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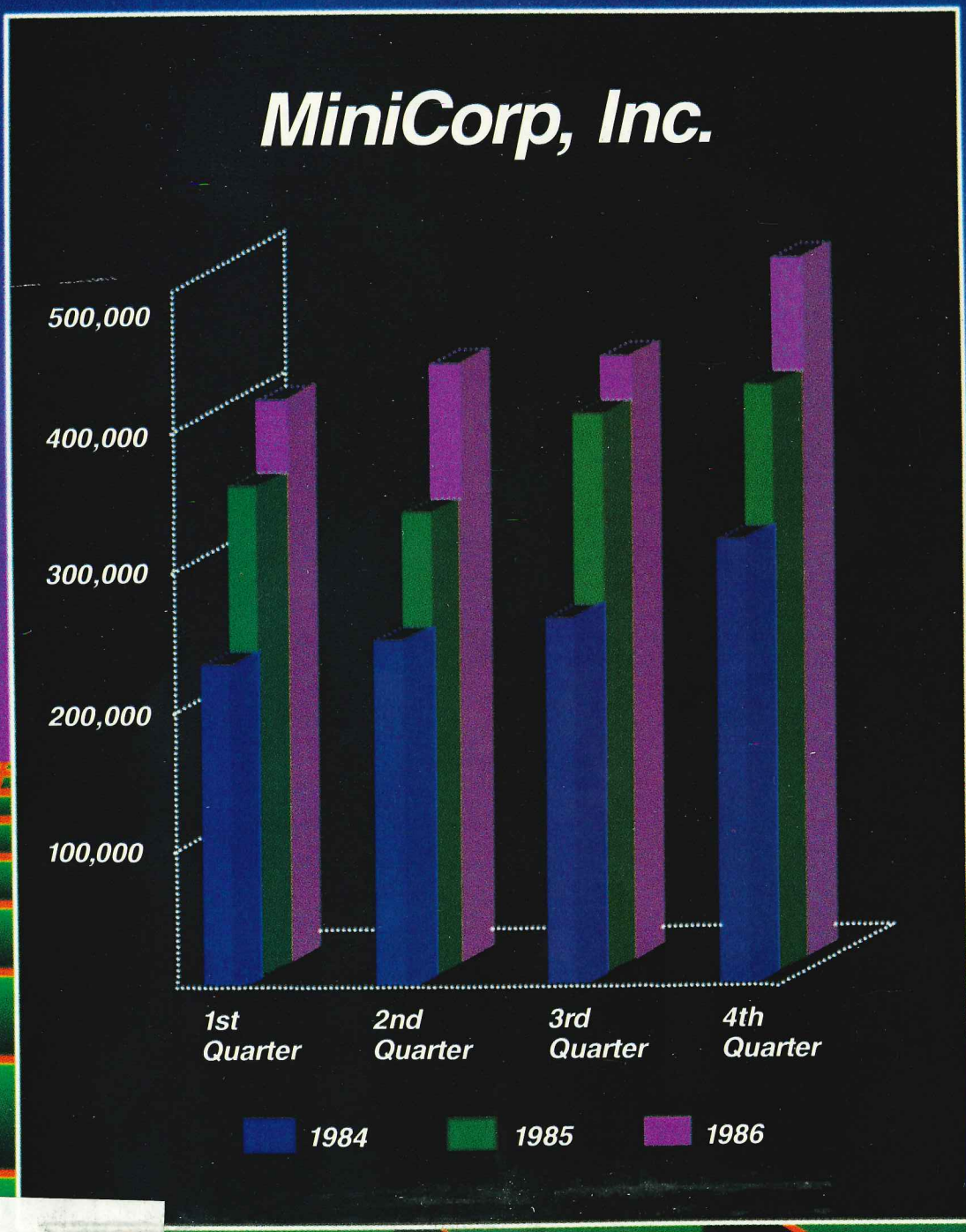
PROFILES

The Magazine for Kaypro Computer Users

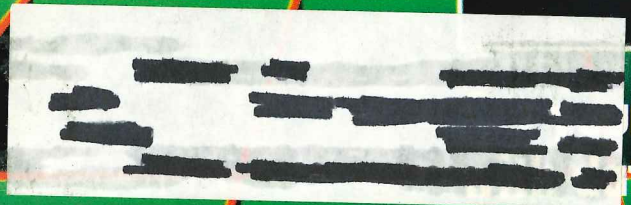
September 1987

SEE YOUR PRESENTATIONS COME ALIVE WITH BUSINESS GRAPHICS



SAY IT, DON'T TYPE IT!
Save time with voice data entry

Get organized with SideKick: We show you how



r phone bill in half
ta compression

EXTRA! EXTRA!
New column on desktop publishing

Dress for Success

Letter Quality Type - *Cosmo Writer 2600*

Less Expensive than Dot Matrix

$199

NEW!

- Diablo/Qume Printwheels
- Diablo/Hytype II Ribbons
- 26 CPS - 22 CPS Shannon
- Bi-Directional Printing
- 2K Buffer
- 4 part form capable
- 90 day manufacturer's Warranty
- 10, 12, 15 Pitch and Proportional printing

Diablo 630 Compatible
Parallel Interface

Order Today
Limited
Offer

Please include $17 freight

Good only while supplies last

- 110 CPL, 132 CPL, 165 CPL
- 110/220 V-50/60 Cycle
- Less than 50 dB noise level
- Dimensions - 18.7; (W) x 5.5; (H) x 13.0; (D)

Limited Offer

Make everything you write look great in print. The written communication you send to others determines how you appear to them. Dot matrix doesn't always make the cut. With this printer it is impossible to tell that the output came from anything less than a professional typewriter.

The Cosmo Writer 2600 is a quality printer offering excellent daisy wheel print performance. This printer spews out text at 26 characters per second, faster than anyone can type. And it does it in both directions, finding the next logical type position and going directly there. An internal 2 kilobyte print buffer allows the computer to rapidly send out up to a page of text to the printer so that the computer can go back to doing real work, not just driving a printer. In the Shannon print speed test, a realistic appraisal of actual print speed, this printer tests out at 22 CPS, a very respectable speed at twice the price, much less Central's low, low price.

Works With Any Computer

Don't worry that your software won't work with this printer. This printer does everything right. The Cosmo Writer is compatible with the Diablo 630, the industry standard of daisy wheel printers. Virtually all software on the market (non-graphics) will operate beautifully with this printer. This includes bold facing, double strike, underlining, subscripts and superscripts. And character pitch can be set from the front panel.

The provided standard Centronics parallel interface is the industry standard printer interface for computers, including IBM PC and all PC clones, C/PM machines and virtually all other microcomputers built today.

Replace Your Typewriter

Included with this printer is a great little program called Deskteam. This program packs a group of utilities together that provide, among other things, the ability to use your printer as a typewriter. Select direct type through, like your standard typewriter, or line mode, where you can enter and edit a line prior to printing it, just like the new expensive memory typewriter. This program will allow you to directly replace your typewriter and use the printer for forms, envelopes, etc. The calculator allows a "tape" output to be sent to the printer. Calendar, phone dialer, alarm clock, notepad, and printer control is also provided.

The most commonly made ribbons, Diablo HyType II, and printwheels, Diablo/Qume, are used in this printer. Central offers a complete line of printwheels, ribbons and supplies.

If you want to use inexpensive tractor feed paper, we offer an optional tractor mechanism; or for single sheet paper, such as letterhead, an optional cut sheet feeder. Both mechanisms can be attached in seconds. The tractor mechanism allows push-pull operation so that the paper can be backed up in the printer. The cut sheet feeder uses standard letterhead, stationary, or plain paper, automatically feeding a new sheet of paper when the previous sheet is done.

Major Manufacturer

Cosmo is part of one of the largest companies in Japan. This diverse multi-national corporation offers a wide range of products in many fields, from sports and leisure to heavy industry. This printer is the efforts of this large and diverse organization. Their extensive manufacturing experience has produced what we feel is one of the best values in letter quality printing today.

Get your order in soon for one of these great printers. For a limited time, included with each order is your copy of Deskteam, that superb printer utility. $199. Order today.

Description	List	Central
Cosmo Writer 2600	$499	$199
Tractor Feed	$129	$ 89
Cut Sheet Feeder	$199	$129
IBM Parallel Printer Cable	$ 35	$ 19
Centronics/Centronics Cable	$ 35	$ 19

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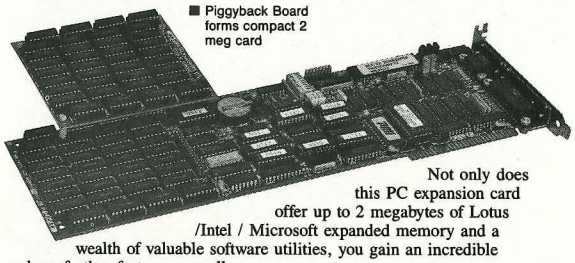
CA: 800-624-5628

For Information Please Call (805) 524-4189



- Piggyback Board forms compact 2 meg card

Step Into the Future
— Giant 2 Meg Memory Expansion

$379

- L/I/M standard expanded memory
- 2 megabytes per board
- On board password protection
- Provides disk caching
- Provides print spooling
- Includes clock/calendar
- Includes parallel port
- Includes serial port
- Includes game port
- Split memory mapping
- Fault tolerant design
- One year factory warranty

Not only does this PC expansion card offer up to 2 megabytes of Lotus /Intel / Microsoft expanded memory and a wealth of valuable software utilities, you gain an incredible number of other features as well.

Password Protection

Protect your PC from unwanted intrusion. This card offers battery backed up password protection. When you power up the computer, only a user with the password gains access to your precious data. Parallel, serial, and game ports are also provided to communicate with all your peripheral devices such as printers, modems, etc.

This product has tremendeous memory features. This Lotus / Intel /Microsoft expanded memory product provides both bank selected memory for megabytes of RAM in software applications that support it, and extended memory for large RAM disks. Multiple lightning fast RAM disks may be set up within available memory, as well as automatic setting of expanded memory page addresses for L/I/M software.

Extra Features

Fastcard IV also dynamically allocates memory for disk caching, allowing much faster access to your disk drive's data, and print spooling so that your computer is free to do work, not wait for the printer.

Easy to Use

Much of the software required to perform these wonders are contained in firmware (software in an integrated circuit) so that precious memory space is preserved to do your work. Advanced built-in diagnostics automatically bypasses defective memory, as well as automatically storing the setup information in battery backed up memory.

Get One While Supplies Last

Fastcard IV. This incredible expanded memory board offers more capabilities than the Intel Aboveboard or AST RAMpage. Compare features. Costs much less. $379. 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
Generic Auto Dimen.	$ 45
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
Spreadsheet Auditor	$129
SuperCalc3	$295
SuperCalc4	$359
Twin	$ 99
VP-Planner	$ 84
Training	
ATI dBase III	$ 57
ATI Framework	$ 57
ATI Lotus 123	$ 57
ATI MSDOS	$ 57
ATI SuperCalc4	$ 57
ATI Word Perfect	$ 57
DAC Acctng Tutor	$ 20
Project Management	$ 65
Using dBase III Video	$ 69
Using DOS Video	$ 69
Using Lotus 123 Video	$ 69
Word Processing	
Grammatik II	$ 79
MailMerge	$ 89
Mathstar	$ 49
Microsoft Word	$349
Multimate	$359
Number	$ 57
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

$149 Top Notch Communications — Rock Bottom Price

100% Hayes compatibility is now available at an incredible low price. This half card modem from Practical Peripherals is the best deal in telecommunications today.

The hottest software on the market is included. Get PFS access, $140 worth of leading communications software, plus Pop-Up Desk Set, a group of superb, memory resident utilities including a calculator, clock, telecom, terminal emulation, and autodialer.

But that's not all. You also get FREE access to the Official Airline Guide for on-line reservations, ticketing and low fares. Membership to the Source, is also included, FREE. Top this incredible deal off with a 5 year guarantee. Nothing comes close. $450 value. Your cost $149. Order today.

SmarTeam 1200AT Modem

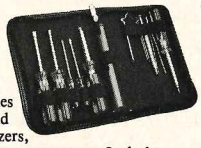
$179

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.

Personal Computer Toolkit

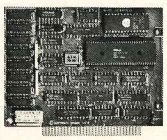


This is the perfect PC Toolkit. It has all the tools needed to add peripherals, cards, and hard disks to your PC. Kit includes nut drivers, phillips and flat screwdrivers, tweezers, chip retriever and inserter extractors. Includes a black vinyl zipper case. $27. Order today.

Play the Lottery? Lotto Master comes with a unique database that lets you track and analyze winning numbers. You may be able to use this information for projecting the future. Play and track more than one lottery at a time. It can also be altered so you can play any lottery up to 9/99. Test out numerous schemes at once. Super easy to use. Exciting. $25. Order today.

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. 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.

No More Memory Limitations

Expanded Memory Without the Expanded Price

Get **8 Megabytes** of RAM

Without Expensive Boards

Above Disc is a revolutionary new software product that emulates Expanded Memory Specification 3.2 by using Extended Memory or Disk. Use up to 8 meg. of hard disk, your extra floppy or RAM disk space for your programs that use EMS 3.2 or greater.

Use **Above Disc** for large spreadsheets by turning your floppy or hard disk into extended memory. Above Disk is super fast, and super easy to use. It's a dynamite product for anyone who does serious computing.

SPECIAL INTRODUCTORY OFFER — $97

Printer Buffer

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

Works with any computer and printer • Reset button • Multi-copy repeat function • Auto diagnostics • Self-test • With cable • 90 day warranty • Satisfaction guaranteed •

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.

Premium Tractors

Tractor Descriptions †	Price
Diablo D-25 Bi-Directional	$195
NEC Elf Uni-Directional	$ 87
NEC Pinwriter P2 and P6 Bi-Directional	$149
NEC Pinwriter P3 and P7 Bi-Directional	$164
NEC Pinwriter P5 Bi-Directional	$167
Toshiba 351 and 341 Bi-Directional	$179
Toshiba 321 Bi-Directional	$ 95

† Firm money back guarantee and full warranties.

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	
Postage & Handling	$ 3.50
Total	$

Firm Money Back Guarantee Order With Confidence

☐ Check ☐ Money Order

☐ Visa/MC # _____

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Exp. Date _____ Sig. _____

Name _____

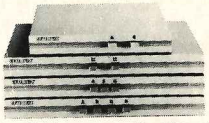
Address _____

City _____ State _____ Zip _____

Credit Card phone orders accepted. **Call toll free.** To order by mail use coupon, letter, or photo copy.

Slimline Data Switches

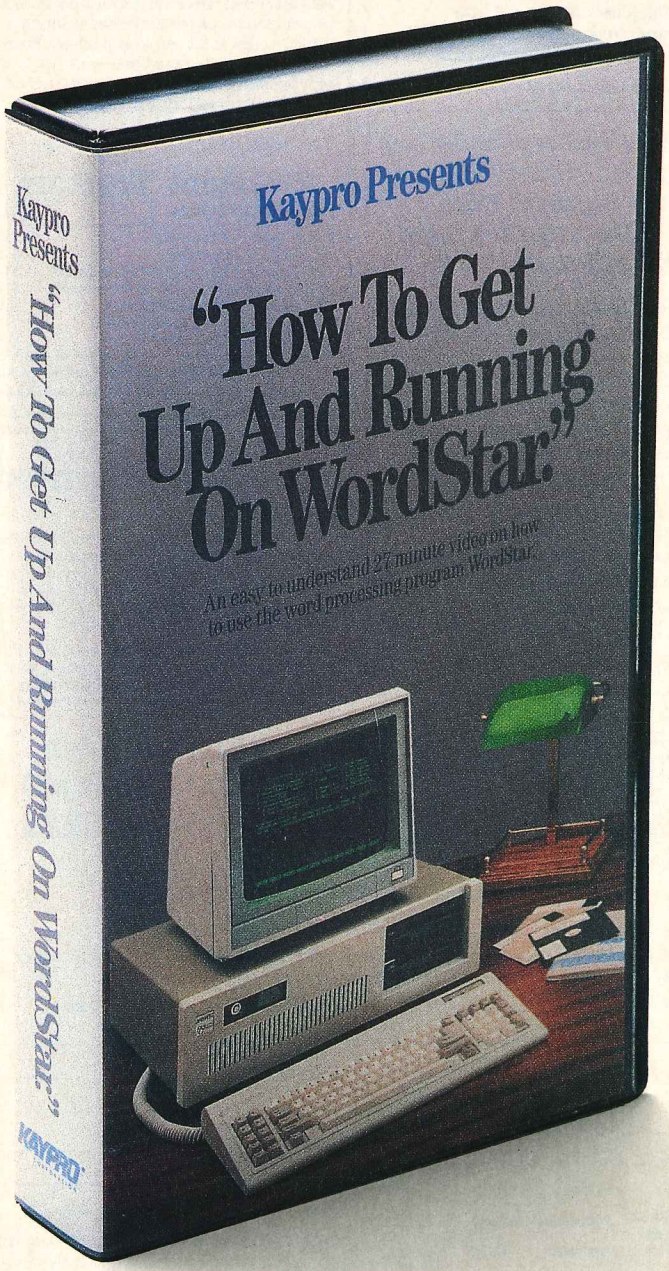
Lifetime Guarantee



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.

Kaypro Presents

"How To Get Up And Running On WordStar."



