounted on its left side.

Look at the corner of the processor board nearest the front of the computer. You will see a block of switches, labeled 1 through 5, at position SW1. Switch 1 should be ON—that is, the top of the rocker switch should be flush with the plastic block that surrounds it. Some switches use OPEN and CLOSED, rather then OFF and ON. In this case remember that OPEN is OFF and CLOSED is ON. If the switch is not in the correct position, use a small piece of stiff wire (such as a bent paper clip) to set the switch correctly. Reconnect the power and turn the computer on.

If you still get the same error message, the switch itself may be faulty. Have your dealer replace the switch block.

If neither of these solutions works, the problem may be a bad chip on the processor board. Kaypro Technical Support reports that the chip at position U29 sometimes causes 8087 NMI errors. Ask your dealer to replace this chip with part number 2526, programmed with 2317-9102A.

Low priced communications

I have just purchased an MS-DOS computer and a modem. I was shopping for telecommunications programs, but a friend told me that there are some good ones in the public domain. Do you have any recommendations?

Silas Jenkins
Lexington, Kentucky

There are quite a few quality telecommunications programs available in the public domain. I have heard good things about the programs Qmodem and PC-Talk. In my personal opinion, however, Procomm is the best.

Procomm is a telecommunications program for MS-DOS computers that is available for free on bulletin boards and from user groups throughout the country.

Procomm has the standard telecommunications program features—ASCII terminal emulation, Xmodem transfers, text file uploads—but its real power comes from a slew of powerful extras you would expect from a high-priced package.

Procomm supports nine—count 'em, nine—communications protocols: Xmodem, Telink, Ymodem, Ymodem batch, Modem7, WXmodem, Kermit, CompuServe "B" and ASCII. It accesses any of four serial ports and has built-in macros and its own script language for autologging. It has a good online help menu and a 150-page, clearly written manual with an extensive index.

Procomm is owned by Datastorm Technologies of Columbia, Missouri, and while they encourage its distribution through the RBBS network, they only grant the public a "limited license" to use it. Datastorm states outright that the program is not free—they expect to get paid.

For more information write Datastorm Technologies, Inc., P.O. Box 1471, Columbia, MO 65205.

Technical considerations

My friend Carol has offered to cast a spell over my computer, insuring its continued operation (Carol is a bit of a flake). The trouble is she wants two hundred bucks! Is this the going price?

Buster Felinski
Solana Beach, California

Two hundred dollars is an equitable price. You must be very careful when casting spells on your computer, though. Sometimes third-party spells can cause quite a bit of damage to your system.

First, your computer had a level-five spell put on it at the factory; every computer consultant knows that. That is why files get trashed for no reason, error messages appear at the worst times, and sometimes drives blow up. Make sure that anything your friend does doesn't conflict with the standard factory necromancy.

Second, make sure your friend uses ASCII spells, which are incantations cer-

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tified by American Spellcasters Coven International Incorporated. If your computer receives a non-ASCII spell it will do nothing except play "Chopsticks" on its speaker. Over and over.

Third, make sure the phase of the moon is right. The success of all computing endeavors depends on the phase of the moon and the position of your mouth relative to your right foot at the precise instant that RETURN is pressed. Make sure Carol works when the moon is full, and preferably on April 1. Also, have her sprinkle garlic around the system.

Beginning assembler

I am attempting to write my own assembly language programs for my Kaypro 4'84. I've studied the obfuscating CP/M manual and nowhere can I find the most fundamental and essential information, the port addresses! Could you please publish the port addresses.

Digital Research's CP/M manual is too general and opaque for the Kaypro. You would be helping many beginning assembler programmers if you published those addresses. Also, are you aware of any Z-80 assembler texts for beginners or intermediate users?

Edmund B. Lewis
Brooklyn, New York

CP/M was designed to run on many different computers. For that reason the CP/M manual does not contain computer-specific information. The CP/M manual is not "general and opaque"—it is quite specific and thoroughly unintelligible. But Digital Research correctly assumes that the computer manufacturer will supply machine-specific information. Port addresses are about as machine-specific as you can get.

The port addresses for your computer should be in the back of your Kaypro User's Guide. If they are not, refer to the figure on the next page.

As for assembly language programming books, Ted Silveira recommends CP/M Assembly Language Programming, by Ken Barbier, Prentice-Hall, and I have heard good things about Z-80 and 8080 Assembly Language Programming, by Kathe Spracklin, Hayden Book Co.