- A must for any office — a timesaver for training office staff
- Good for family members or friends
- Contains an index (which matches video) on back cover for fast forwarding
- Takes the mystery out of WordStar . . . it makes word processing enjoyable

An easy to understand 27 minute video on how to use WordStar. It will take you from start to finish — using such commands as reforming paragraphs, underlining, spacing, margins, tabs, insert and much more — including the print out procedure.

Introductory Offer $29.95
(plus $2.50 for shipping)

To order send a check or money order to:
Kaypro
"How To Get Up And Running On WordStar"
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☐ MS-DOS ☐ VHS ☐ BETA

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City _____ State _____ Zip _____

Phone _____

	Cost	Quantity	Totals
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Shipping:	$2.50 ×	_____	= _____
		Total	_____

KAYPRO®
CORPORATION

PROFILES

The Magazine for Kaypro Computer Users

Volume 5, Number 2 • September 1987

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The Ultimate in Show and Tell 14
BY JACK NIMERSHEIM
Get the attention you want with business graphics software. Here's a brief on its uses and benefits, plus reviews of three popular packages, a synopsis of 13 more packages, and a glossary of terms.

"Computer, Take a Memo" 22
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Speech recognition systems offer "hands free" computing. This is a status report on the technology and its applications for business, home, and handicapped users.

Data Compression Programs . . 28
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Save money, time, and disk space with these utilities. Here's what they are, how they work, and when to use them.

A First Session with Sidekick 32
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Changing Chips . . . 36
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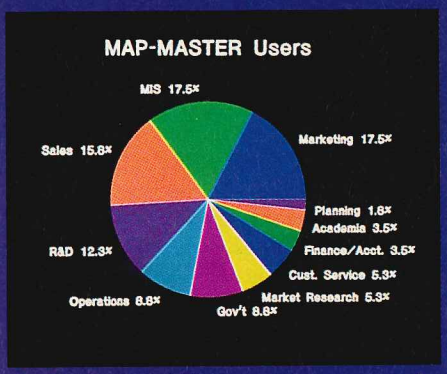
The Relational Power of dBase III 41
BY JOSEPH COMANDA
Simplify your data base chores. Part two in this series offers step-by-step instructions using a donor/donation-tracking system as a model.

Near-Desktop Publishing 46
BY JIM SPICKARD
A look at products offering CP/M users modest text-and-graphics printing capabilities.



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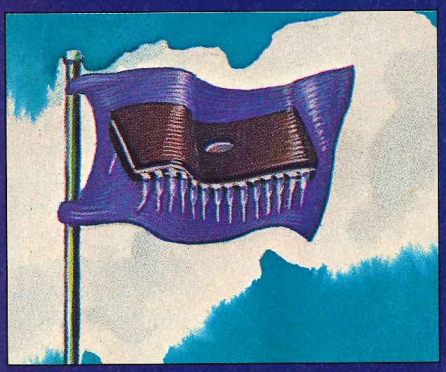

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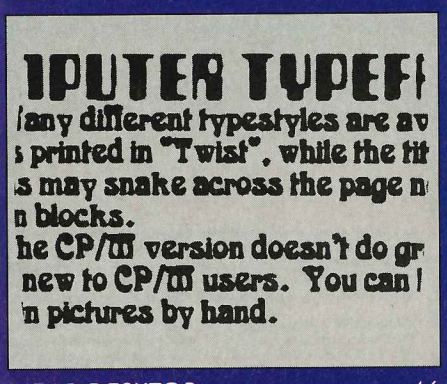

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ON THE COVER:

Our cover this month is an example of what's possible with a good presentation graphics package. This dramatic graphic was produced on a PC by Megan Wheeler, a Software Engineer for Computer Associates International, using SuperChart and SuperImage Software.

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Editors' Notes

A rundown of the future

In this issue and over the next few months, you'll be seeing some changes in *PROFILES*—changes that will give you even more of what you want from a computer magazine: practical, hands-on information and reliable advice. Here's what you can expect:

•"Desktop Publisher" is Ted Silveira's new column ("Flea Market" has been discontinued), and as its name implies, it will cover the whole field of desktop publishing using Kaypro's EXTRA! EXTRA! system as a model.

•"The Kaypro Insider Report" will keep you up to date on new products, policies, and people at Kaypro Corporation.

•"In the Workplace" will tell you how other people solved their business problems with their Kaypros—the hardware and software they used, the systems they set up, and the obstacles they encountered and overcame.

•"Q & A" will continue to be devoted to users' questions, but the questions will come from different sources. We'll poll dealers and Kaypro Technical Support to find out what questions they're asked most often, and we'll continue to cull questions from readers' letters.

•Our "Reviews" department will include "Editor's Choice," a new column by technical editor Tom Enright highlighting exceptional products, and "At a Glance," product reviews by members of the Professional Software Programmers Association and others.

•"On the Practical Side" will supplant "Technical Forum" as a source of technical and how-to information. It will give you information you need to work on your machine and provide do-it-yourself solutions to hardware and software problems.

As always, our goal is to help you get the most out of your Kaypro, and we're confident that these new departments and columns will help us do that.

And now for a rundown on two of the features in this issue:

•Sometimes the way you present information is just about as important as the information itself. With the right presentation graphics program, you can translate data into graphs and charts—in fact, whole "slide shows"—that will get the attention you want. Reviewer Jack Nimersheim offers an overview of MS-DOS presentation graphics software and its uses, along with reviews of three popular packages and thumbnail sketches of over a dozen more.

•The most natural way for people to communicate—even with computers—is by talking, and speech recognition systems make it possible. Though now used primarily for data entry in industrial settings, such systems are finding applications in the microcomputer world and may soon even shape the way our homes are designed. Edward Teja's article, "Computer, Take a Memo," is a look at this technology.

Diane Ingalls
Terian Tyre

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Computer Professionals, Inc. has been developing computer applications for business and industry for TWENTY years, often working behind the scenes for some of the biggest names in the industry. We have learned how to pack a lot of power into each computer program but we know that raw power and ability is worth little unless coupled with ease of use, good documentation and responsive support. CPI's Business Systems are all these things and more. They run faster, support larger capacities and cost less than any similar systems marketed today. They have been installed by thousands of users (since 1978) and are available from us directly or from your KAYPRO dealer. We specialize in KAYPRO systems.

We know that floppy disk users don't appreciate shuffling four or five disks in and out per application. We know that no users like to abort in the middle of an application to change printer pitch. We know that users don't like copy protection and complex licensing agreements. We don't believe that any systems with these 'features' can be considered easy to use so we left them all out of CPI Business Systems.

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

Most users need a little support when getting started so we include 45 days of FREE support with each application. Others charge hundreds of dollars extra. Users of CPI Business Systems can extend support for a full year for less than ten cents per day per application.

CP/M users may become MS-DOS users in the years ahead; CPI has planned ahead for this possibility and we provide data file conversion service to any user. CPI will, however, continue to support and enhance these fine systems for CP/M users for years to come. Your investments today will not be obsoleted by tomorrow's technology.

These powerful systems are described briefly below. If you don't feel confident yet ask for our 30+ page overview or try an application demo system at half price (demo prices apply to future system orders).

There are no extra charges for shipping, COD, etc. American Express, Mastercard, VISA card orders welcome. We ship in 48 hours. Please tell us what format you want (II/2X/4/10/16), etc. Demo systems in KAYPRO formats only.

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CP/M MS-DOS

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

$100.00 **PAYROLL** $100.00
CP/M MS-DOS

A complete payroll system supplied with current tax routines for every state. Multiple pay rates, multiple overtime rates, multiple other pay rates, eight user deductions (each can be an amount, a rate or %), deductions may be taken before or after taxes. Commissions, tips, tips considered as wages, earned income credit, SUI, SDI, etc. are all included. In short it's a very comprehensive payroll system but one which is very easy to use. Its functions include Employee File Maintenance; Employee Lists in multiple levels of detail; Input Worksheets; Time Card Entry; Regular, Overtime, Other, Commissions, Tips, Misc. Pay. Exception Processing is the rule so you need only enter variable data. Manual checks are processed quickly and easily. Weekly, Bi-Weekly, Semi-Monthly, Monthly pay cycles (run individually or combined); Departmental Payrolls; Checks; Check Registers; Deduction Registers; Earnings Reports; 941's; W-2's; Unemployment Reports; Multi-state; Manual Checks; G/L interface for Federal, FICA, State and Local Taxes, Federal/State Add-Ons, FICA, FUTA, SUI, SDI, EIC, 8 user deductions.
CAPACITIES - 600/2000 emp. (CPM/MS-DOS), 98 Tax File Rcds.

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Improve your cash management with this fine system. You'll get the up to date accurate picture of accounts to be paid, cash requirements for the data on file. Payments and notes vouchered automatically insuring timely payments. Complete check writing included. The system reports include Vendor File Lists, Open Vouchers, Ageing By Due Date, Discount Date Ageing, Cash Requirements, Check Registers, G/L Transaction List, Query Vendor Status, Credit Vouchers, Deleted Vouchers.
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 . . .**

Letters

BIOS calls

I find your publication very informative and useful. However, in the July 1987 issue, on page 4 ("Editors' Notes"), it indicates that the article "BIOS Calls Your Mother Never Taught You" also included an assembly language version of the "unerase" program UNFILE. I was especially interested in the program. On page 51, a program is printed as part of that article. It's not assembly language—it seems like Turbo Pascal. Is there some way I may obtain a copy of the assembly language version of that program, either by your printing it in some future issue, or by some other method?

Marvin Sendrow
Annandale, Virginia

As always, I couldn't wait to read the latest issue, especially since it offered the chance to learn something about Turbo Pascal by creating David Weinberger's UNFILE. But the article forgot to note that there were at least four mistakes, obviously meant to challenge Turbo neophytes like me.

Well, in my case at least, it worked—I managed to find and correct the errors, and in the process I did learn more than I otherwise would have.

William J. Schultz
New Concord, Ohio

The errors cited in the letters above stemmed from faulty proofreading on our part.

First, our original arrangement with the author of "BIOS Calls" was for a piece on assembly language. Later, by mutual agreement, it was changed to Turbo Pascal. But "assembly language" stuck in our minds and slipped through into print. No assembly language version of the UNFILE program is available to us.

Second, PROFILES does not deliberately print mistakes in code to "challenge" readers. (Come on, now—would we do that to you?)

The following are corrections to the Turbo Pascal listing that appeared on page 51 of the July issue:

```
18:  if drive > 'B' then drive := 'A';

47:  if C = 'U' then fcbbuff[FcbCtr,Ø]
         := Ø
     else fcbbuff[FcbCtr,Ø] := $E5;

57:  if FcbCtr > 64 then begin
     FcbCtr := 1;

58:    writeln('  <Beginning>  ');
     end;
```

We apologize for any confusion these errors may have caused.

Beginner's Luck

Please don't discontinue the "Beginner's Luck" column. As a novice, I'd be lost without these excellent articles.

No name and address supplied

A few months ago, we announced to readers that we would no longer run beginners' articles under the "Beginner's Luck" title. Instead, we would publish such articles as regular feature pieces. This way we can devote more space to them, and we're sure you'll agree that this will meet your needs even better. Look for the labels "Beginner CP/M" and "Beginner MS-DOS."

Alien registration

Where does an alien go to register? I am the owner of a new Kaypro PC. I had absolutely no computer or word processing experience when I made my purchase and have been "learning by doing" since late February. So I was really pleased when my complimentary copies of your magazine arrived in the mail.

"Aha," I thought. "Now I'll really be able to get some help especially written for my computer!"

I was wrong. You see, as a rank beginner, I'm not very familiar with much of the terminology used in the articles. I also have to spend a great deal of time trying to decipher the acronyms and other alphabetic references sprinkled liberally throughout each article.

I have the feeling that I'm not completely alone in this situation, so I'd like to offer a suggestion. Why not include a glossary of terms and general abbreviations in each issue? It doesn't have to be elaborate or complicated—just a list of the most commonly used computer terms and acronyms along with their definitions.

I, for one, would be grateful, because I could then concentrate on the real content of an article instead of trying to discover the meaning of each "foreign" word I come across.

Beatrice G. Davis
East Williston, New York

We sympathize with your plight—we were all novices once. We try to spell out acronyms on the first reference and to briefly define terms within articles where appropriate, but definitions of common terms generally are out of place in articles for intermediate to advanced users. We don't have space to run a glossary in every issue, but we agree with you that a glossary would be very handy for new users. We've decided to compile such a glossary in booklet form and make it available to our readers by various means, which we'll announce in future issues. We'll send you a copy when it's ready. Meanwhile, we did run a "Beginner's Luck" column on terminology some time ago (October 1985) and a copy is on its way to you. Hope it helps.

Such a deal!

A few issues back, a reference was made to a Chilton guide to reapair/maintain the Kaypro. I bought one for about $13, plus $2 shipping and handling. Such a deal!

Anyone who has ever used a Chilton manual for shade-tree auto repair knows that these manuals are usually well written and complete, with plenty of pictures for folks with ten thumbs—such as myself. Their standards are just as high for computer manuals.

Written for the non-technoid, the manual has sections covering diagnosis and repair of most components (drives, boards, power supplies, keyboards, printers, and video). Also included are

sections on general computer information, problem prevention, adding aftermarket items, and even how to deal with a repair technician should the work be beyond your abilities. The copyright date is 1985, and most CP/M models are covered, along with the 16-bit models.

Randon G. Crowell
Killeen, Texas

Not on "tocking" terms

In December 1985, my brother and I both bought Kaypro PCs. We both configured them with 768K, two floppies, and a Princeton Graphics Max12E monitor. I added a Tandon 20-megabyte hard disk and a Hayes 1200B modem. We both upgraded from the stock monitor so we could use the color graphics and/or high-resolution monochrome display the Kaypro color board allowed.

The machines have performed quite well, with one exception. After about a year, the internal clocks on both machines have stopped "ticking," so they're not "tocking" to our machines.

In checking under the hood, I found dual Panasonic batteries hard-wired in. (Gasp! *Hard*-wired?) Without resorting to maligning the ancestry of those responsibile for this design (dare I say design *flaw*?), I pose a question: Are you folks at *PROFILES*, or any of the loyal readership, acquainted with a vendor stocking a modification package that will allow me to replace the batteries with a battery holder that will accept standard batteries?

On another subject, have you seen the new Iomega drive Leading Edge is packaging on its model D for $2,000? It's also available after-market for about $1,200. I would dearly love to have that drive in my machine, but it costs too much. But man! A 20MB removable hard drive! My backup woes would be over. Any chance Kaypro will have a line on a similar drive in the near future? Perhaps an upgrade at a reasonable price? May I suggest a column in *PROFILES* dedicated specifically to new developments and upgrades on MS-DOS machines?

Another question/problem: I have logged on to KUG ROS several times and appreciate the service. However, although I have been able to leave messages and retrieve files that can be <T>yped, I have been unable to download any files. I am using Crosstalk XVI, release 3.5. Here's what happens: After selecting a file, I use the RBBS <S> command, then <Esc> to my command line and command Xtalk to <rc> (receive) filename.XXX. I get multiple block errors. Is this due to circuit noise, or am I bringing this upon myself through some foolish error?

Art Brothers
Hamburg, New Jersey

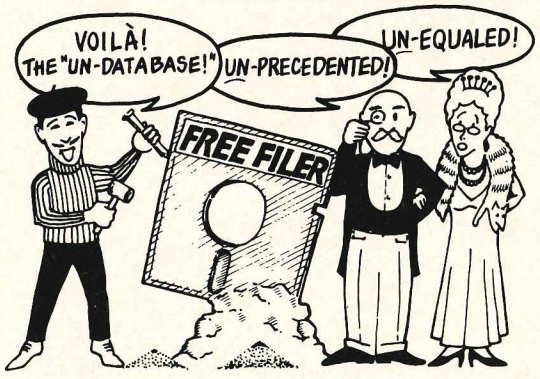
To answer your various questions, Kaypro Corporation is preparing a conversion kit to install a single, plug-in battery on older Kaypro PCs. The kit should be ready by the time this is in print. Contact your dealer to have this kit installed. If your dealer does not know about the kit, have the dealer *call Kaypro Hardware Technical Support for information on ordering the kit.*

We are not aware of any plans by Kaypro Corporation to market a removable hard drive. However, third-party vendors sell kits to install these drives in IBM PCs. Any drive kit that works with the IBM will work on the Kaypro PC. The new drive will either have to replace one of your floppy drives or be mounted in an external cabinet. (By the way, for updates on Kaypro products and policies, see "Kaypro Insider Report," a new department beginning in PROFILES *this month.)*

To solve your downloading problems, set Crosstalk's PMODE parameter to 2; communications parameters should be eight data bits, no parity, and one stop bit. Your version of Crosstalk does not support XMODEM CRC transfers. It does support XMODEM CHECKSUM transfers. The KUG ROS board defaults to CRC mode and may not automatically switch to CHECKSUM mode. When you are downloading, make sure you have told KUG ROS to use XMODEM CHECKSUM mode.

Free Filer

The "Un-Database" from Telion Software



Database programs make you organize information, like mailing lists, into a form. But how do you "database" your free-form text files, like novels, business letters, annotated bibliographies, or personal correspondence?

Now Free Filer lets you keep track of your words like you do your lists. That's why we call Free Filer the "un-database."