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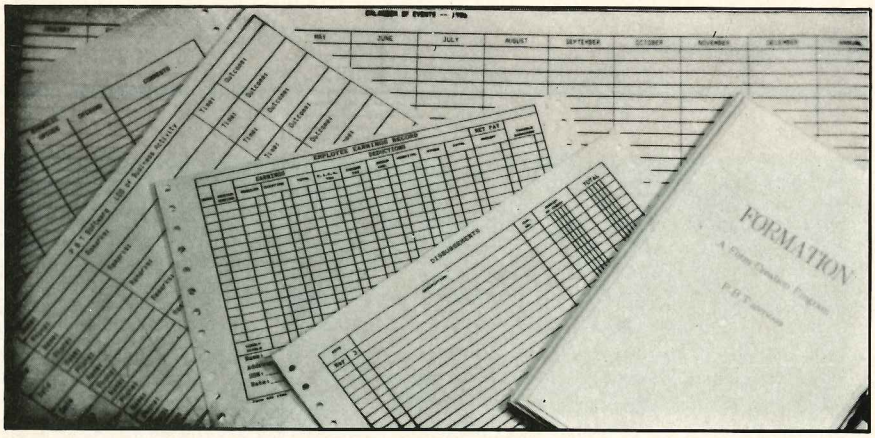

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FIGURE: Port Addresses

Use	Port# (hex)	Device	Function
Keyboard	05	ZSIO 1 Chan. B	Keyboard data (R/W). Eight-bit data from keyboard.
	07	ZSIO 1 Chan. B	Keyboard control/status I/O.
Video	1C	6545/6845 EA	CRT controller status/control I/O.
	1D	6545/6845 EA	CRT controller data I/O.
Parallel Printer (output only)	18 - 1B	74 373	Parallel printer port (write only)
Serial Printer I/O	08 - 0B	WD 1943 COM 8116	Baud rate for serial printer port.
	0C	ZSIO 2 Chan. A	Serial printer data I/O (RS-232C).
	0E	ZSIO 2 Chan. A	Serial printer control/status I/O.
Serial Data I/O	00 - 03	WD 1943 COM 8116	Baud rate for serial data port (write only).
	04	ZSIO 1 Chan. A	Serial data port (RS-232C). Data I/O.
	06	ZSIO 1 Chan. A	Serial data port (RS-232C). Status/control I/O.
Disk Controller Ports	10	1793	Floppy disk controller status/command I/O port.
	11	1793	Floppy disk controller track register I/O port.
	12	1793	Floppy disk controller sector register I/O port.
	13	1793	Floppy disk controller data register I/O port.
	80	WD 1002	Hard disk controller card data I/O port.
	81		Error Register (input). Write Precomp. (output).
	82		Sector count register I/O.
	83		Sector number register I/O.
	84		Cylinder low register I/O.
	85		Cylinder high register I/O.
	86		Size/drive/head register I/O.
	87		Status register for input. Command register for output.
System	14 - 17	74 373	System output port. Bit functions. 0 0=Select floppy A. 1 0=Select floppy B. 2 0=Select side 2. 3 PSTROB. 4 0=Floppy motor on 5 0=Select double density. 6 0=Select normal character set. 7 0=Select 64K RAM. 1=Select ROM (RAM 8000-FFFF).
		74 244	System input port. Bit functions. 0 0=floppy A selected. 1 0=floppy B selected. 2 0=Side 2 selected. 3 PSTROB. 4 0=motor is on (48 tpi floppy). 5 0=Double density is selected. 6 0=Parallel printer is busy. 7 0=64K RAM is selected. 1=ROM (RAM 8000-FFFF) selected.

Technical Forum

Direct screen I/O for the real world

by Tom Enright

For the last couple of months we have been discussing direct screen I/O and how it can speed up your programs on a DOS machine. Two assembly language programs were introduced in the February issue—one to demonstrate normal screen output (SCRNI.ASM) and the other to demonstrate writing directly to video memory (SCRND.ASM). Although writing directly to video memory requires more program code, it is about 50 times faster than using normal DOS methods.

Last month I said that we would modify SCRND.ASM to be more useful in real-world programs. I also said that we would show you how to use direct screen I/O in a high-level language such as Turbo Pascal. This month I am keeping those promises.

Modifying SCRND.ASM

The SCRND program has three sections: the mainline, a clear-screen subroutine (CLS), and the subroutine to insert a string into video memory (INSTR). Our changes will break INSTR down into two separate procedures that are more useful in general programming.

In the following discussion I will assume that you already have a listing of SCRND for reference. Only the new version of the program will be shown here (Listing 1 on page 74).

The first alterations are in the data area, where we have a new "ioln" and have added the line "vid_seg dw 1." The label "vid_seg" lets us store the starting address of video RAM instead of having to determine it each time INSTR is called. Note that the line is "dw 1" (Define Word) not "db 1" (Define Byte). We will be storing the full 16-bit address of video RAM in this location.

Determining the starting address of video RAM is now done in GET_VSEG. This subroutine returns the FWA (First Word Address) of video memory in the AX register, which we now store at "vid_seg." Since we are now storing the starting address of video memory, we only need to determine it once, at the beginning of our program.

Our program's mainline now has much less to do. It now calls three subroutines and then exits. The first subroutine clears the screen. The second one obtains the FWA of video RAM and stores it for later use. Finally we call INSTR with the desired video attribute in the AX, the target screen row in the DX, the target column in the CX, and the address of the ASCIZ string in the BX.

The new part of INSTR is from the fourth line to "ins2:." (The labels ins0 and ins1 are no longer part of INSTR; they are now part of GET_VSEG.) The new lines of code accomplish two things: figuring out how far into RAM to put our message, and storing the FWA of video RAM at VID_SEG. The rest of INSTR is unchanged.

VID_SEG is where video memory begins, and it corresponds to line 1, column 1 on your screen. What the program has to figure out is what part of video memory is the same as the line and column numbers in the DX and CX registers. We do that by taking the line number in the DX register and multiplying it by 80, the number of columns in a row. We then add the column number that we are after to the result. Finally we double this number to allow for the attribute byte that tells how each character on the screen is displayed. This is the offset *from* the starting address of video RAM for our target line and column.

INSTR then gets the starting address of video RAM and continues the same way our original example program did. The result is that, when the program is run, on the screen we see "Hello World!" printed on line 10 starting at column 34.

The Pascal version

The Turbo Pascal version of our direct screen output program (Listing 2 on page 75) prints 24 lines of 35 Xs. Each line is located midway between the left and right margins of the screen. Turbo Pascal has GOTOXY, WRITE, and WRITELN statements to position the cursor and print on the screen. But our program will do its screen output faster than is possible with the normal Turbo Pascal methods of screen I/O.

Our Turbo Pascal program has two procedures in addition to the mainline. The procedure "get_vseg" determines the starting address for video RAM, and "write_direct" figures out the offset and inserts the characters into video memory.

The "get_vseg" procedure works precisely the same way the subroutine of the same name works in our assembly language version. The code may look ominous, but it is what Turbo Pascal requires to perform an interrupt call under DOS. The procedure merely finds the start of video RAM and stores it in the variable "vid_seg."

The "write_direct" procedure takes care of calculating and updating the offset into video memory. In Turbo Pascal, memory is directly accessed as a special type of array. This is an array that doesn't have to be declared ahead of time. It is provided as one of Turbo Pascal's extensions and is always available. Notice that we insert a *number* into memory and not a character. If you try to insert the character itself, the program won't compile. Only numbers between 0 and 255 can be inserted into memory. The Turbo Pascal function ORD(X) returns the ASCII number of the string variable X.

The mainline simply clears the screen, determines the start of video memory by calling "get_vseg" and ends after calling "write_direct" 24 times. If you write a Turbo Pascal program that does the same thing using GOTOXY and WRITE statements, you will see the difference in I/O speed. While direct screen output in Turbo Pascal is not nearly as fast as the assembly language version, it is significantly faster than standard Turbo Pascal output.

Other methods could have been used to do direct screen I/O in Turbo Pascal. Using Turbo Pascal "pointers" would have been a more elegant solution, but pointers are not well understood, and I felt that this method would be more easily and widely understood.

(continued on next page)

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Back Issues

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

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LISTING 1: SCRND.ASM

```
cseg    segment public 'CODE'
        assume  cs:cseg,ds:cseg,es:cseg,ss:cseg

        org 100h                ; This is a COM file

entry:  jmp start               ; bypass data line

ioln    db      'Hello World!',00h
vid_seg dw      1

start:  call    cls             ; Clear screen.
        call    get_vseg        ; Get FWA of video RAM
        mov     [vid_seg],ax    ;   and store.
        mov     ax,0007h        ; Set attribute.
        lea     bx,ioln         ; Point to output string.
        mov     dx,000Ah        ; Target row
        mov     cx,0022h        ;   and column
        call    instr           ; Insert string procedure.
        int     20h             ; End

; CLS - Clear screen.
cls proc near
        mov     ax,0600h        ; Clear window request.
        mov     cx,0000h        ; Top left corner.
        mov     dx,2480h        ; Bottom right corner.
        mov     bh,07h          ; Video attribute wanted.
        int     10h
        ret
cls endp

; GET_VSEG - Returns FWA of video memory in AX.
get_vseg proc near
        push    bx              ; Preserve all except AX
        push    cx
        mov     ax,0F00h        ; Video mode request
        int     10h
        cmp     al,07h          ; Monochrome?
        jne     gv1             ; Nope, assume color
        mov     ax,0B000h       ; Load monochrome segment
        jmp     gvx             ;   and exit.
gv1:    mov     ax,0B800h       ; Load color segment
gvx:    pop     cx              ; Restore registers
        pop     bx
        ret
get_vseg endp

; INSTR - Insert an ASCIZ string in video buffer.
;  AX - Attribute        BX - FWA of ASCIZ string
;  CX - Target column    DX - Target row
instr proc near
        push    es              ; Preserve registers
        push    bx
        push    ax
        mov     ax,80           ; Characters per row
        mul     dx              ;   Times target row
        add     ax,cx           ;   Add column
        shl     ax,1            ;   Times 2 for attribute
```

```
        mov     di,ax
        pop     ax              ; Get attribute from stack
        mov     dh,al
        pop     ax              ; Get pointer to string.
        mov     si,ax
        mov     ax,[vid_seg]    ; Get pointer to video RAM
        mov     es,ax
ins2:   mov     dl,byte ptr [si] ; Character to insert.
        cmp     dl,00h          ; End of string?
        je      insx            ; Yes, exit.
        mov     es:word ptr [di],dx ; No, insert character & attr.
        add     di,02h          ; Point to next buffer loc.
        add     si,01h          ; Point to next character.
        jmp     ins2            ; Loop til done.
insx:   pop     es
        ret
instr endp

cseg    ends
        end entry
```