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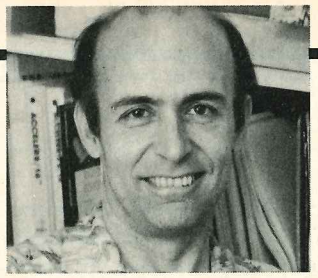

DESKTOP PUBLISHER

Welcome to the world of publishing

by Ted Silveira

Desktop publishing has grown from hot topic into big business. In this new column, I'll be covering the whole field, everything from what desktop publishing is good for down to the details of producing camera-ready copy, using Kaypro's new EXTRA! EXTRA! desktop publishing system as a model.

The computers, laser printers, and page-makeup software that are the core of desktop publishing have created a new style of publishing, because they make it possible for one person to control a major part of the publishing process, using equipment that will literally fit on a desktop. As dramatic as this change may be, it is not a complete break with the past. No matter whether you're producing books, business reports, advertising brochures, or newsletters, when you become a desktop publisher, you become part of the larger world of publishing.

And it's not a world to ignore. In it, you can find a vast body of knowledge about problems of design and technique that face the desktop publisher and the traditional publisher alike. And it's often true that the best and cheapest way to produce high-quality publications involves using the standard processes alongside the new.

But publishing is a complex business, easily as detailed and difficult as the computer business. So, for those of you who are new to this world, here's a short list of books to help you along. As you'll see, it's a mixed batch of titles—some are overviews to read once, some are strictly for reference, some are everyday tools. It's not complete, but it's a start.

The publishing business

Book Publishing: What It Is, What It Does, John P. Dessauer, R. R. Bowker Co.

This book is a bit dated (1981), but if you want an overview of the traditional commercial publishing process ("big" publishing), it's worth a look. Traditional publishing shouldn't necessarily be the model for desktop publishing, but it can teach you a lot, and you'll almost certainly have to interact with printers, typesetters, and others from that world at some time. Get this book from the local library.

Pocket Pal, International Paper Co.

This little book, published by the International Paper Company, is well known in the graphics arts, typesetting, and printing industries. It's an interesting catch-all that includes information on the history of printing, modern typesetting and printing methods, paper, ink, definitions of terms, tables of equivalents, and every part of the production process, from copy and art preparation to halftones and color separations to imposition sheets and binding. It won't make you an expert on anything, but it will acquaint you with everything . . . and it's cheap. Buy it.

Author Law and Strategies, Brad Bunnin and Peter Beren, Nolo Press

The Copyright Book: A Practical Guide, William S. Strong, MIT Press

Intellectual Property Dictionary, Stephen R. Elias, Nolo Press

These books cover not only copyright law but also libel law and other matters of interest to publishers. Whether you're publishing other people's words or your own, you need to know these things.

Design

Editing by Design, Jan V. White, R. R. Bowker Co.

When you become a desktop publisher of any kind, you have to deal with questions of design, whether you like it or not. Jan White's *Editing by Design* is an excellent introduction to page design if you've never had to deal with it before (or even if you have). His writing is clear, his designs clean, and his suggestions invaluable. This book makes no mention of computers or desktop publishing, and it is slanted toward magazine design, but its principles can be applied anywhere. If you don't already have some training in design, buy this book.

How to Spec Type, Alex White, Watson-Guptill Publications

This book explains how to talk to commercial typesetters in their own language. It also gives you some principles for using type effectively on a page, and in its examples it presents many interesting design ideas. If you're going to be working with a commercial typesetting house, you'll find this book valuable, though not absolutely essential. Even if you are going to use a laser printer for your final output, you'll find it useful.

Graphics

Mastering Graphics, Jan V. White, R. R. Bowker Co.

Using Charts and Graphs, Jan V. White, R. R. Bowker Co.

Like his *Editing by Design*, Jan White's *Mastering Graphics* is a clear, clean, and useful book, this time focused specifically on using graphics on a printed page. Again, the book makes no mention of desktop publishing and is slanted toward magazines, but its principles are applicable everywhere. If you're new to the world of graphics, it

PHOTO BY TODD TSUKUSHI

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will get you started in the right direction. Buy it.

If you're specifically interested in charts and graphs, you will want to look at his *Using Charts and Graphs*.

Production for the Graphic Designer, James Craig, Watson-Guptill

While text can be processed by computer with no loss in time, money, or appearance, the same is not always true of graphics. Especially in the case of photographs and other pre-existing art, you may find it easier and cheaper to use traditional halftone methods and manually paste them into your camera-ready pages just before you go to the printer. This book, like Dessauer's *Book Publishing*, is a little dated, but it's a useful overview of the traditional production process for graphic arts. Look for it in your local library.

When you become a desktop publisher, you become part of the larger world of publishing.

Text

Revising Business Prose, Richard Lanham, Scribners

Elements of Style, William Strunk, Jr. and E. B. White, Macmillan

You may or may not think of yourself as a writer, but as a desktop publisher, you are inevitably going to be involved with writing and editing text, either your own or somebody else's. Unfortunately, while it's easy enough to find books to help you with matters of correctness—spelling, grammar, usage—it's almost impossible to find books that will help you recognize lousy writing and do something about it.

The book most often recommended is Strunk and White's *Elements of Style*. But I think it's overrated (though I may be one of the few people in the United States who thinks so). When deadline time arrives, all Strunk and White's fine-sounding advice suddenly seems very cerebral. "Yes, I know this sentence sounds terrible," I mutter, "but what do I do about it?"

What I do is turn to Richard Lanham's "paramedic" method. It's direct and practical, and unlike Strunk and White, Lanham recognizes that the same style of writing is not applicable in every situation. Lanham has a second version of the book, called *Revising Prose*, which uses examples drawn from academia, but I prefer *Revising Business Prose* because the examples are closer to everyday life. This is one to buy.

Webster's New Collegiate Dictionary, G. & C. Merriam Co.

Oddly enough, you probably won't use a dictionary much for spelling, except for looking up the few words your spelling checker doesn't know. You're much more likely to use it to check hyphenation when you adjust line breaks on your page. The current edition of *Webster's New Collegiate Dictionary* is the standard at most publishing houses and typesetters across the country. Buy it, and make sure you get the Merriam-Webster from G. & C. Merriam Company—other companies put out a "Webster's" dictionary, too.

Roget's International Thesaurus, Thomas Y. Crowell Co.

If you work with words much, you'll need a good thesaurus (the printed kind—electronic thesauruses just don't make it yet). I use *Roget's International Thesaurus* because it's organized by association rather than alphabetically, but there are other good choices (including many with the title *Roget's Thesaurus*). Pick one that suits you.

Harbrace College Handbook, John C. Hodges & Mary E. Whitten, Harcourt Brace Jovanovich

Index to English, Wilma R. Ebbitt and David R. Ebbitt, Scott, Foresman and Company

A grammar reference book is no kind of fun, but you'll need one to settle tricky questions. These two are the most common, sold by the thousands at college campuses every semester.

The Careful Writer: A Modern Guide to English Usage, Theodore M. Bernstein, Atheneum

Books on word usage are tricky, because the concept of what is correct can change so quickly. Yet editors and other people involved in publishing words do have to make day-to-day decisions about how to say things ("different from" or "different than"?). These things matter the same way the clothes you wear matter—because of the impression they make on your audience.

Bernstein's book is better than many, but always use it in conjunction with your own ear for what sounds best.

A Manual of Style, University of Chicago Press

This book, published by the University of Chicago Press and usually known as *The Chicago Manual*, is the standard reference for copyeditors, proofreaders, typesetters, and the like. It covers all the arcane details that go into creating correctness and consistency of form in text—rules for hyphenation, capitalization, abbreviation, and address; styles for tables, bibliographic citations, and indexes; formats for poetry, long quotations, and footnotes; usage of quotes, commas, italics, and parentheses.

In some cases, you may find these matters of detail completely irrelevant to what you're doing, but if you need to know how to hyphenate classical Greek, look here first. Buy it.

Copyediting: A Practical Guide, Karen Judd, William Kaufmann, Inc.

In book production, and to a lesser degree in magazine or report production, a copyeditor's job is to make sure the manuscript is complete, correct, and consistent. This last job—establishing consistent form and usage that matches the "house style"—is a tedious, detailed, but essential business. If you want to know what professional copyeditors do and how to do it, this book will tell you.

Desktop publishing

The Art of Desktop Publishing, Tony Bove, Cheryl Rhodes, and Wes Thomas, Bantam

Desktop Publishing, Frederic Davis,

John Barry, and Michael Wiesenberg, Dow Jones-Irwin

Desktop Publishing, Ken Ritvo and Greg Kearsley, Park Row Press

Desktop Publishing from A to Z, Bill Grout, Osborne McGraw-Hill

These four books all give overviews of desktop publishing; they do not tell you specifically how to do things (how to lay out a page, how to get the most from your laser printer, etc.). If you've already started in desktop publishing, or if you've been following the many articles on the subject in computer magazines, you'll find these books too general to be useful. If you're intrigued by the sound of "desktop publishing" but don't know what it is or what it can do for you, go to your local library or bookstore, find the most recent of these books (one, at least, has already gone into a second edition), and read it.

Publish!, $39.90/year, P.O. Box 55400, Boulder, CO 80322, (800) 222-2990

Personal Publishing, $30/year, P. O. Box 390, Itasca, IL 60143, (312) 250-8900

Publish! and *Personal Publishing* are monthly magazines devoted entirely to desktop publishing and covering both MS-DOS and Macintosh systems. Both magazines are well worth reading—they provide the nitty-gritty information that the four desktop publishing books lack, and they are both examples of the art, produced using desktop publishing tools. *Publish!* is beautifully designed and executed and has an excellent design column, "Page Makeover," that's always worth reading. *Personal Publishing* is not quite so gorgeous, but it packs more information into each issue. It's also produced using a 300-dots-per-inch laser printer, so it shows what you can do with such relatively inexpensive equipment. Subscribe to both these magazines.

If any of you want to recommend additions or substitutions for this list, especially in graphics, I'd love to hear from you. If you have suggestions or questions, you can reach me via electronic mail through MCI Mail (TSILVEIRA) or CompuServe (72135,1447) or via land mail through *PROFILES*. Electronic mail gets a much faster response. If you want an answer via land mail, be sure to enclose an SASE.

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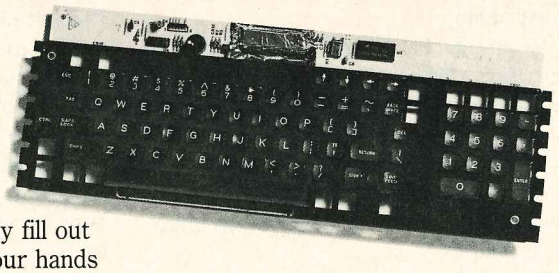

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PC Pursuit: The "Model T" of the '80s

by Brock N. Meeks

Let's face a brutal fact: Telecommunications costs too much.

If your online journeys take you beyond the local bulletin board scene, you've no doubt experienced the high price of services like CompuServe and Dialog. And you've probably choked on more than one long-distance phone bill.

These high prices aren't likely to drop, but there is a service bucking this trend and making telecommunications affordable: Telenet's PC Pursuit.

Online buffet

PC Pursuit offers what amounts to an "all you can eat" buffet of online time. The bottom line sounds almost too good to be true: For a flat fee of $25 a month you get an unlimited amount of online time during non-prime time hours (6 p.m. to 7 a.m.). That's it. There are no hidden costs, no other access fees. Use PC Pursuit for 25 minutes or 25 hours—the cost is the same.

To access PC Pursuit you dial into your local Telenet node. Once you see the Telenet @ prompt, you type in a PC Pursuit access code. These codes are really the area codes of the 25 metropolitan areas that PC Pursuit covers (more on this later). An access code looks like this:

C DIAL202/12,TLLN5989

This command tells Telenet several things: that you want to use the PC Pursuit network; that you want to call the Washington, D.C., area code (202); that you're using a 1200-bps modem (that's what /12 means; similarly, a /3 designates a 300-bps modem); and what your user ID number is.

The PC Pursuit network is not carried on Telenet's value-added network, or VAN, as it is commonly called. Instead, once Telenet recognizes that you want to use PC Pursuit, its computers switch your signal to a regular, voice-grade phone line. These voice lines, in turn, feed into standard 1200-bps modems, *not* the high-speed modems used by Telenet's VAN.

Modem tag

The PC Pursuit network is really a series of modem connections. To connect with a remote computer system, four modems are needed: yours, two in the PC Pursuit network, and the modem of the remote system.

This is how it works: Your modem dials into a local Telenet node, as previously described, and sends the access code and ID information to Telenet's main computers. After that information is processed, your signal is sent to a PC Pursuit modem in your local calling area.

This local modem then makes a long-distance phone call to another PC Pursuit modem in the local area of the system you want to contact.

When you are finally connected to the remote PC Pursuit modem you are given control over that modem, just as if it were sitting on your desk (or inside your computer). Using the standard Hayes command set, you tell the modem what you want it to do.

To dial, for example, you type **ATDT** and the number. The modem then dials and attempts to make a connection. If the number is busy, you get a "Busy" message on your screen. You can re-dial or try a different number. In essence, the remote PC Pursuit modem is your proxy; it's as if you were in that city making a local call.

Where you can call

At first blush, the number of metro areas (25) covered by the PC Pursuit network seems feeble. On closer inspection, however, PC Pursuit's coverage is hard to knock (unless your favorite out-of-state BBS happens to be in Roswell, New Mexico).

The remote PC Pursuit modem is your proxy; it's as if you were in that city making a local call.

Take a look at the following areas PC Pursuit covers and you'll see that not many major metropolitan areas are ignored: Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Glendale, Houston, Los Angeles, Miami, Milwaukee, Minneapolis, Newark, New York, Philadelphia, Phoenix, Portland, Research Triangle Park, Salt Lake City, San Francisco, San Jose, Seattle, Tampa, and Washington, D.C.

Given that coverage, I estimate that PC Pursuit can reach more than 70 percent of the nation's online systems. However, there is a small catch. (You've been waiting for this, right?) The system you're trying to reach must be within the local

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PHOTO BY R.S. POWERS

calling range of the remote PC Pursuit modem. In other words, if the system you're trying to connect with is a long-distance call for the remote modem, your call won't go through.

A good example of this limitation is the area covered by the 303 *access code*. The modems for this part of the PC Pursuit network are in Denver, Colorado. This means that any call using the 303 access code must be made to systems in Denver, or within Denver's local calling zone. Calls to computer systems in Colorado Springs (which has the same *area code* as Denver), for example, will not go through because Colorado Springs is a long-distance call from Denver.

Drop back and re-dial

I wish I could tell you PC Pursuit works flawlessly, but I can't. There's an unwritten rule in the telecommunications world: for every upside, there is a downside. PC Pursuit is no exception.

The first complaint you're likely to have about PC Pursuit is that it's tedious to use. For example, to connect with a remote computer system you have to type no less than 45 keystrokes. Fortunately, there's relief for this problem. Recently a small group of dedicated programmers developed a few public domain programs that automate the PC Pursuit connection process.

MS-DOS users will want to look for a file called APCP.ARC. This is a series of script files written in the script language of the shareware communications program Procomm. (Script files are small sub-routines specifically written to handle a particular task—in this case, automating PC Pursuit). However, you must use Procomm to take advantage of the script files.

In the CP/M world you can find two self-contained communications packages—PCP-26.LBR and PCPINC.LBR. You can find these programs on various BBSs, including Kaypro's KUG ROS (619/259-4437), or on CompuServe.

Another criticism of the service is that it is slow. That's a valid gripe, and frankly, there's no solution for it. Because each keystroke travels through *four* different modems, it's predictable that your overall throughput (data transfer speed) is going to suffer. For example, I've found that file transfers take up to 25 percent longer. That's a substantial loss, but you're not paying by the minute anymore, remember?

Putting PC Pursuit to work

The potential for PC Pursuit as a telecommunications workhorse is exciting. Multi-user regional networks, with their low online costs, already draw heavy usage from PC Pursuit users. The Whole Earth 'Lectronic Link in Sausalito, California, is one such system benefiting from PC Pursuit.

Where do I sign up?

Telenet makes it easy to sign up for PC Pursuit. Just use your modem and call the New User Guide BBS, at (800) 835-3001. The BBS gives you all the information you need on how to sign up. In fact, if you have your credit card handy, you can sign up online. (This is, however, another minor gripe of mine: You must pay with a credit card—there are no other payment options.)

Within a week Telenet sends out your user ID and password. That's all there is to it. You're billed on your credit card each month. A point to remember: you are charged $25 a month whether you use the network or not.

Another source of information is a BBS called PC Exchange (non-subscribers can call 703/689-3561; subscribers can access the board free, via a special Telenet node). This BBS includes news on recent PC Pursuit updates and other important information, such as the "best of the BBSs" listings for each metro area PC Pursuit services.

Market pressure

As I see it, PC Pursuit is a kind of information age "Model T" Ford. Whereas the Model T was the first affordable automobile for the public, PC Pursuit is providing the first affordable network for the public.

At least one other company thinks such a network is a good idea. Tymnet, one of Telenet's major competitors, is currently testing a similar service called PC Express.

This kind of competition should lead to other low-cost networks and ultimately make affordable telecommunications more widely available.