LISTING 2: SCRND.PAS

```
program scrnd;

type iolin = string[80];

var vid_seg,row,col,i,j,k: integer;
    outputlin: iolin;

procedure get_vseg;
type regpack = record
                 ax,bx,cx,dx,bp,si,ds,es,flgs: integer;
               end;
var regs: regpack;
begin
  with regs do begin
    ax := $0F00;
    intr($10,regs);
    if lo(ax) =  7 then vid_seg := $B000
    else vid_seg := $B800;
  end;
end;

procedure write_direct(row,col:integer; ioout: iolin);
var i, vid_offset: integer;
begin
  vid_offset := ((row * 80) + col) * 2;
  for i := 1 to length(ioout) do begin
      mem[vid_seg:vid_offset] := ord(ioout[i]);
      vid_offset := vid_offset + 2;
  end;
end;

begin
  clrscr;
  get_vseg;
  for i := 1 to 24 do
    write_direct(i,15,'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX');
end.
```


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User Groups

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

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

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

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

The bottom line is that user groups are a veritable goldmine—and the mother lode is information.

KUGs

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

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

KUG ROS – (619) 259-4437

New Products

edited by Suzanne Kesling

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

Dot matrix

The Canon A-65 is an 18-pin dot-matrix printer that offers high-speed printing and three text modes—200 characters per second (cps) in draft mode, 100 cps in NLQ mode, and 34 cps in NLQ+ mode.

The wide-carriage printer uses the module system—the printer's control card and interface card are in a rear compartment. You choose the typestyle by an external font cartridge. Available cartridges include Courier, Gothic, Italic, and more.

A large-scale control panel lets you specify print mode and pitch, and 11 indicators advise which print mode and pitch are being used.

The A-65 can produce graphics designed for a 9-pin dot-matrix printer and can mix graphics with NLQ or NLQ+ characters in the same document.

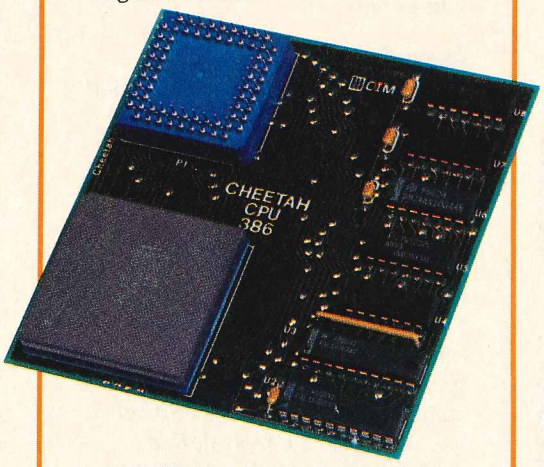
$769. Canon U.S.A., Inc., One Canon Plaza, Lake Success, NY 11042; (516) 488-6700.

286 to 386 in minutes

The Cheetah Adaptor/386 converts your 286 computer into a 100 percent functional 386 machine—with a 16-bit bus.

The adaptor board plugs into the 286 socket and does not require a bus slot.

Cheetah claims it has found no problems running all 8088, 286 and 386 programs, including Microsoft Windows, Lotus 1-2-3, AutoCad, and Flight Simulator.



Installing a "zero wait state" Cheetah Combo/70 memory board allows the 386 AT to perform ten percent faster than the original IBM PC-AT.

$495 for the adapter, $395 for the Combo/70. 286 computers. Cheetah International. Inc., 107 Community Blvd., Suite 5, Longview, TX 75602; (800) CHEETAH.

PC dialer

Hot Line is an electronic telephone directory and automatic dialer. It is based on the National Directory of Addresses and Telephone Numbers *and contains more than 2,000 listings of America's major companies, government agencies, and institutions. You can also add up to 65,000 personal numbers.*

With a modem, Hot Line can handle local, long-distance, international, and credit-card calls. It keeps a log of all calls on disk and includes a pop-up, two-keystroke speed dialer for important numbers.