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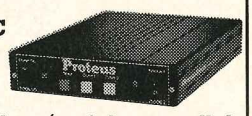

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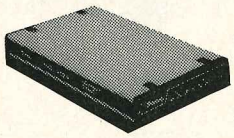

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The Ultimate in SHOW and TELL

A look at business presentation graphics software

by Jack Nimersheim

It begins innocently enough. You experiment a little with the graph option of Lotus 1-2-3 (or some similar function in your favorite spreadsheet or data base program) and suddenly, unexpectedly, you feel the bite of the graphics bug.

It's quite a thrill to actually see the results of complex calculations magically transform themselves into X- and Y-axis points on a line graph—or mystically divide themselves into the relative slices of a pie chart on a CRT display. And when designed properly, such graphics not only entertain, they can also enlighten, dramatically supporting that old cliché (updated for the modern age): "One graphic display is worth a thousand data listings."

Consider the following example:

	1984	1985	1986
1st Qtr.	$233,000	$350,000	$400,000
2nd Qtr.	$250,000	$330,500	$425,000
3rd Qtr.	$265,500	$400,000	$430,000
4th Qtr.	$320,000	$420,000	$500,000

This listing represents the three-year sales totals, of an imaginary company called Nimi, Inc., broken down quarterly. While it may be well-ordered and neatly typed, such a listing communicates little information about the actual performance of Nimi, Inc.—unless one is willing to sit down and spend time analyzing those dry columns of monotonous figures.

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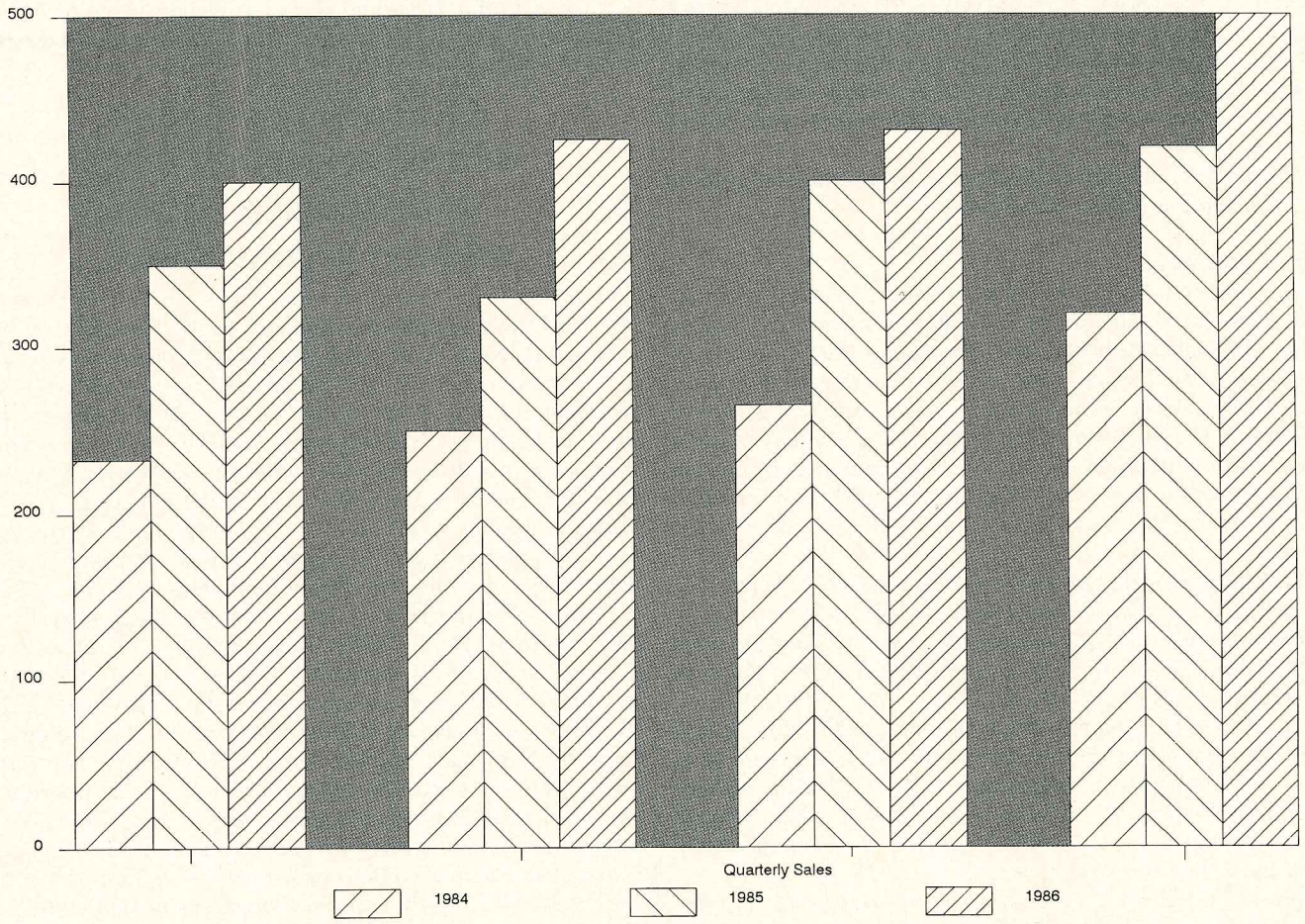
Suppose, however, that this data were instead used to generate a simple bar graph. What would this graph reveal?

Figure 1 represents just such a bar graph. Here a true overview of Nimi's performance begins to emerge. Using this *graphic* model of the original data, the true nature of the company's steadily rising sales trends becomes immediately and dramatically obvious—not only from one year to the next, but also within subsequent quarters of the same year.

FIGURE 1: Nimi, Inc. Sales Totals



At first it's exciting to see data thus represented on a PC monitor, or printed out as hard copy. But after a while, conventional bar graphs and pie charts generated by the built-in graphics capabilities of Lotus and other general software packages begin to look primitive. They seem less than ideal for the types of professional presentation graphics most business applications require.

That's when the inevitable question arises: Where do you go from here?

An entire category of software has evolved over the past few years in response to this problem. Alternately referred to as "business graphics packages," "dedicated charting software," or simply "graphics software," these programs were created for the sole purpose of generating visually appealing representations of otherwise mundane data. Ranging in cost from just under $100 to well over $1,000, such programs offer capabilities and features as wide ranging as their prices. It is beyond the scope of this article to review all of these packages individually, but we will introduce some general concepts universal to such programs, and we'll discuss specific points you should consider before deciding which graphics package can best fulfill your needs. A listing of 13 popular business graphics packages, including their retail prices and minimum memory requirements, accompanies this article. Also included are brief profiles of three representative programs from this listing—CHART-MASTER, Harvard Presentation Graphics, and Energraphics.

What you see

The type of video hardware installed in a system determines, to a large extent, the quality of presentation graphics that system is able to produce. (See accompanying article, "The Words Behind The Pictures," on page 20.)

Driving business graphics with a monochrome display adapter (MDA) is kind of like pulling a Porsche down the expressway with a couple of old plow horses—some insist it's counterproductive to run a business graphics package using anything less than an Enhanced Graphics Adapter (EGA) display. It's true that the EGA standard offers a combination of color capabilities and high-end resolution ideal for displaying

presentation graphics, but the EGA is still at the high end of the price structure—an EGA card and the mandatory high-resolution monitor cost $700 to $1,100. The decision about which video display to buy is often dictated more by financial considerations than personal preference.

For many, the choice boils down to the more common and less expensive Color Graphics Adapter (CGA) and Hercules Graphics Card standards. The determining factor in this decision is color versus clarity.

CGA allows you to use color to add excitement to presentation graphics, but this is accomplished at the expense of image resolution. Circles and other curved-line figures end up with a jagged appearance some people find distracting. If color is not critical, a better alternative might be the Hercules standard. Even though it limits the user to a monochrome-only graphics, the image resolution (720 x 348 pixels) surpasses even that of an EGA display.

The majority of business graphics packages support all three of these popular display standards.

What you get

The fundamental concept behind most dedicated charting programs closely mirrors the Lotus /Graph command. That is, these programs translate designated data into a variety of graphic representations—bar graphs, pie charts, line graphs, and the like. Most charting programs include a wider variety of charts and graphs from which to select the best format for a specific presentation; 3-D bar, high-low, and area graphs are only a few of the additional graph styles these programs offer. Some even allow for the creation of Gantt and organization charts.

The true power of a business graphics package, however, lies in its ability to enhance those rudimentary charts and graphs, to refine them to a degree impossible to attain using a general applications program. Here a dedicated business graphics package really begins to shine.

Labeling data elements, often a tedious and confusing task using standard applications programs like Lotus, can be as simple as entering text directly onto the graphic. Also, a wider selection of font styles and sizes is generally available for such labeling. The use of multiple fonts greatly increases the visual impact of a graphics presentation.

Beyond simplifying data labeling, charting programs also offer greater control over the appearance of the graph or chart itself than spreadsheets, data bases, or even integrated packages containing a graphics module. Depending on the video display being used, a wider variety of colors is available for color systems. Graphics are further enhanced because most dedicated charting software uses a high-resolution, bit-mapped display format. Many programs even offer the option of rotating a display on one or more axes. In this way, the perspective from which a graph or chart is viewed can be adjusted for greater clarity and impact.

Finally, several business graphics packages (including the three profiled here) contain a "paint" module. This option allows the user to approach presentation graphics in much the same manner in which an artist approaches the canvas—the user's control over the appearance of the finished graphic is total. But this last option can't create artistic talent—if you don't have such talent, "paint" functions are superfluous.

What goes in

The data used to generate a graphic can come from several different sources. Many people swear by their spreadsheet programs, while others find that data base software best suits their specific information-management needs. Most programs—spreadsheets, data bases or word processors—structure their data files in some unique manner, slightly different from other programs. When the same data is to be shared by different programs, such minor differences become critical.

All dedicated charting software allows for manual entry of the data from which graphics are to be generated, but this can become a quite monotonous and time-consuming task. A better solution is some form of data import: The ability of one software package (in this case the business graphics program) to read data directly from a file created by a second software package—say a spreadsheet or data base. By the same token, the program in which data is stored must be capable of creating files in a format compatible with the dedicated charting software, and of successfully exporting its data to a given business graphics package. For these reasons, extreme care must be taken when selecting the various software components of a comprehensive business graphics system.

All charting software allows for manual entry of data, but a better solution is data import.

By far the most common format for importing and exporting data is a standard ASCII file. Most popular spreadsheet and data base software can create ASCII files. Similarly, the majority of programs listed here can import data from these ASCII files and use it to create presentation graphics. Other popular import file formats include WKS (Lotus 1-2-3), DIF (Data Interchange Format), DBF (dBASE), and VisiCalc files. Some packages require a utility program to import data, while others have this capability built into the main program. Programs utilizing the former method require an additional, time-consuming step to import data. This should be considered when choosing a graphics program.

Other methods of entering data to a graphics program include several popular mouse systems and various pad and/or tablet input devices. Again, it is important to determine whether an individual package supports your specific hardware configuration.

What comes out

The ultimate purpose of using a business graphics package, of course, is the actual presentation of the materials—the charts, graphs, and possibly text screens—that package was used to create. A wide variety of presentation formats are available.

Most obvious, of course, is an onscreen presentation of charts and graphs at the computer terminal. A common practice is to use the computer like a slide projector to display graphics ("slides") and analyze their contents. An attractive

(continued on page 20)

Popular Packages

A BAKER'S DOZEN

Boardroom Graphics
Analytical Software, 10939 McCree Rd., Dallas, TX 75238, (214) 340-2564; $150.

This menu-driven program requires 192K and can merge pie chart and Lotus 1-2-3 files. It comes copy protected on two disks. It supports the major plotters, laser and dot-matrix printers, and the Polaroid Palette image recorder.

Freelance Plus
Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142, (800) 345-1043; $495.

Freelance Plus requires 384K and creates all common business charts. It allows limited free-form drawing and has a library of more than 300 symbols. It also has help menus and supports major image recorders, laser, color and dot-matrix printers, and plotters.

GEM Graph
Digital Research Inc., 60 Garden Court, Monterey, CA 93942, (408) 649-3896; $249.

GEM Graph uses the GEM Macintosh-like interface. It can create pie, line, area, bar, and 3-D bar charts, map charts and symbol graphs. It requires other GEM applications to reach its full potential. GEM Graph needs 320K and supports major plotters, laser and dot-matrix printers, and image recorders.

Graph-in-the-Box
New England Software Inc., Greenwich Office Park, #3, Greenwich, CT 06831, (800) 633-2252, x7012; $99.95.

This RAM-resident program allows you to graph using data displayed on the screen. A special key sequence causes this program to "pop up" in the middle of any application. It requires 256K, supports most major laser and dot-matrix printers and plotters, and is not copy protected.

DataEase GrafTalk
DataEase International, 12 Cambridge Dr., Trumbull, CT, 06611, (800) 243-5123 or (203) 374-8000; $395.

This program requires 256K and supports all basic graph and chart types. It has its own graphing language and dBASE-like interpreter. DataEase is menu or command driven, and it supports the major laser and dot-matrix printers, plotters.

Graphics Express
Bell & Howell Co., Quintar Division, 411 Amapola Ave., Torrance, CA 90501, (800) 233-5231; in CA (213) 320-5700; $895.

Graphics Express requires 384K and is designed for the experienced computer user. ASCII, DIF and SYLK files can be imported. This program can generate every type of chart or graph except an organization chart, and it supports the major laser and dot-matrix printers, plotters, and image recorders.

Graphwriter
Lotus Development Corp., 55 Cambridge Pkwy., Cambridge, MA 02142, (800) 248-8002; $495.

Graphwriter has 28 basic chart formats. It is menu driven and will import SYLK and DIF files. It needs 256K and supports most of the major dot-matrix printers and plotters, the HP LaserJet, and the Matrix PCR and QCR image recorders.

PCchart
Aztek, 17 Thomas, Irvine, CA 92718, (714) 770-8406; $695.

PCchart is a copy-protected program that requires 448K and cannot run from a hard disk. It imports DIF, ASCII, and WKS files. The program can access up to 14 million colors. PCcharts' data is sent directly to a service, which creates the graphs in the form of slides or transparencies.

Perspective
Three D Graphics, 860 Via de la Paz, Pacific Palisades, CA 90272, (213) 459-7949, contact: Celia Brawley; $295.

Perspective allows you to create 3-D graphs and charts. Output is available only in black and white on a laser or dot-matrix printer or an image recorder. It requires 512K, and can import data from ASCII, SYLK, WKS, WK1, IMG and DIF formats.

Picture Perfect
Computer Support Corp., 2215 Midway Rd., Carrollton, TX 75006, (214) 661-8960; $295.

Picture Perfect creates vertical bar, horizontal bar, pie, line, and combined bar/line charts. It requires 448K, imports ASCII and DIF files, and supports popular laser and dot-matrix printers, plotters, and image recorders.

Slide Expert
Autographix Inc., 100 Fifth Ave., Waltham, MA 02154, (800) 548-8558, in MA (617) 890-8558; $249.

Slide Expert creates bar, pie, line, or area charts. It will print output on most dot-matrix printers and the HP LaserJet printer. For 35mm slides, transparencies, or color prints you must send out to a processing center. It's menu driven and requires 256K.

SuperImage
Computer Associates, 10505 Sorrento Valley Rd., San Diego, CA 92121, (619) 452-0170; $495.

SuperImage is a non-copy protected free-form drawing program. You can manipulate shapes, figures and graphs using either a Microsoft or Mouse Systems mouse. It can import CGM graphics files and creates lines, text, polygons or squares, and bullet word charts. SuperImage requires 320K and supports most dot-matrix printers, plotters and image recorders.

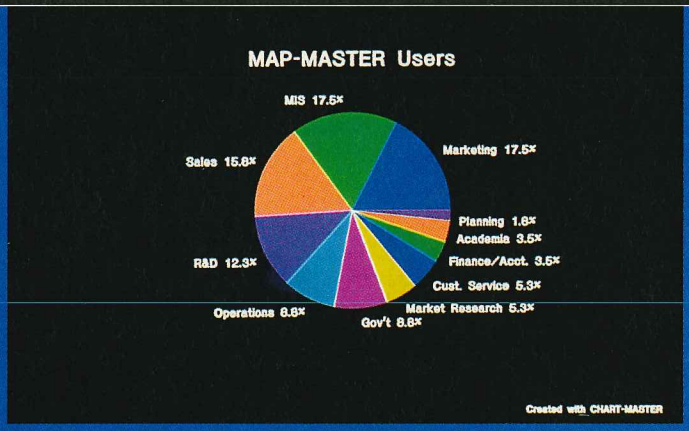
SuperChart
Computer Associates, 10505 Sorrento Valley Rd., San Diego, CA 92121, (619) 452-0170; $395.

SuperChart creates clustered, stacked, bar, pie, line, area and scatter charts. It can import data from most major programs. SuperChart also creates TELAGRAF script files, and it supports most color and dot-matrix printers, and plotters.

Sampling the Samples:

The following products were chosen for review because they are among the most popular and offer an idea of the range of features—and limitations—to be found in presentation graphics software. These profiles are not full reviews and do not offer a complete picture of the products covered.