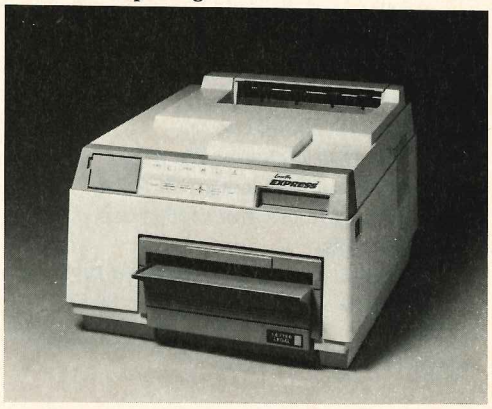
Hot Line is memory resident and can be used with most popular word processors, data base programs, and spreadsheets. It can also work with other memory-resident software, such as SideKick and SuperKey.

$29.95. DOS systems. General Information Inc., 401 Park Pl., Suite 305, Kirkland, WA 98033; (206) 828-4777.

Laser printer

The LaserPro Silver Express laser printer is designed for text and desktop publishing as well as bar code generation, label printing and CAD/CAM applications.

This printer features 768K of RAM, additional printer emulations, including the LaserJet Plus, and 25 standard bit-mapped fonts from which multiple fonts can be produced via bolding and software-selectable character spacing.



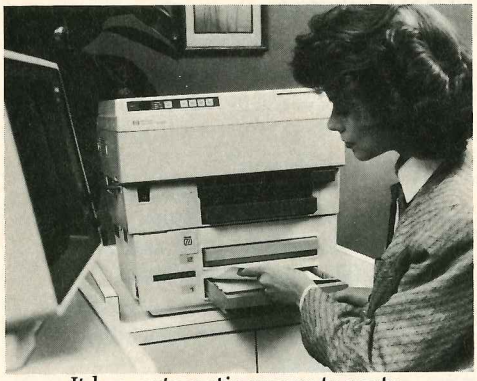
Two other features are the EXPRESS Command Language, which simplifies page composition tasks with the use of English-like commands; and the Pyramid Font System, a custom font generation system that allows you to vary printing parameters such as typeface and point size.

$2,995. Office Automation Systems Inc., 8352 Clairemont Mesa Blvd., San Diego, CA 92111; (619) 576-9500.

Electronic paper feeder

The PaperJet 400/DSF is an electronic paper feeder that sits directly underneath Hewlett-Packard LaserJet or LaserJet Plus printers.

The DSF expands the functionality of laser printers by adding two paper trays to the single tray already built into the printer. This allows you to intersperse different paper sizes and types throughout a document as needed for correspondence, graphs and spreadsheets.



It has automatic access to up to three types of stationery, such as letterhead, plain bond, and memo paper, without requiring the user to manually change paper.

The DSF increases the paper capacity of the Hewlett Packard LaserJet printers from 100 sheets to 450 sheets.

$1,295. Ziyad, Inc., 100 Ford Rd., Denville, NJ 07834; (201) 627-7600.

Filling in forms

FORMS-4 is a program that makes filling in forms easy. It handles single- and multiple-page forms and allows you to reposition the form to compensate for non-typewriter spacing.

Help information is available by just entering a question mark. And since all information entered on forms is based on line and column position, a program is included that helps you determine where each piece of information is to be placed.

Field edits may also be included to force the entry to be numeric, alpha, date, dollars, or a phone number. You can also make any field left or right justified, or centered.

$49.95 plus $2.50 for shipping and handling. CP/M and DOS systems. Elliam Associates, 6101 Kentland Ave., Woodland Hills, CA 91367; (818) 348-4278.

Awards

Certificate Maker lets you create and print personalized certificates and awards with your computer. Certificate Library Volume 1 is a companion program that includes more than 100 pre-designed certificates and awards.

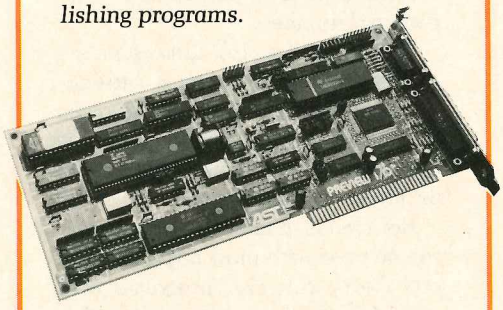
The library of new awards covers a wide range of occasions. "Super Student Award" and "Corporate Pirate" are just two examples of what is available. The library also features 24 new borders to frame certificates and includes 72 new seals and stickers with which to add the perfect finishing touch to the award.

$59.95 for Certificate Maker, $34.95 for the Library. DOS systems. Springboard Software, Inc., 7808 Creekridge Cir., Minneapolis, MN 55435; (612) 944-3915.

Enhancement board

Preview I/O is a new monochrome graphics adapter (board) that offers integrated I/O functions and 132-column text capabilities, with a parallel port, a serial port and a battery-backed clock/calendar.

The board works with all software packages that support the Hercules monochrome graphics standard. Preview I/O provides a resolution of 720 pixels by 348 rows for CAD/CAM, business graphics and desktop publishing programs.



Included with the board are Print Screen and SuperSpool software utilities. Print Screen allows you to print any screen, text or graphics, without having to save the image and leave the application program. The SuperSpool utility creates a printer output buffer in memory, allowing computer users to continue working while printing files.