CHART-MASTER

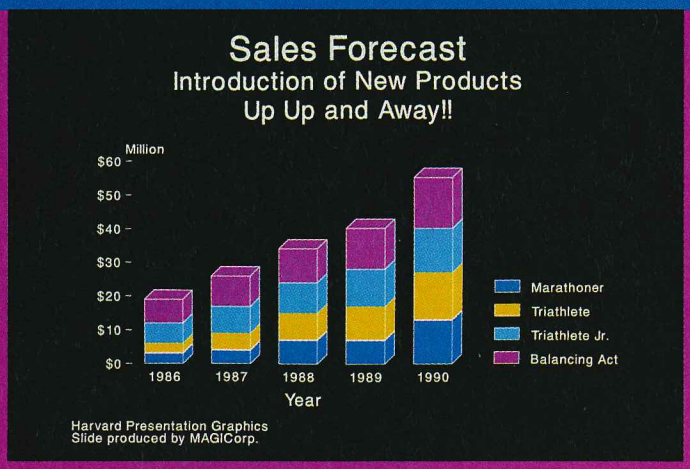


Product: CHART-MASTER
Manufacturer: Ashton-Tate
20101 Hamilton Ave.
Torrance, CA 90502-1319
Phone: (213) 329-8000
Sugg. List Price: $375

CHART-MASTER is currently available in version 6.22. That fact identifies this program as one of the premier PC graphics packages. Thanks to Ashton-Tate's constant and comprehensive upgrade policy, however, CHART-MASTER has managed to keep pace with its younger competition, despite its "old-timer" status.

CHART-MASTER requires 256K RAM (320K RAM with printer or Polaroid Palette optional output), one 360K disk drive, and PC/MS-DOS 2.0 or later. It can be used with the following types of displays: IBM Monochrome Adapter (MDA), CGA, EGA, and Hercules monochrome card. It offers bar, stacked column, line, scatter, high-low, area, pie chart, and exploding pie chart graphics. Output options include dot-matrix, ink jet, and laser printers, plotters, Polaroid Palette and HP 7510A image recorders, and the Video Show 160

HARVARD PRESENTATION GRAPHICS

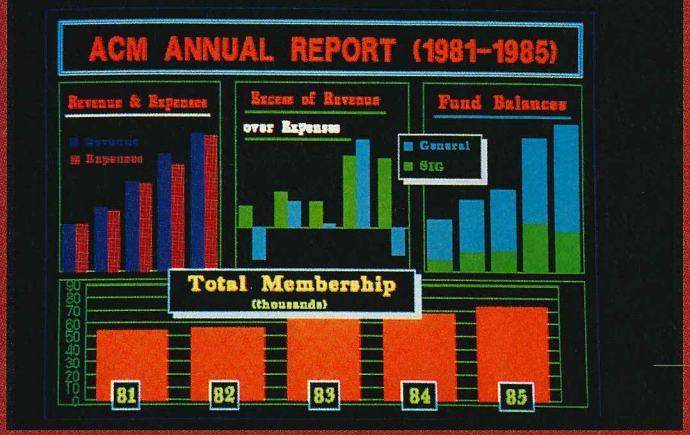


Product: Harvard Presentation Graphics
Manufacturer: Software Publishing Corporation
1901 Landings Dr.
Mountain View, CA 94043
Phone: (415) 962-8910, contact: Tess Reynolds
Sugg. List Price: $395

Harvard Presentation Graphics stands head and shoulders above other packages in its price range for several reasons. The first and most noticeable of these is the program's user interface. The entire process of creating a graph is completely menu driven, from the initial query about what kind of graph is desired, through data entry and text labeling, all the way to specifying printer or plotter output, if desired. Yet the elegant simplicity of such an approach does not seem to overly limit the capabilities of this package.

This package requires 256K RAM (384K RAM with VDI device), two 360K disk drives or a hard disk, and DOS 2.0 or later. It can be used with CGA, EGA, or the Hercules monochrome card displays, and it offers the following types of graphics: bar, stacked bar, overlapped bar, 3-D bar, scatter, high-low, area, pie chart, exploding pie chart, and organization chart. Output options are dot-matrix, ink jet and laser printers (PostScript interface); plotters, and Polaroid Palette

ENERGRAPHICS



Product: Energraphics
Manufacturer: Enertronics Research, Inc.
1910 Pine St.
St. Louis, MO 63103
Phone: (800) 325-0174
Sugg. List Price: $595

Energraphics is another charting program that has been around for years. Like CHART-MASTER, Energraphics wears its age well. In terms of ease of use, sheer power, and display quality, Energraphics stands up well against the competition. The program's ability to create Gantt charts for project planning attests to the fact that this program takes its business applications seriously.

Energraphics requires 384K RAM, two 360K disk drives or a hard disk, and DOS 2.0 or later. It can be used with IBM monochrome adapter, CGA, EGA, and Hercules monochrome card displays. It offers the following types of graphics: bar, stacked bar, overlapped bar, 3-D bar, line, scatter, high-low, pie chart, exploding pie chart, and Gantt and organization charts. Output options are dot-matrix, ink jet, and laser printers; plotters, Polaroid Palette and HP 7510A image recorders, and the Video Show 160 presentation system.

THREE PRODUCT PROFILES

presentation system.

Even a novice will find CHART-MASTER an easy program to use for designing excellent graphics with very little effort. For the advanced user, however, there are nine screens of options available to greatly enhance the appearance of charts and graphs. These include axis scaling, user-defined placement of data elements, access to an extensive symbol library, and a floating-legend option. This last option allows text to be added to a graphic even after its basic format has been designed.

CHART-MASTER's biggest drawback is that it does not recognize subdirectories, thus forcing graphics to be stored in the same directory as all the program files. Over time, or during the course of a single large project, this can cause a lot of confusion. A second consideration for the hard disk user is the fact that Ashton-Tate holds onto an antiquated copy-protection policy, long after most other companies have eliminated this inconvenience.

CHART-MASTER allows an unlimited number of charts to be printed on a single page. Practically, this capability is restricted somewhat by the dictates of good design layout. Still, it is a useful feature for certain business applications where comparative charts are most effective if placed in close proximity to one another.

Eight font styles are available in 16 different point sizes. Boldface, italics and underlined text are also supported.

CHART-MASTER automatically detects when an EGA card is installed and adjusts its display accordingly. One powerful function is the ability to print or plot charts from a batch file. This allows for the automation of most printing operations and frees the user to concentrate on other tasks. ASCII, DIF and SYLK files can be imported into CHART-MASTER using the program's Datagrabber utility.

Overall, CHART-MASTER is a dependable, easy-to-use program, appropriate for both the novice and advanced user.

and other image recorders.

The PC function keys are used extensively. For example, the F2 key displays a preview chart at any time during a chart creation session. This is convenient for putting the finishing touches on a graph or chart. Font attributes, such as boldface and italics, are selected with the F5 key, while the F7 key is used to adjust the point size of labels and text.

The Harvard Presentation Graphics package does exhibit one major shortcoming: While text enhancements and size options abound, only one font style can be incorporated into any single graphic.

The program directly imports data files stored in either ASCII, WKS or PFS:Graph format. It can even read a Lotus 1-2-3 PIC file to the screen for further enhancement. Since Harvard Presentation Graphics is from the same company that distributes the PFS: software series, its graphs can be easily merged into a PFS:Write document.

Harvard Presentation Graphics is one of the programs with primitive animation capabilities. A special module called the Presentation Manager allows up to 49 individual screens to be linked to one another as a single graphics presentation. Time delays can be specified for each screen.

Unlike CHART-MASTER, Harvard Presentation Graphics does recognize hard disk subdirectories. This permits the user to organize work into manageable components and is especially useful when several projects are being worked on concurrently. The program is not copy protected.

Harvard Presentation Graphics charts produced on a high-quality plotter display incredible detail and can easily be used for preparing truly professional looking, multi-colored overhead transparencies. The program's VDI serial interface allows output to a Polaroid Palette for creating 35mm slides.

With its 3-D graphics capabilities, quality output and menu-driven command structure, Harvard Presentation Graphics represents an extremely powerful yet easy-to-use program that delivers more "bang for the buck" than most of its cousins. With the right hardware configuration, here is a business graphics package that's hard to resist.

An opening menu lists Energraphics's four major program functions: Graph, Draw, Support, and Utilities. The Graph option is used to create display screens. Within this Graph module, a series of menus on the upper right-hand corner of the monitor keep the user apprised of the program's available options. When a menu item is selected, a second menu appears that contains that item's available functions. This kind of onscreen guidance makes designing a chart with Energraphics a fairly straightforward operation.

Primary functions of the Graph options include Create/Edit Data, Create/Edit Scales, Create/Edit Text, Draw Chart, and Customize Graphics. This last option allows for extensive customization of charts, graphs, and text screens created with Energraphics. Individual data items and their elements (label, color, hatching pattern, etc.) can be edited and even relocated using this Customize option.

One unique aspect of Energraphics is its ability to merge up to four graphs into a single graphic display whose format is user-definable. This is similar to the page layout capabilities of many desktop publishing packages, though not as flexible or powerful. If one of the original graphs is edited, any changes are automatically incorporated into the corresponding merge screen.

Despite all its strengths and subtleties, however, Energraphics demonstrates some conspicuous deficiencies. It is one of the few charting programs unable to import ASCII files, a glaring oversight. Furthermore, Energraphics' Draw facility, a paint program that allows for the freehand creation of intricate screens, is totally isolated from the main Graphing functions. It can't even be used to edit already created screens. Were this Draw facility integrated with the program's other modules, Energraphics would easily occupy the top spot on any listing of ideal business graphics packages. As it is, even given all its power, one can't help but feel a little disillusioned with Energraphics; it's a natural tendency to contemplate "what might have been . . . "

(continued from page 16)

and professional presentation can be organized easily using nothing more intricate than this "slide show" approach. Even if that were the only presentation method available, the quality of graphics generated by most of these programs would still justify their purchase. But some business graphics packages go a step farther by adding additional support for primitive animation capabilities. A tenacious user can work virtual magic on a computer monitor with a sophisticated graphics program possessing such functions.

It's also possible to print hard copies of graphics with dot matrix, letter-quality, and laser printers—although, of course, what you'll get in most instances is black and white, not the colors you see onscreen if you have a color monitor. (There are some color dot-matrix printers out there, and some graphics programs do support them.)

There are other drawbacks besides lack of color. Dot-matrix printers print at relatively low resolution. Letter-quality printers may be great for correspondence, but they don't print graphics well and are almost never used with graphics programs.

Laser printers, on the other hand, may print only one color, but they operate quickly and quietly and can print graphics at a resolution of 300 to 600 dots per inch.

Remember that the printer or plotter influences the quality of hard copy more than the graphics package.

Besides monitors and printers, there are two other output devices that create quality graphics for presentations: plotters and image recorders. A plotter is a computer peripheral that draws high-resolution charts or graphs by means of a mechanically controlled pen or marker. Plotters can produce quality output on a variety of surfaces, including transparencies and vellum. A film recorder is a device that accepts data from a graphics program and creates quality, high-resolution color slides or transparencies. When using a film recorder, graphics software transmits an image that is directly put on film, bypassing the relatively low resolution of video displays.

The ability to produce professional looking printed documents is vital in any business environment. For this reason a wide variety of printers and plotters are supported by most graphics packages, including some laser printers. Remember, however, that the printer or plotter being used exercises a greater influence on the quality of hard copy than the graphics package itself; not even the most powerful graphics program can duplicate laser-quality output on a nine-pin, dot-matrix printer. However, the right hardware/software configuration (for example, a multi-pen plotter and Harvard Presentation Graphics) easily generates colorful, attractive hard copy of excellent quality.

(continued on page 27)

THE WORDS BEHIND THE PICTURES

A brief glossary of graphics terminology

ASCII: Acronym for American Standard Code for Information Interchange; a translation standard in which a number represents a specific command or character. For example, the ASCII value 36 is universally accepted as representing the dollar sign character ($). ASCII code is the most common method of transferring data between different programs on a personal computer.

Bit-mapped: A system in which each individual pixel of a graphics display is defined by a consistent number of memory addresses (bits) in your computer's RAM. While bit-mapped systems generally allow greater precision in designing and generating a graphics display, there is a trade-off: Large files are required to store each graphic, and the amount of processing time it takes to redisplay these files greatly decreases the speed of a graphics presentation.

Display Standards: A wide variety of display modes, differentiated by the resolution and color capabilities of specific hardware configurations. While numerous graphics display standards exist, the three most popular are the Color Graphics Adapter (CGA) standard, 640 x 200 (two-color) or 320 x 200 (four-color) pixels; the Hercules Graphics Card (HGC) monochrome-only standard, 720 x 348 pixels; and the Enhanced Graphics Adapter (EGA), which allows a display resolution of 640 x 350 pixels, with color. As mentioned in the article, it's vital to verify that any graphics software packages you purchase support the display mode(s) available with your specific hardware configuration.

Fonts: The appearance of text, defined by its style and size. Several graphics packages permit a variety of type fonts to be integrated with a graphics display for insertion of titles, expository text, labeling of data components, etc.

Palette: The number of colors available for a graphics display, generally limited by either the hardware configuration or software package being used.

Pixel: A contraction for "picture element," the smallest point capable of being displayed on your screen. Both text and graphics are composed of various combinations of individual pixels.

Resolution: The fineness of detail (maximum number of pixels) possible within a specific display mode. See Display Standards.

THE ADVANTAGE ENHANCED

Kaypro Corporation — electronics innovator since 1952 — has made a good thing even better. The KAYPRO 286i Model C now features a 40-MB hard drive and the 101-key AT-style keyboard. With the latest standard feature enhancements, the KAYPRO 286i is the smartest choice in advanced computer technology.

Advanced.

The heart of the KAYPRO 286i is the 80286 microprocessor — with a processing rate of 10 MHz and 640 kilobytes of RAM. The perfect match for today's high productivity software.

And Enhanced.

The KAYPRO 286i Model C has a 1.2-MB floppy disk drive, plus a hard disk with 40 MB of storage. The KAYPRO 286i AT-style keyboard features the new 101-key layout with separate cursor control, numeric keypad, and 12 programmable function keys.

Perhaps the nicest surprise about the KAYPRO 286i/C is the suggested retail price of $2995.

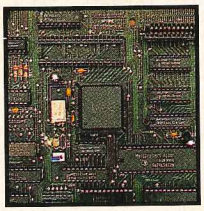
You won't find distinctive metal construction, 10-MHz processing, and free name-brand software that includes WordStar Professional Release 4 in any other AT-type computer. Other company's extras are Kaypro standard features.

KAYPRO®
COMPUTERS
The Future's Built In

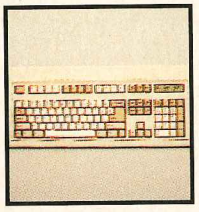
KAYPRO Lease-Link
Kaypro's Commercial Leasing

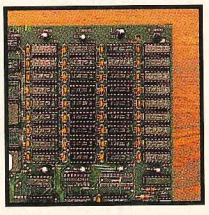
Kaypro's Revolving Charge Plan

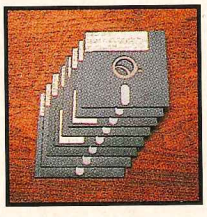
The KAYPRO 286i Model C features...


80286, 10-MHz Microprocessor.

An internal hard disk drive with 40 MB of storage.


Enhanced 101-key IBM PC/AT-style keyboard with security keylock.


640 KB of RAM; expandable to 15 MB.


Bundled software includes WordStar Professional Release 4.

Trademarks: 286i, Kaypro Corporation; IBM, AT International Business Machines; WordStar Professional Release 4, MicroPro International.

For the Kaypro Dealer near you, call 1-800-4KAYPRO.