$249. DOS systems. AST Research, Inc., 2121 Alton Ave., Irvine, CA 92714; (714) 863-1333.

Full page WP

Writer III is a word processor that supports a display that measures 66 x 90 characters. This permits you to view an entire 8-1/2 x 11-inch page without having to scroll up and down the screen.

Writer III is most helpful when preparing lengthy documents such as legal briefs or contracts, and in desktop publishing applications where pages are laid out electronically.

This program also includes a table of contents generator and creates and updates an index composed of user-defined keywords. A sophisticated document assembly feature allows you to create a library of frequently used documents or paragraphs, eliminating the need to rekey repetitive segments.

$495. DOS systems. Xerox Corporation, Xerox Square 006, Rochester, NY 14644; (716) 423-5078.

Help in math

Math Tutor allows a teacher or parent to easily generate and save a variety of math drills. The difficulty level of the drills automatically increases according to the student's ability.

Each student may have several sets of lesson parameters, and the problems in the drill are generated randomly based on that student's parameters.

The program lets you specify which kinds of problems are to be

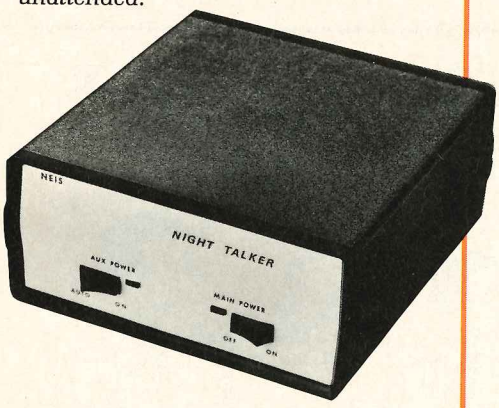
used in each lesson, including addition, subtraction, multiplication, division, powers, square roots, decimals, and fractions.

$29.95. CP/M and DOS systems. DNE Software, Route 1, Box 136, Pennsboro, WV 26415; (304) 659-2415.

The night shift

With NIGHT TALKER a substantial part of your data transfer or remote printing can be done at night completely unattended.

It takes care of powering up your remote PC and printer when you call, or with a NIGHT TIMER at the originating end and the NIGHT TALKER at the answer end, files may be transferred either way, unattended.



It can also power down automatically after the call has been terminated or can be left running until commanded to power down by the NIGHT TRANSFER software. The bundled software includes instructions for setting up your file transfers and/or remote printing.

$279 for the NIGHT TALKER, $19 for the NIGHT TIMER. DOS systems. New England Innovative Systems, 23A Old Milford Rd., Brookline, NH 03033; (603) 673-8922.

Perfect spreadsheets

The Spreadsheet Detective allows you to edit and correct common errors in your spreadsheets.

Key features in this program include examination and verification of data representations and cell references; review of all calculations in formulas; and verification of accuracy of cell references involved in problems.

A "Strange" function permits you to examine unusual cells and unusual references to cells that may be inappropriately used.

The Spreadsheet Detective is currently available for SuperCalc 3 & 4 and for Lotus 1-2-3, releases 1A and 2.

$89.95 for the Detective configured for one spreadsheet; additional spreadsheets are $29.95. DOS systems. Deucalion, 538 N. Division, Ann Arbor, MI 48104; (313) 668-1333.

Hold that thought

BOOKMARK is designed to save your data input to a hard disk should there be an accidental reset, power down, frozen keyboard, system crash, or power failure.

It is a memory-resident utility that automatically takes a "snapshot" of RAM memory and saves it to a reserved area on the hard disk. The BOOKMARK can be set to save data at intervals of numbers of keystrokes or minutes, with a default interval of 1,000 keystrokes or two minutes.

One feature allows you to stop work by placing a BOOKMARK and turning off the PC. Work can be resumed where it was left off by switching the computer back on, eliminating the need for going through menus.

The password-protected program operates in the background with WordStar and Lotus 1-2-3, as well as with most other word processors, spreadsheets, and data base programs.

$69.95. DOS systems. Intellisoft International, P.O. Box 1972, Novato, CA 94947; (415) 883-1188.

PRODUCT UPDATES

Property Management Plus now features tenant information lookup and rent posting by tenant name or rental number in both the DOS and CP/M versions, and the DOS version is now available in color. Realty Software Company, Redondo Beach, CA ☐ **Resource Manager 3**, an installation and systems utilities package for the 14-module Open Systems Accounting Software product line, now offers windows and features predefined inquiry windows. Open Systems, Eden Prairie, MN ☐ The decision support system **Information Planner MVS**, version 2.1, features faster response time, the addition of a batch option for running reports and analysis, improved report formatting, and more. KnowledgeWare, Inc., Ann Arbor, MI ☐ **Matis**, a screen generator for DOS computers, has been replaced by **HIGH SCREEN**. This new program can handle variables in any language, and it generates no source code, making maintenance easy. Softway, Inc., San Francisco, CA ☐ The DOS version of the indexing program **IN>SORT** has been updated to 2.24. Some new features include command line passage of file names for immediate loading, faster move and delete block capabilities, and use and storage of macros. Kensa Software, New York, NY ☐ Version 3.0 of the menu generator **MenuMate** now includes the ability to pop menus onto the screen and to add password protection to any menu. Victory Computer Systems, Sunnyvale, CA ☐ **Instant-C**, an incremental compiler for the C language, now combines the interactive environment and ease of use of an interpreter with the execution speed of a compiler. Version 2.0 integrates a full-screen editor, source level debugger, pretty printer, object code linker, and more in a single system. Rational Systems, Inc., Natick, MA.