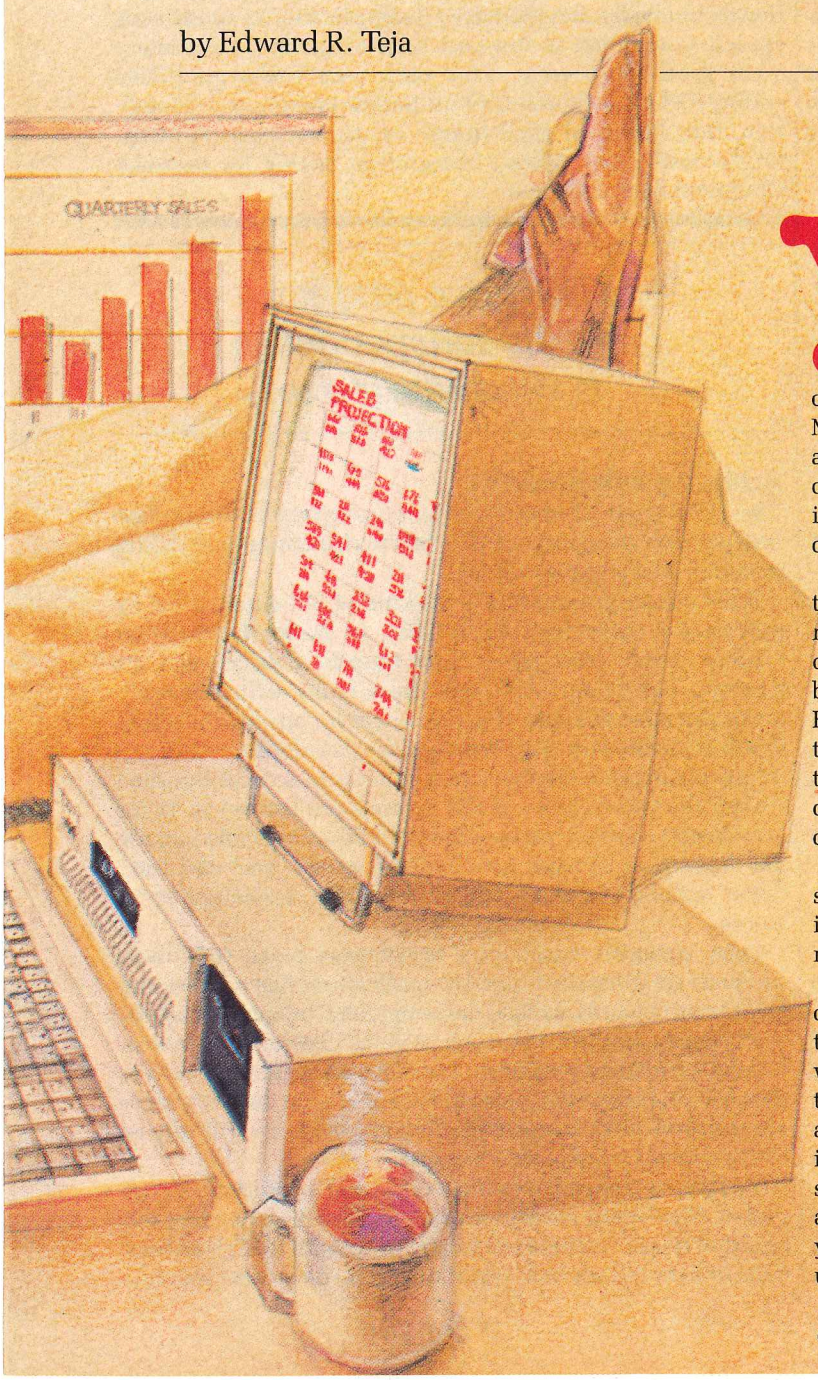
made in U.S.A.

ILLUSTRATION BY ED ABRAMS

"Computer, Take a Memo"

An overview of voice-input technology

by Edward R. Teja



You have to be careful what you say about computers these days—one might be listening.

But that's all right. From the beginning of our love affair with computers we have known that the fantasy wouldn't be fulfilled so long as a keyboard came between us and our beloved computing machines. Movies haven't helped, either. HAL's dialogues with humans and the casual interaction of the crew of the *Enterprise* with a chatty onboard artificial intelligence have further and firmly implanted the expectation that we should be able to talk to our computers.

Actually, the idea that you should control your computer by talking to it isn't unreasonable. Speech is, after all, the communication medium of choice—the most natural way to express desires and decisions. Although thousands of our fellow beings might not read at all, nearly all of us talk. And quickly. Even the best typists talk faster than they type. More important than speed, however, is computer access. Because an inability to use computers on at least an elementary level may prove crippling in the very near future, fears of illiteracy often are couched in terms of computer illiteracy.

The technology and products required for practical low-cost speech recognition have only slowly emerged, but large and inexpensive memory chips and powerful microprocessors are making limited voice recognition an affordable reality.

The operative word is "limited," notwithstanding the IBM commercials that would lead you to believe a computer knows the difference between a period (the punctuation mark) and the word "period." Furthermore, there are few vendors with long track records, few installations outside of expensive industrial applications, and no organized, industry-wide approach to improving low-cost speech recognition. Each vendor has solved industrial-strength problems in a unique fashion; and although the vendors will stand behind the products they sell, you are pretty much on your own in terms of making them useful add-ons to your computer system.

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The technology of hearing

First of all, the correct term is *speech* recognition, not *voice* recognition—these peripherals recognize spoken words, not voices. There are voice recognizers, used primarily by law enforcement agencies in acoustic forensics applications, but that isn't what we're talking about here. We're talking about electronic ears—speech recognition.

The fundamental process of computerized hearing is the decomposition of a sound into frequency bands across the audible range. A spectral analysis shows how much energy is in each of the frequency bands at each point in time during the utterance of a word or phrase. This is a reasonable beginning to computerized speech recognition because that is exactly how the human ear works. We tend to imitate what we know works.

The technologies for making this analysis range from general-purpose digital-signal processing (DSP) chips, such as Texas Instruments' TMS 320, to special recognition chips that contain as many as 16 spectral filters (such as Interstate Voice Products' ASA16 chip). However the analysis is done, the trick is to partition the signal energy into frequency bands that contain useful information.

Creating dependency on the speaker

Speaker-dependent recognition (SDR) is the state of the art in low-cost systems (that is to say, systems that can be afforded by individuals and organizations not empowered to levy taxes). Such systems can recognize up to several hundred words—the system's vocabulary—and you decide what the vocabulary will be. Training software that comes with the system prompts each user to repeat each word in the vocabulary from one to four times (depending on the training software) to store voice patterns.

During actual use, the recognizer identifies spoken words by comparing the patterns of incoming words to these stored patterns. Within user-adjustable limits, the word in the system's vocabulary that most closely matches the incoming word pattern is considered the "correct" word. This pattern matching is the heart of what we call speech recognition.

Because each of us pronounces words differently, recognition is uncertain if a user tries to use patterns stored by someone else. Each speaker must train the system to recognize the way he or she says the words in order for recognition to be accurate—hence the term speaker-dependent recognition. Variety may be the spice of life, but it's the bane of accurate recognition.

Being discrete

Most recognizers, especially those priced below $500, recognize only discrete words, which means that words must be spoken individually (discretely), with pauses between words, to give the recognizer a chance to find the end of the word. The Interstate ASA16 chip, for instance, needs 160 milliseconds of quiet at the end of an utterance before it will assume that the utterance is complete. In essence, you are helping the recognizer in the same way you might help a foreign speaker understand what you are saying by . . . .speaking . . . .more . . . .slowly . . . But this is forced and unnatural. We want the system to do the work without our help. At least one of the challenges to recognition vendors, therefore, is to move from the recognition of discrete words to recognition of connected words and finally to continuous-speech recognition.

Connected-word recognition systems are the next step up the ladder. They can recognize a few words spoken at a normal pace (perhaps three or four), and then they require a pause for the system to catch up.

Continuous-speech recognizers are the creme de la creme. This is what we think of when we think of computerized speech recognition—a system that can recognize words and phrases the way we actually speak them when we talk to each other. Stringing any number of words together into a sentence shouldn't confuse a continuous-speech recognizer, but it could cause numerous misrecognitions (or no recognition) in a discrete recognition system.

Votan, a long-time innovator in the development of recognition technologies, has pioneered the application of continuous speech recognition in low-cost systems using a proprietary VLSI speech processor. This chip uses linear-predictive coding (LPC) algorithms to mimic human hearing and recognition. But, like most good things, continuous speech recognition costs more: Votan's recognition boards for personal computers start at $1,800.

The price paid for speaker independence is vocabulary size.

Achieving independence

The Holy Grail of speech recognition systems is speaker-independent recognition (SIR); this performance level is still more talked about than offered.

What you might run into is the kind of SIR exemplified by proprietary chips from firms such as Audec Corporation (Saddle Brook, New Jersey) and Interstate Voice Products (Orange, California). Although these chips will accurately recognize most speakers, the price paid for speaker independence is vocabulary size. Whereas speaker-dependent recognition easily accommodates vocabularies of several hundred words, the vocabularies of SIR systems are limited to 12 (or even fewer) words. These small vocabularies typically include the digits zero through nine and the words "yes" and "no." Some include the word "oh" to raise the vocabulary to 13 words.

Such stringent vocabulary restrictions mean that these products are generally limited to applications that only require a few control words, such as voice-operated telephone dialers, and security applications, such as voice-controlled combination locks and entry systems. For office applications, such as data base management, vocabularies of at least 30 to 80 words are required. This means that office applications will rely on SDR systems for some time to come.

Vendors will encode customized vocabularies, but the high cost of developing vocabularies for speaker-independent recognition doesn't make sense except in extremely high-volume consumer or industrial applications. As early as next year toys

could be on the market with true speaker-independent recognition (Worlds of Wonder, the makers of the talking Teddy bear Teddy Ruxpin, plan an introduction), but a practical plug-in card for your computer is a lot farther away.

Doing without independence

The lack of SIR in a personal computer, especially in an office environment, is not necessarily a problem, or even much of a limitation. It might even be a benefit. Because speech recognition systems make the computer easily accessible, a speaker-dependent recognizer provides a certain level of protection. Not only can you password-protect your files, you also get the extra protection of requiring that the system recognize a spoken password. It isn't complete privacy, and you can't count on the system not recognizing an interloper saying your password, but speaker dependency combined with a password provides an extra measure of security.

And then there are upgrades. Just because a computer began life with a speaker-dependent recognizer doesn't mean that it must always remain so. Votan has introduced a new level of application flexibility by offering SIR as an optional add-on card for its otherwise speaker-dependent voice-recognition board. You can start using the recognizer with speaker-dependent recognition, to create a prototype perhaps, and then, if the vocabulary restrictions aren't too severe for the application, equip production models with speaker independence.

Mixing input technologies

Combining the new input technology (speech) with the old (keyboard) has been the strategy of Key Tronic for a few years now. An early vendor in voice-input peripherals, Key Tronic has adopted the simplest strategy—replace the old-style keyboard with one that incorporates a speech recognition system, can intermix keystrokes with as many as 160 (SDR) recognized utterances, and pass both to the computer at 9600 baud. The computer neither knows nor cares whether the input was produced by speech recognition or old-fashioned keystrokes. This makes it easy for you to enter a spoken command, type some data through the keyboard, and then enter another voice command.

This strategy makes the technology of recognition totally external to the computer, although the training software comes on a floppy disk. You'll have to train the system (to create your vocabulary) and then download the vocabulary to the keyboard.

But most speech recognizers for personal computers are plug-in SDR boards, rather than replacement keyboards. And there are a couple of good reasons for separating the input functions: It seems wasteful (and expensive) to replace a perfectly good keyboard when you don't have to, and plug-in boards can usually offer better performance because they can take advantage of your computer's larger memory.

The Voice Connection's IntroVoice VI board, for example, provides voice I/O for IBM PC/XT/AT and compatible computers on one card (giving you speech *synthesis* as well as recognition for such tasks as automated phone answering). The board comes with system software and drivers that let you create a vocabulary and that provide virtually the same keyboard transparency you get from the Key Tronic peripheral.

By using the same recognition technology as the Key Tronic keyboard (both use the Interstate ASA16 recognition chip) but putting the recognizer inside the computer instead of the keyboard, the IntroVoice VI offers somewhat faster and more flexible voice input and a significantly larger (400-word) vocabulary. Also, the IntroVoice plug-in board is substantially cheaper—but its operation requires 64K of system RAM for the recognition algorithms and storing of the vocabulary patterns.

Of course IBM itself is not missing out on the recognition market, but in terms of price and performance the IBM product is clearly targeted at the office equipment market (more on this board later)—and not the particularly cost-conscious office at that. A $1,000-plus peripheral on a $1,000 computer (or even a $2,000 computer) can seem a bit pricey unless it does everything, including walk the dog. Thus vendors such as Interstate price their boards well below $1,000— Speech Recognition Board Low Cost (SRBLC) is priced at $395, including software. By comparison, the IBM board costs $1,250. Furthermore, IBM's 64-word (maximum) speaker-dependent recognizer requires 184K of system RAM, compared to the 64K mentioned above for the IntroVoice board.

Most speech recognizers for personal computers are plug-in SDR boards.

Recognition at home

Home management systems are one of the most promising and exciting applications of speech recognition. PC-based voice-control systems are a direct application of everything that voice-product manufacturers have learned in industrial process-control applications. PC-based systems now available give voice control over your environment—to the extent that *any* system will control your environment. Voice commands can adjust the window shades and the room thermostat setting, set or open door locks, turn alarm systems on and off, and completely control the operation of many household appliances, including televisions, radios, and coffee pots.

A case in point: The Voice Connection's HAL (Home Automation Link) Entry System uses the IntroVoice board in a PC to furnish voice control over as many as 36 multitasked jobs. The base system comes with a half-card sized controller that controls a speaker phone and remote television tuner. The base system costs $995. Options range from a lamp and appliance control unit that accommodates 256 devices ($149) to a 32-channel relay control card ($895) that lets you build sophisticated custom home-control installations.

A primary attraction of these systems is the freedom and independence they give handicapped users. Using voice commands to control many things that used to require considerable freedom of movement or manual dexterity, a handicapped person no longer has to depend on others to make life tolerable. It is a step toward using computers to provide equal access to convenience and independent lifestyles—a high-tech analog

to wheelchair ramps. A well-designed system will also let nonhandicapped users enjoy hands-free and interactive control over their environment.

Accommodating application software

Most of us look to speech input for more mundane automation. Many of the most practical PC-based products are designed to work hand-in-glove with the most popular software programs. Interpath Corporation has focused its attention on using voice recognition to provide nontechnical business users of computers with a way to use programs such as Lotus 1-2-3 and SuperCalc. The firm's MC-100 recognizer, one of a series of recognition boards, combines a half-sized plug-in card for IBM-compatible PCs with software that features a vocabulary of 100 words.

Because each word in the vocabulary can represent a string of commands as well as an individual command, the 100-word vocabulary lets a user get a lot of work done without ever touching a keyboard. The Voice Connection's IntroVoice boards, for example, will let each word or phrase in the vocabulary represent as many as 1,000 keystrokes. The keystrokes associated with the utterance "START," for example, could load a program and a standard set of parameters, and then begin execution.

Making the vocabulary of the recognizer the same as the repertoire of commands of the software package has nothing to do with technology. This is a packaging and marketing strategy aimed primarily at business people who are still resisting computers. These recognizers effectively defuse the "I can't type" argument against office automation. Designing speech input into familiar computerized tasks makes the adjustment to the new input technology easier. But there is no reason to stop there.

Can you hold? My computer is on the other line

Consider Votan's Telephone Professional system. This package provides all the hardware and software you'll need to outfit an MS-DOS personal computer to handle secretarial call management jobs. The appropriately equipped PC uses its new speech recognition and synthesis tools to answer calls, screen and identify callers, record and play back messages, and retrieve messages when you call in from a remote site, and of course the system handles all of the call logging and voice-controlled dialing. Thus, for about $1,500, the Votan system bundles voice control over existing applications programs (Lotus, SuperCalc, etc.) with some totally new and uniquely voice-oriented capabilities for the PC. The PC can work with you to prepare a spreadsheet analysis and then take over the phones when you take a lunch break.

This is the same market served by IBM's Voice/Phone Assistant board, mentioned earlier. Software with the board converts the PC to a sophisticated telephone answering machine, and pop-up menus provide access to all functions—including vocabulary training or retraining. And the computer provides prompts to help you use the system, including one that tells you to speak louder.

Clearly, the application of speech recognition in the office benefits the user by providing:

—increased productivity in a busy "eye-and-hand" environment
—reduced job training times
—accurate and rapid data capture
—better utilization of computers
—user mobility (via wireless microphones)
—computer access over telephones

These are the same benefits that have convinced companies to push speech recognition into factory automation systems. Because they apply equally well in the office and the home, when prices drop sufficiently, speech recognition will become more pervasive. The combination of process control and voice control will make life easier and help make the quality of life better for the handicapped, and voice technology will even begin to influence the interior design of homes, giving new meaning to the old saw about "talking to walls."

Edward R. Teja is a Portland, Oregon-based freelance writer. He wrote the Heathkit's Voice Synthesis *course, is the coauthor of* Voice Technology *(Prentice-Hall, Inc.), and the author of* Teaching Your Computer To Talk *(TAB Books) and* A Designer's Guide To Disk Drives *(Prentice-Hall, Inc.).*

Quick Reference Summary

Product: Voice Communication Option
Manufacturer: IBM Corporation
P.O. Box 1328
Boca Raton, FL 33429-1328
Phone: (800) IBM-2133
Sugg. List Price: $950

Product: MC-100
Manufacturer: Interpath Corporation
4423 Cheeney St.
Santa Clara, CA 95054
Phone: (408) 988-3832
Sugg. List Price: $395

Product: Speech Recognition Board Low Cost (SRBLC)
Manufacturer: Interstate Voice Products
1849 West Sequoia Ave.
Orange, CA 92668
Phone: (714) 937-9010; contact: Bill Brundage
Sugg. List Price: $395

Product: Speech Recognition Keyboard
Manufacturer: Key Tronic Corporation
P.O. Box 14687
Spokane, WA 99214
Phone: (800) 262-6006, (509) 928-8000
Sugg. List Price: $995

Product: IntroVoice VI
Manufacturer: The Voice Connection
17835 Skypark Cirle, Suite C
Irvine, CA 92714
Phone: (714) 261-2366
Sugg. List Price: $595

Product: PC Card
Manufacturer: Votan
4487 Technology Dr.
Fremont, CA 94538
Phone: (415) 490-7600
Sugg. List Price: $1,800; $1,950 (with speaker independent recognition)

(continued from page 20)

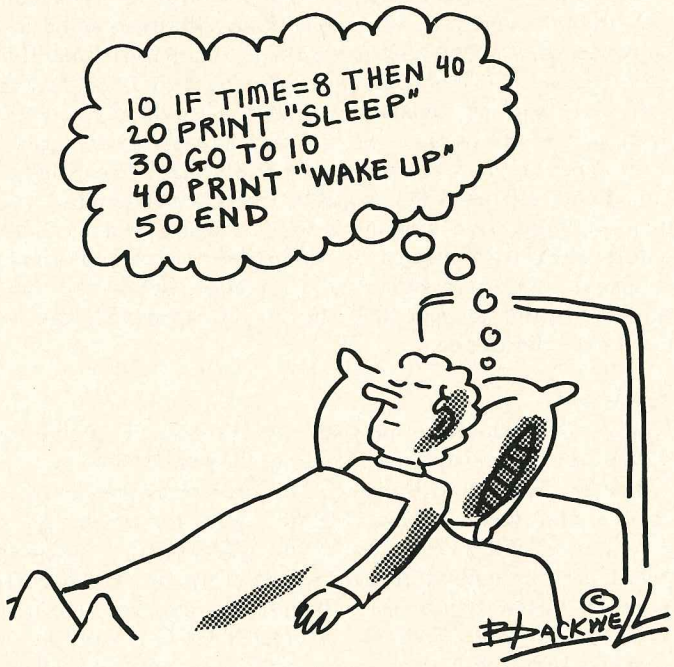
When this level of graphic reproduction is achieved, the true high-end capabilities of charting software begin to emerge. For example, one potential use of the specific setup mentioned above would be the in-house production of high-quality transparencies for overhead projections. Some graphics packages can send their output directly to a Polaroid Palette or similar image recorder for the creation of 35mm slides.