Product Updates provides information about revisions of existing products. Users should contact vendors for more complete information and current prices.

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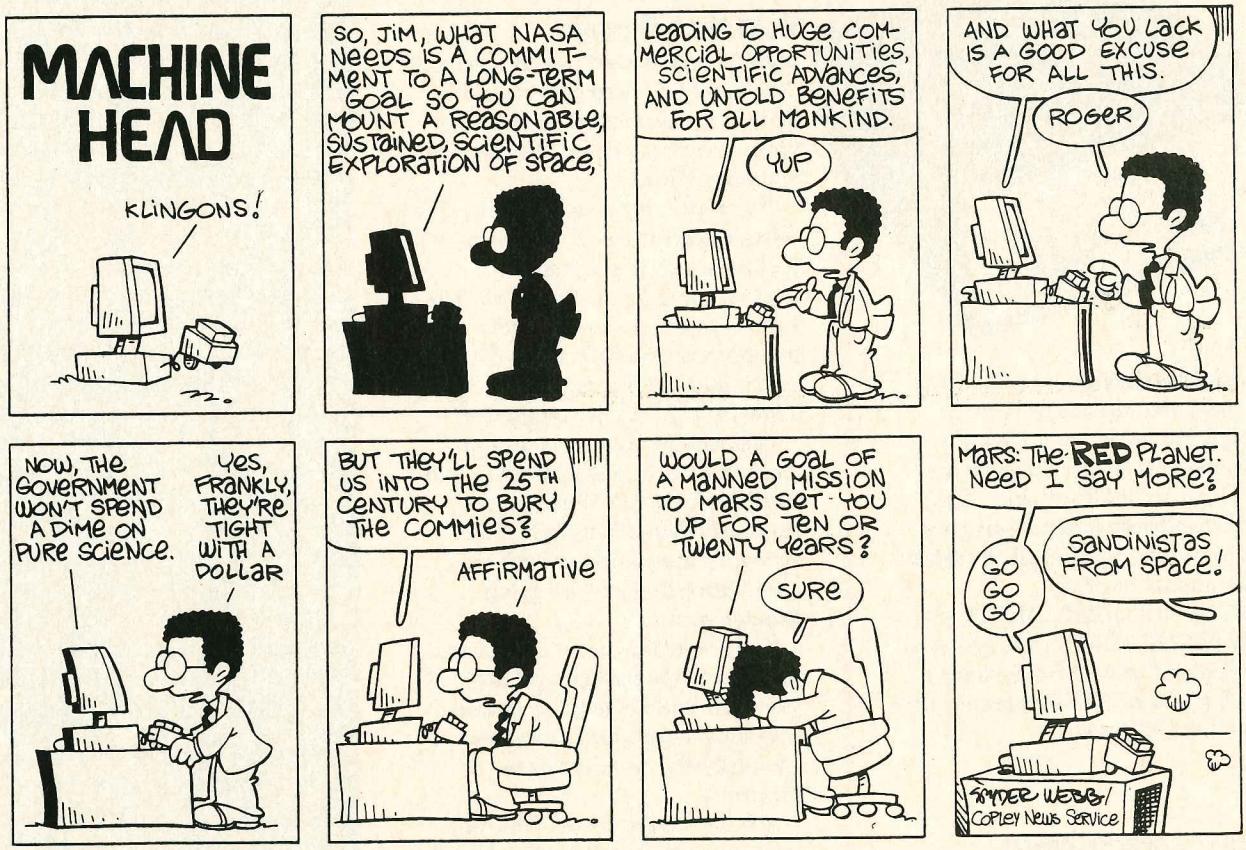