The bottom line: controlled creativity

This has been a general discussion of the major points to consider when choosing a business graphics package. Once the choice is made, it becomes a matter of designing and reproducing the presentation graphics most appropriate to a given job.

Entire books have been written on this subject. One rule of thumb, however, deserves mention: The key to professional presentation graphics is simplicity. It's easy to be tempted by the sheer power of these programs—and that's a temptation that must be avoided. The wide variety of features these programs offer should be used only when they are needed: Controlled creativity is still the most important element of any graphics presentation.

Jack Nimersheim is an independent computer consultant and technical writer in Cincinnati, Ohio, and a member of the Professional Software Programmers Association. When not testing software, Nimersheim specializes in training support and programming for the professional environment.



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MS-DOS CP/M

Data COMPRESSION Programs

The keys to unlocking public domain software

by T.F. Chiang

Some time after purchasing a computer, most people encounter the world of public domain software. There's an enormous number of application programs, utilities, and games in the public domain, and they can be obtained from user groups or downloaded from bulletin boards if you own a modem. But once you get these programs, you'll probably find that a large percentage of them are "squeezed" to save disk space or file transfer time. You'll need to return these files to their natural state before you can use them. To do this, you'll need a data compression utility (such utilities both compress and uncompress files).

There are two basic types of compression programs: data compression programs *per se*, which make files smaller; and library file programs, which combine many files into one. These two types of programs are widely used by users groups and bulletin boards to streamline the distribution of software. In this article, we'll see how these programs work and why you might want to use them.

Squeezing and unsqueezing

The original public domain compression utilities were the SQUEEZE programs, which appeared under CP/M several years ago. They have undergone various name and version changes, but have now stabilized under the names SQ and USQ (SQueeze and UnSQueeze). For CP/M the current versions are 1.6 and 1.9, respectively, and the MS-DOS versions are 1.9 and 1.0.

What SQ does is take a file and make a smaller copy that contains all the same information as the original (see related article on page 29 for an explanation of how this is accomplished). If you want to squeeze a file called MYFILE.DOC, you would (assuming everything is on drive A) type **SQ MYFILE.DOC**. The drives will spin for a while, and SQ will display a message telling you it's finished.

You'll now find a new file called MYFILE.DQC on drive A. The original file is still present and isn't altered in any way—what we've got is another, smaller copy. The "Q" in the file extension indicates that it's a squeezed file; if the original file hadn't had an extension, the squeezed version would have had "QQQ" as its extension.

How much room has SQ saved? If the original file was 60K of text, the squeezed version may end up around 32K. This sounds good, but if you try to TYPE the file, all you'll see are a few lines of garbled nonsense characters. The squeezed file is unusable in its present form; neither you nor your word-processing program can read it. And if you squeeze a COM file, you won't be able to run it in its CQM form.

This is where USQ comes in. Typing **USQ MYFILE.DQC** will reverse the process, and a new file called MYFILE.DOC will be created. The new, expanded file will be exactly the same as the original, and you'll still have the squeezed copy. Remember that you'll need plenty of free space if you plan to unsqueeze a lot of files; you may need a blank disk or two to hold everything before you're done. Both SQ and USQ will accept wildcards in the file name you specify.

Though SQ and USQ were originally created for CP/M, MS-DOS versions are available as well. The main difference between them is that the CP/M programs are more versatile and will accept more complicated input specifications. Other than that, the MS-DOS and CP/M programs produce identical output, so they are cross-compatible. It doesn't matter what operating system a file was squeezed on; as long as you can transfer it to another system, it can be unsqueezed. (Of course, program files for one operating system won't run on the other.)

The amount of space saved by SQ depends on the type of file. Text files may shrink by 40 percent, though the exact amount of space saved depends upon the contents of the individual file. Program files (COM or EXE), may only shrink by 10 percent. In addition, relatively small files (under 8K) will probably not benefit at all from squeezing, and may actually grow larger.

So when might you want to use SQUEEZE/UNSQUEEZE? You'll normally use USQ on public domain software that you receive; if you have occasion to send such software to others, you'd use SQ. User groups distribute files in squeezed form to conserve disk space and usually include USQ on the disk. Bulletin boards squeeze files primarily to reduce file transfer time over the phone.

CRUNCH

The CRUNCH family of programs (version 2.3, available for CP/M only) is a relative newcomer to the public domain.

Just like SQ, CRUNCH reads a file and creates a smaller copy of it. If you were to crunch MYFILE.DOC, the resulting file would be MYFILE.DZC. The ?Z? or ZZZ extension indicates that it is in "crunched" format instead of squeezed. CRUNCH uses a different compression technique, one that is totally incompatible with SQUEEZE. When CRUNCH is working, it displays a running tally of the size of the input and output files, so you know exactly how much space it's saving. To make a normal file out of the crunched one, use UNCR.

The difference between squeezing and crunching is that

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crunching saves more space; the same 60K file above that became 32K when squeezed becomes 23K when crunched. Moreover, CRUNCH works faster; it takes half as much time as SQ to compress a file, and it's also much faster at uncompressing files.

CRUNCH would seem to be the program of choice, but you must remember why you're using a compression program in the first place: to handle compressed files you encounter in the public domain. At the moment, squeezed files are far more common. Crunched files may become a second standard, but that will take some time. Distributors and users of public domain software must first acquire CRUNCH and UNCR, and—almost as important—a base of utilities for supporting crunching will have to arise.

Squeezed files, for instance, are so common that many popular utilities expect them. NewSweep (see "Beginner's Luck," *PROFILES*, April 1987), has an option for squeezing and unsqueezing files and displays squeezed files without hesitation. The same is true for the NULU utility (see below).

The library utilities

The LU (Library Utility) family of programs is another standard that originated in the CP/M public domain and is widely used with SQ and USQ. The current version of LU for both CP/M and MS-DOS is 3.1. Like squeezing programs, LU is supported by a host of utilities.

What LU does is to combine several files into one library file with an extension of LBR. The files in a library are called member files, and you can add, delete, and otherwise manipulate them with LU. When files are locked inside a library, they're inaccessible without LU or a similar utility.

There are several reasons for placing files in a library. First of all you save some space, even though the files aren't compressed. As an analogy, imagine a book of poems in which each poem begins on a new page. An eight-line poem would get its own page, while a poem two lines longer than one page would get two pages. By printing the poems one right after another, you'd save many pages in the book. It's the same for files on a disk; the "pages" are called blocks, and you'll save an average

HOW DATA COMPRESSION WORKS

Just how do programs like SQUEEZE and CRUNCH work? You may be thinking, "A file has a certain size; how can it be made to fit into a smaller space? And if there's a method of saving space when storing text, does that mean word processing programs are writing files into bigger spaces than is necessary? Why don't we always keep our files in a compressed format?"

Let's see how a text file can be made smaller while still retaining its original information. The basic idea is to exploit the redundancy in the file. For instance, let's say we had a file that contained the word DOG repeated a thousand times. This file could be shrunk drastically simply by replacing it with a file that says "[DOG - 1,000 times]." Of course, this strategy would be useless for ordinary text files.

Next, consider a file made up of the words CAT and DOG repeated hundreds of times, but in random order. This could be shrunk by almost three quarters, in the following fashion: "[CAT=A - DOG=B] ABBABABBBAB . . . "

This technique doesn't look that much more helpful than the previous one, if we want to use it on ordinary text files that contain hundreds of different words. However, this is the general idea behind a method known as the LZW coding method, which is how CRUNCH works. CRUNCH scans a file and builds a table in which strings of characters are represented by a single "character" (actually, a byte and a half). It will generate up to 4,096 replacement codes this way; the table and the coded text are what go into the compressed file.

Somewhat different is Huffman coding, which is the basis for SQUEEZE. This method operates on the individual characters in the file instead of on words. Each character, or byte, is actually a code of eight bits; those eight bits let us have up to 256 different characters—letters, graphics characters or whatever. But most files don't use all of those characters, and they also use a few much more often than others. Imagine that the above file, "CAT DOG DOG etc.," had a handful of OCTOPUSes and PANGOLINs thrown into it. If our code were allowed to use only the letters "A" and "B", we could replace OCTOPUS by "(AB)" and PANGOLIN with "(BA)"; these are longer than the other codes, but it doesn't matter because they appear rarely.

Similarly, SQUEEZE replaces each byte with a "character" whose number of bits depends on the frequency of its occurrence. If a letter is used a lot, it's given a code with one or two bits to save the most space; other letters that appear infrequently may have up to four or five bits. A directory, or conversion key, is included at the beginning of the compressed file for decoding it.

The precise replacement code that is used is different for every file; it is generated when SQUEEZE or CRUNCH reads the file. Obviously, the "DOG DOG . . . " file above would be given a different code than an ordinary text file. (This is why not all files get compressed by the same amount.) And when USQ or UNCR goes to work to bring a file back to normal size, it must read the directory table before it can translate the file back into its original form. The translation table included in the compressed file is the reason that small files will get larger if squeezed. This doesn't happen with CRUNCH. Because it analyzes a file, it can tell if the file will get larger because of the table and does nothing in those cases.

Programs such as word processors don't save files in a compressed format because it would be much too much trouble to decode the files every time they were read and recode them every time you saved changes. It's so much simpler to just use a standard code, and we do—it's the ASCII code.

—T.F. Chiang

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of half a block (say 1K) for each file you store in a library.

You'll also save directory entries. A CP/M Kaypro can only have 64 files on each disk. If you have a lot of small files, you'll run out of directory space before you run out of data space on the disk. A library usually takes up only one directory entry, and grouping related files in a library makes your disk collection less cluttered and more organized. This brings us to the main reason that library files are popular in the public domain: they allow you to collect related files into one package. In one library you can include a program, its documentation and help files, and accessory files. Downloading a single file is easier than downloading a dozen, and if they were squeezed before they were put in the library, so much the better.

Because of the variety of operations possible on member files, LU is more complicated to use than SQ. The CP/M version can be used either interactively or in command mode. We'll look at interactive mode first. If you enter **LU** at the A> prompt, you'll find that LU responds with its own prompt:

```
-? 0/A:>
```

From here you may enter any of several single-letter commands prefaced with a hyphen. The help command (-H) will give you a list of valid commands. You must open (-O) a library file before you can work on it. The open command will ask for the name of the library to open and create that library if it does not exist. When a new library file is created you will also be asked to enter the maximum number of member files it will hold. Once that is done you can list (-L) member files, add (-A) files, extract (-E) files, and rename (-N) files using full file specifications or wildcard characters. You must close (-C) a library file before your changes are written to disk and you can exit (-X) to the operating system.

The delete (-D) command deserves special mention. When you delete a member file, only the directory entry for that file is deleted. The file itself remains in the library until you use the reorganize command (-R) to reclaim disk space.

The other way to use LU is command mode, where all commands are entered as options to the command line. The MS-DOS version of LU only works in command mode—it does not have an interactive mode. A help list of valid commands for the MS-DOS version will appear on the screen when the program is run with no options on the command line. The only other difference between the CP/M and MS-DOS versions is that the MS-DOS version does not use a hyphen in front of command letters.

The two versions create compatible files, so a library created under CP/M can be used under MS-DOS. Programs, of course, are not portable between the two operating systems.

There are a variety of utility programs under CP/M to help you handle library files. For instance, LDIR lists the library's internal directory; LTYPE displays a text file locked in a library; and LRUN runs COM files inside a library. There are also some replacements for LU itself, the most notable of which is NULU. Even though it's a smaller program, NULU does everything that LU does, as well as operating in filesweep mode (similar to SWEEP—see "Beginner's Luck," April 1987). It displays the library's members in a circular directory (one

that starts over when you reach the end of it) the way that NewSweep does. It also includes options for unsqueezing member files during extraction, and for displaying member files.

ARC

ARC, short for archiving utility, is an impressive program for MS-DOS only. ARC is shareware, meaning that its authors request a donation if you find it useful. It combines the functions of SQ and LU by both compressing files *and* combining them into a single "archive" (ARC) file. It's quite popular in the MS-DOS public domain. Unlike SQ and LU, ARC continues to appear in new versions (the current version is 5.20).

ARC is similar in operation to the MS-DOS version of LU – it only runs in command mode. ARC automatically compresses files when you add them, and expands them when you extract them. In fact, ARC does both squeezing and crunching, and it analyzes each file to see which method will save the most space, or whether neither will do any good. ARC is faster than LU and SQ, produces smaller ARC files, and has many more capabilities. Running ARC with no command line options gets you a list of valid commands.

There are four ways to add files into an archive. Other than the basic Add, you can Move files, which deletes the original; Update, which adds only the files that aren't already there and replaces ones that have more recent versions; and Freshen, which updates existing files with newer versions.

Deleting files with ARC actually does delete them, so you don't have to reorganize the archive. ARC also uncompresses files automatically when you extract them and allows you to print them. You can even run a program within an archive. The List command gives you the uncompressed size of each file, while the Verbose listing also gives you the method of compression used (squeezing, crunching, etc.), the compressed size, and even the CRC value (cyclic redundancy checksum – this shows if anything in a file has been changed) for each file.

When to use these programs

Other than for opening up public domain software, when should you use these programs? Using file compression utilities lets you save space on backup disks, and you can really organize your files with libraries. However, files stored in this way are inconvenient to use because the files are not directly accessible. Programs and files that you use frequently should not be kept in compressed form or in libraries. Moreover, both compression and libraries are comparatively high-risk forms of storage. If some disk or file error occurs, the bulk of a normal file can probably be recovered, but there is no chance of recovery from a damaged compressed file (including ARC files) or library file.

For your own purposes, consider whether using compression or libraries are appropriate for a given circumstance. For reaping the benefits of public domain software, though, these programs are definitely on the "must have" list.

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

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Beginner MS-DOS

A First Session with SideKick

A tutorial on Borland's desk accessories

by Robert J. Sawyer

After cramming your computer and peripherals onto your desk, you may not have room for your calculator, appointment calendar, notebook, or Rolodex address file. Fortunately, Borland International's SideKick provides electronic versions of these desktop accessories in an easy-to-use, inexpensive package. This article will teach you how to use SideKick.

SideKick is RAM resident, meaning that once loaded it stays in your computer's memory until you reset the system. Because of this, you can call it even while running another program.

If you don't have a modem, SideKick runs just as it comes, right out of the box. If you do have a modem, you must run SKINST.COM, SideKick's menu-driven installation program. Select **D** for Dialer from the main menu, answer each question, then exit to the system. This will allow you to dial phone numbers either from the screen or from SideKick's phone directory.

To load SideKick, type **SK** and press Enter at your system prompt. Unlike most programs, SideKick seems to do nothing except display a copyright notice when you first load it. Instead, it waits patiently for you to call it into action. To do that, press **Ctrl** and **Alt** simultaneously or both Shift keys simultaneously. (Hitting two keys at the same time is a bit tricky. If you prefer, hold one down first and, with it still depressed, hit the other.) Either way, SideKick will show you its main menu:

F1	**H**elp
F2	**N**otepad
F3	**C**alculator
F4	ca**L**endar
F5	**D**ialer
F6	**A**scii table
F7	**S**etup
Esc	exit

Notepad

The Notepad is SideKick's most powerful module: a full-featured editor based on WordStar. There are four ways to activate it from the main menu. You can press F2. You can press the highlighted letter N. You can use the arrow keys to move the cursor bar down the menu until it's on Notepad, then hit Enter. Or you can hit Alt plus the highlighted letter. This last method, using Alt-N, is the best. It will conjure up the Notepad from anywhere within SideKick, even when the main menu isn't onscreen.

Issue **Alt-N** now. When you do so, a file named NOTES opens automatically. If this is the first time you've used SideKick, NOTES contains introductory messages from Borland.

To move around the Notepad, use the famous WordStar cursor diamond:

```
     ^E
^S       ^D
     ^X
```

Pressing one of these letters while holding the Ctrl key moves the cursor in the appropriate direction. A ^E takes it up; ^X, down; ^S, left; and ^D, right.