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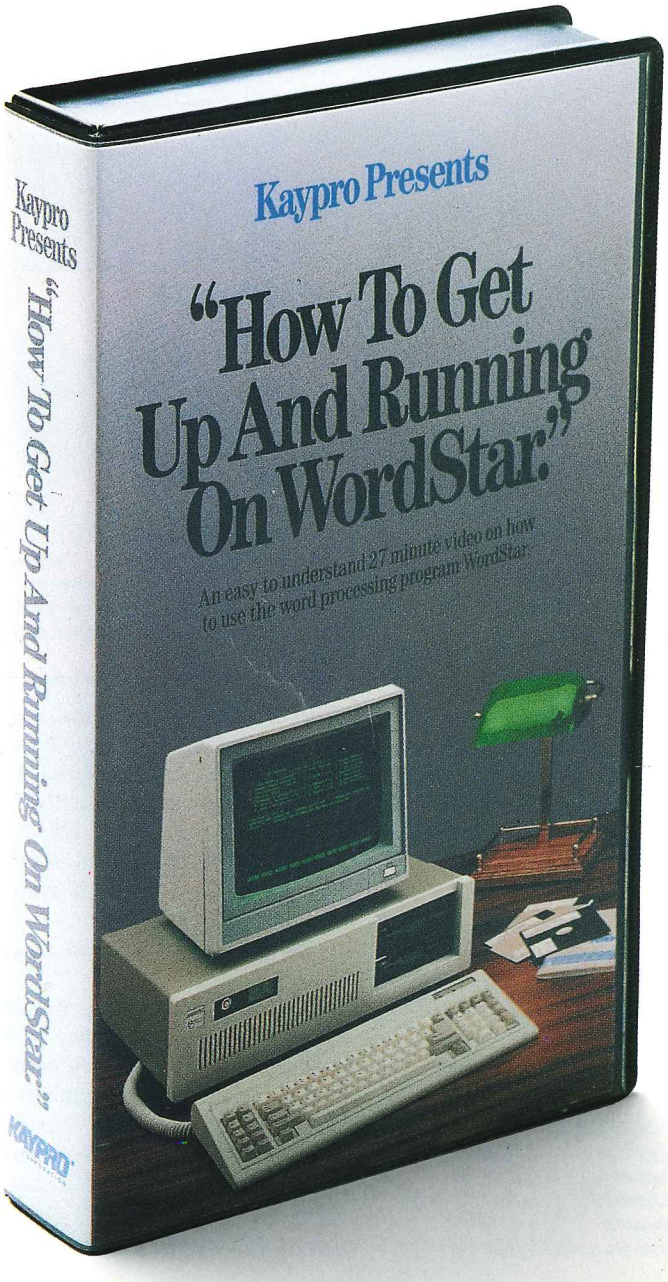

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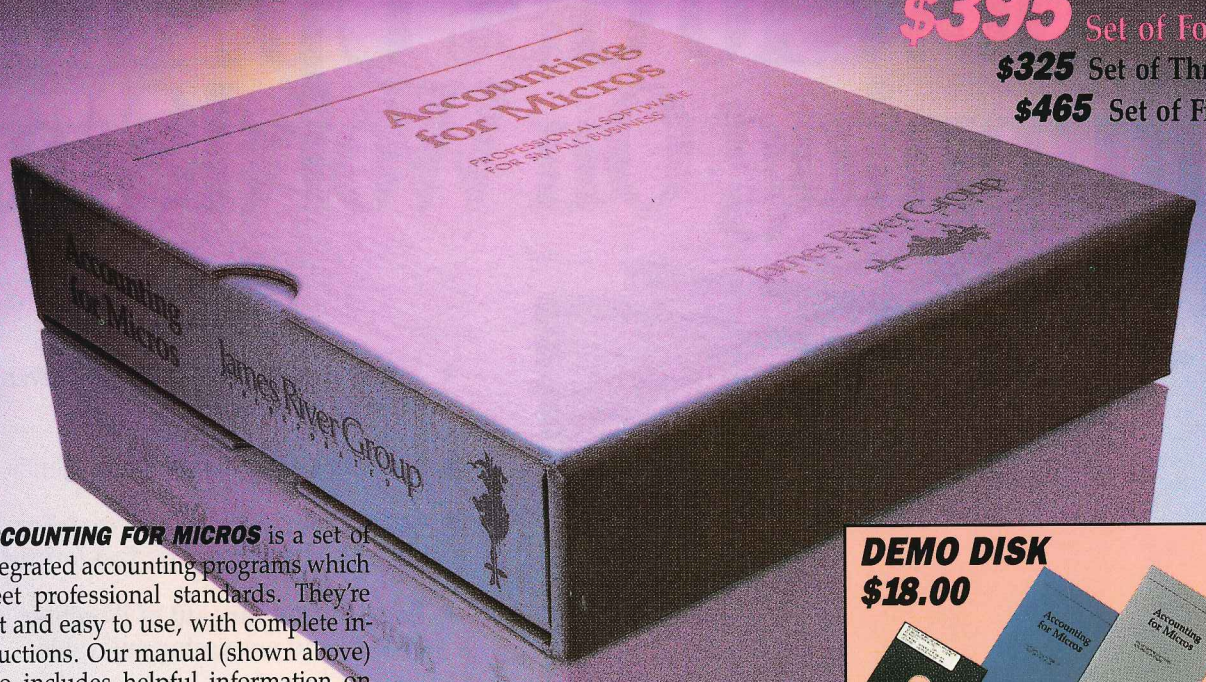

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