The letter F is immediately to the right of D on your keyboard. Since ^D is the command for right one character, ^F is the command for right one word. Likewise, A is just to the left of S. As ^S moves the cursor left one character, so ^A jumps it left one word.

To delete, backspace, and toggle insert, you can either use the Del, Bksp, and Ins keys, or their WordStar equivalents, ^G, ^H, and ^V.

The Notepad uses WordStar's ^K to begin commands dealing with blocks and files. ^KD will store your document on disk. ^KB marks the beginning of a block and ^KK marks its end. ^KV moves the marked block, ^KC copies it, ^KP prints it, and ^KY deletes it. If you don't know WordStar, type some text and practice these commands.

SideKick's block commands can also copy information from other programs into the Notepad, or take information from the Notepad and transfer it to other programs.

To try this, we'll have to exit SideKick. There are two ways to do that. If you hit Esc, the next time you invoke SideKick you will be at its main menu. Instead, exit by pressing Ctrl and Alt together, just as you did to get into SideKick. Now, when you next summon SideKick, it will return to where you left off, with the Notepad active.

Start an application program, then hit **Ctrl-Alt**. The Notepad appears over your program. Notice that the bottom line lists SideKick's function key assignments. **F4** is "import data." Hit it. The Notepad will disappear. Move the cursor, using either the WordStar cursor diamond or the arrow keys, to the upper left-corner of a block of information you would like to import into the Notepad. Type **^KB** (the begin-block command). Move the cursor to the lower-right corner and issue **^KK**. The Notepad reappears. Place the cursor where you would like the imported data to appear. Now issue **^KC** (block copy). Presto! A duplicate of the block appears in the Notepad. If the block you marked contained graphics characters, they will seem to have been replaced by regular keyboard characters. To show them in graphics mode, issue ^QG. To return to normal mode, issue ^QG again.

Moving data from the Notepad into an application is just as easy. Mark the data in the Notepad as a block. Now issue

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Notepad's paste command, ^**KE**. SideKick will ask you to choose a "paste" key. You can select any function key alone or in combination with Shift, Ctrl, or Alt. You can also use Alt with any letter or number.

Next, SideKick wants to know whether it should paste in "block" or "line" mode. Block mode will transfer the data in one big chunk; line mode transfers one line for each press of the paste key. Drop back to your application by hitting **Ctrl-Alt** and place the cursor where you want the transferred data to appear. Hit the key you designated as the paste key. If you're using line mode, push Enter after each press of the paste key.

If the pasting doesn't work properly, it probably means your application program can't take the data as fast as SideKick is spitting it out. Re-enter SideKick with **Ctrl-Alt** and go to the program's setup window by hitting **Alt-S**. Note that you now have two SideKick windows open simultaneously, one on top of the other. Increase the "Paste delay factor" and press Enter. If you want to make the change permanent, issue F2 and then exit Setup by pressing Esc. (When more than one SideKick module is active at the same time, Esc takes you to the window underneath [the Notepad, in this case] instead of dropping you out to your application.) Now try pasting your data again.

You can copy text from other programs into the Notepad, and vice versa.

The Notepad can also sort lists into alphabetical order. Type the following words, *one per line*, on your Notepad: **red, orange, yellow, green, blue, indigo, violet**. Now mark the list as a block using ^KB and ^KK (put the end block marker at the beginning of the line *after* the last line you want to sort).

Issue ^**KS**, which starts the block sort function. SideKick will ask you to enter the column you want to start sorting on. Type **1**. (If you were working with a table containing several pieces of information, you might want to start sorting at a different column.) SideKick then asks for the last column to sort on. The more columns you use, the longer the sorting will take. For this example, type **2**. SideKick now rewrites the list in alphabetical order, with "blue" first and "yellow" last.

If you issue ^**QT**, SideKick will insert the current time and date into your Notepad file. Hitting ^QO does the same thing, but it jumps to the end of the file first. If you want to keep a log of activities (useful if you bill by the hour), use the SideKick dot-command ".LOG" at the beginning of your file. Each time you re-open that file, the cursor will jump to the end and the current time and date will be inserted, just as though you'd issued ^QO. To see this, use ^**QR** to go to the top of the file and type **.LOG**. Now hit **F3**, the new file key. Answer **Y** to the "Save?" prompt. SideKick suspects you want to re-open the same file, so it offers the name NOTES as the new file. Hit **Enter** to accept that. The cursor should jump to the bottom, and the time and date should be written to the file.

Calculator

The Calculator handles four-function math in base 10 (decimal), base 2 (binary), and base 16 (hexadecimal). Use **Alt-C** from the SideKick menu to call up the Calculator. To enter numbers, you can use the numeric keypad (invoking the Calculator toggles Num Lock on, although it doesn't turn on the Num Lock LED on your keyboard). Use the + key to add; the – key to subtract, the * key to multiply, and the / key to divide. Hitting Enter or the = key will solve your equation. C clears the Calculator and E clears the last entry.

To convert the number in the display to hex or binary, hit H or B (note the mode indicator). To go back to decimal mode, hit D.

When in Hex mode, hitting F5 will enter the single numeral (represented by the letter A) that is the equivalent of 10 in decimal. Likewise, F6 through F10 insert the numbers represented by B through F, corresponding to 11 through 15 decimal.

As with the Notepad, you can use paste keys to transfer information from the Calculator into other software. Hit P followed by the key you wish to redefine. Once you leave the Calculator, each time you press the paste key the number that was on the Calculator's display at the time you defined the paste key will be inserted into your other software. You can define as many paste keys as you want. Try using Alt-1 for the first number to paste, Alt-2 for the second, and so on. To clear the current paste assignments, call up the Calculator and hit PC (for Paste Clear).

Calendar

SideKick provides a Calendar and Appointment Schedule. Calling up the Calendar with **Alt-L** will display the current month with today's date highlighted. Right-arrow will move you into the future a month at a time. Left-arrow jumps backwards a month. Up-arrow shows next year's calendar for the same month, and Down-arrow shows last year's.

To see appointments for December 15, 1987, move the Calendar to that month, type 15 and hit Enter. A new window will appear over the Calendar showing your appointments for that date. Now Left-arrow and Right-arrow move you backward and forward by days. Down-arrow and Up-arrow move the cursor bar through the day in half-hour increments. You can stop at any point and type in information about an appointment you have at that time. Press Enter at the end of each line.

You can print either all or part of your appointment calendar. If you press F4, your printer will spit out all your appointments, one day's worth per page. If you use F2, you can specify a range of months to print. (For some reason, SideKick fails to echo what you type at this prompt.)

Dialer

You can use SideKick to store your own phone directory, and if you have one of the modems SideKick supports, it can automatically dial numbers for you, too.

Call up the Notepad with **Alt-N**, hit **F3** for new file, and specify **PHONE.DIR**. This file came with your copy of SideKick. If it's not on your disk, no problem. SideKick will create a new one. Type in a list of initials, telephone numbers, and

names, one per line, like so:

```
BI  1-800-255-8008   Borland International Order Desk
AF  555-5555         A. Friend
TO  1-416-555-1212   Toronto Directory Assistance
```

You can use Notepad's block sort function to alphabetize the list if you like. Save the file with ^KD, exit the Notepad with Esc, re-invoke SideKick (if necessary), and call up the Dialer with Alt-D. A window will appear, showing the contents of your PHONE.DIR file. The first number should be highlighted. If you have a modem hooked up to your computer and you want to dial this number, just press Enter. Once the dialing is complete, pick up the phone receiver and hit the space bar.

To dial one of the other numbers, hit F5 followed by a set of initials to look for (initials are any text that begins in column one). Alternatively, hit F6 followed by any string you want to look for. Thus, typing F5 and TO would find the number for Toronto Directory Assistance and so would F6-DIREC. Searches are not case-sensitive—that is, you can type in the string you want to search for in either upper- or lower-case letters.

If more than one entry contains the string of initials you searched for, use the Up-arrow or Down-arrow keys to continue the search in the appropriate direction.

The Dialer can also call numbers that appear on screen. Go into the Notepad or out to MS-DOS and type a phone number (it must include a hyphen). Now call up the Dialer. Instead of showing you the directory, it highlights the number you just typed (this only happens if you've installed your modem using SKINST.COM). If you want to dial that number, hit Enter. If you want to move on to the next number (if any) on screen, hit Right-arrow. If you intended to go into your dialing directory instead, press the space bar.

ASCII table

The ASCII table, called by **Alt-A**, contains a complete listing of the American Standard Code for Information Interchange, which is the system personal computers use to store information. ASCII consists of 128 characters representing all the letters, numbers, punctuation, and control codes you can type with your keyboard.

SideKick's ASCII table also lists an additional 128 characters, called the IBM Extended Character Set. While not part of ASCII, most MS-DOS computers use these characters and many printers can make them. The Extended Character Set includes symbols, accented letters, and block graphic characters.

When you bring up the ASCII table, you'll see five columns of information about the first 16 control codes. The "D" column contains the decimal equivalent of the character. "H" contains the hexadecimal equivalent. "Ch" shows the character as it appears on your screen. "Ctrl" list the control code as you would find it in most books: a normal keyboard character preceded by a caret (^). "Mem" shows the abbreviated mnemonic, or name, for the code: Decimal 13, for example, is CR, which is short for "Carriage Return." To page through the list, use the Down-arrow and Up-arrow keys.

On the third page the format changes. Gone is the information about "Ctrl" and "Mem," since it doesn't apply to these codes. The Extended Character Set starts on the sixth page. If you keep hitting Down-arrow, you will cycle back to the control codes on page one after the ninth page.

MS-DOS allows you to enter IBM Extended Characters directly into files, if your program will accept them. You do this by holding down the Alt key (on PC and XT compatibles) or the Shift and Alt keys (on AT compatibles and others when using some keyboard-enhancer programs), then tapping out the decimal equivalent of the extended character on the numeric keypad.

SideKick is RAM resident; its manual says to always load it last, after all other such programs.

RAM cram

SideKick is one of many "RAM-resident" or "Terminate, Stay Resident" (TSR) programs now available. Unfortunately, not all TSR programs get along. SideKick's manual says you should *always load it last*, after all other such programs have been stuffed into memory. The manual for Jot!, a TSR shorthand typing program from Beacon Software International, says it should be loaded after Borland's resident keyboard enhancer SuperKey, but before SideKick. Word Finder, a TSR thesaurus from Microlytics, likes you to load it first.

Finding the right order in which to load RAM-resident programs may be an impossible game of trial and error. I had to throw out a TSR print-mode-selection program for my Epson-compatible printer because it wouldn't make peace with the other resident programs I use.

Most TSR programs provide a way to kick themselves out of RAM. Your trusty SideKick, for instance, will fade into the sunset if you hit Ctrl-Home-End from its main menu. Be careful, though! You must not have loaded any other RAM-resident programs after the one you are removing or your system may crash.

I use many TSR packages, and even though SideKick is one of the worst in terms of getting along with others of its kind, I wouldn't think of giving it up. Next to my word-processing program, it's the most useful piece of software I own.

As you read this, Toronto-based freelance writer Robert J. Sawyer is enjoying a month-long vacation in Europe.

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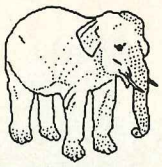

SCS-Draw turns your CP/M Kaypro into a free hand drawing machine. See what you're drawing on the screen too. Comes with drawing tools, windowing capabilities that let you draw pieces larger than one screen, lettering, textures, and much more. Save to disk, or print your work anytime. Simple. There's nothing like it. Turns your Kaypro 1, 2X, New 2, 2'84, 4'84, or 10 into a real Macintosh-like drawing machine. Kids love it, adults too. $57. Draw's new $19 PrintMaster graphics extractor lets you see PrintMaster graphics on your Draw screen and alter them too. Order today.

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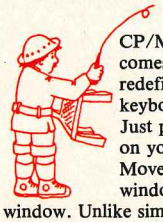
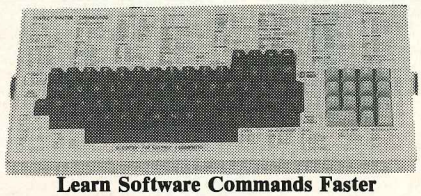


CP/M SmartKey version 4.2 now comes with windows. Lets you redefine every key on your keyboard from inside any program. Just push a key, a window opens up on your screen, redefine the key. Move the cursor anywhere in the window. Make corrections in the window. Unlike similar programs, SmartKey does not interfere with the regular function of your keyboard. Lets you redefine keys, stack them with numerous complex command codes, boilerplate paragraphs, inventory numbers, or whatever, and inject any of them into your work with a single key. Super time and keystroke saver. Central's price includes Paul Golding's $15.95 book, Screen Smarts, The Computer Tamers Guide free. Smartkey — $49. Order today.



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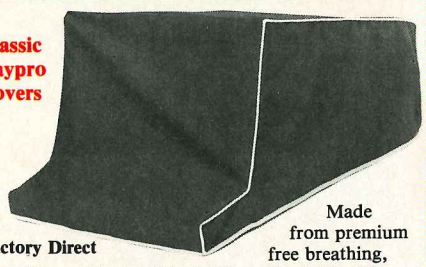

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PUSH
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Changing Chips

It's easy and we'll show you how

by Christopher Conly

Someday you may want or need to install new integrated circuits, also called chips, in your computer. This article will show you that the job doesn't have to be traumatic. It can be easy and will save you money.

First I'll offer some advice on planning a chip replacement project and information on handling chips. Then you'll learn how to install and test the chips. Finally, I'll tell you how to troubleshoot—what to do if the installation does not appear to work. You don't need to be technically oriented to follow these instructions; the task itself is very straightforward, and my instructions are aimed at the intermediate computer user.

Maybe you've gotten along fine so far without poking around inside your computer. If so you may wonder why you should mess with those strange and wonderful black rectangles. Here are a few common reasons:

If you use an MS-DOS PC you may already have noticed that it has an insatiable appetite for memory. If not, you will; and the need for memory is only beginning as new programs develop. Artificial intelligence and computer-assisted design will gobble up unprecedented quantities of RAM.

Larger programs can also bog down the 8088 central processor chip (CPU) in a PC. You may find that a faster CPU, like the NEC V-20, or an 8087 math co-processor chip, will help. A V-20 has the added advantage that it will run some of your old CP/M programs if you've taken the step up.

If you're using a CP/M Kaypro it already has all the RAM it can use, unless you decide to enhance it by installing a RAM disk (highly recommended!). But you, too, may someday want to speed up operations, which involves a faster Z-80 CPU. If you have single-sided drives you might like to change to double-sided ones, requiring a new ROM chip as well as the new drives. Maybe you've seen the ads in *PROFILES* for add-on boards that hold resident utilities, like notebooks and calculators. Maybe you want an interface to a hard disk. If so, you'll be taking out chips, plugging in boards, and adding chips again, or paying someone else to do it.

"Paying"—that's the word that got me started. Computer shops, justifiably, charge high fees to work on computers. Furthermore, possibly less justifiably, their prices for parts are generally not bargains. If (as I hope to show you) some of that work is simple and some of those parts can be had cheaply, that's a strong argument for doing it yourself. Furthermore, there are dividends in learning what's in that box you spend so much time staring at, both in your understanding of it and in your ability to use it.

Planning a project

Before you take on a project there are a couple of things you need to make sure of. The first is that it's something you can do with your particular computer. For that, you need to research the subject. Look at articles and advertisements in *PROFILES*, *BYTE*, *PC Magazine*, *Micro Cornucopia*, and whatever other sources you trust.

Once you find something you want, it's a good idea to look for reviews of it, or people in users' groups who have tried it, and to call the seller and ask for details. Even if you have to pay long-distance charges, advice ahead of time is cost-effective. Just organize your questions before you call, to save your money and your informant's time.

Second, you will definitely need documentation. If you have

ILLUSTRATION BY JENNIFER HEWITSON

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bought some kind of kit (like a ROM upgrade kit) it should contain complete documentation on any installation, including computer-specific instructions. If you're simply installing chips, you need your computer's technical documentation so that you can determine the chips you will need and where they go. Technical documentation for Kaypro computers is available from Kaypro dealers.

Third, you need to know if the chip(s) you plan to replace, or the spots where you plan to put new ones, are already socketed. A socket is a wired plastic receptacle for your chip and it looks like a rectangular frame (usually black). If they aren't already socketed, don't try to change chips—it's too complex a project.

To check for sockets you need to open up your computer's case. Here are some general guidelines. First, *always unplug* your computer. As long as the case is open, the plug should stay out of the wall. Even with the plug out, computers that contain a monitor (like CP/M Kaypros) can hold dangerous charges, so keep your fingers away from the video components and the power supply. It's safe to touch the circuit boards, disk drives, and case, but *always ground yourself* by touching bare metal on the case before you touch any of the boards. That bleeds off any static electricity you've accumulated.

The cases of computers are usually made to open pretty easily. Where "luggable" Kaypros are concerned, there are two screws on top of the case and four on each side that need to be removed, and then the top lifts off and can be put aside. Kaypro PC-type cases slip forward after a few screws have been removed. (Put the screws in a safe place—try to be methodical with the small parts you remove, so none are left out when you reassemble the computer and nothing is left inside where it might cause a short circuit.)

In general, taking off the case should not involve disassembling anything else, so if you find yourself removing screws that hold your drives in, for example, stop and make sure you're really in the right place.

Now look for sockets in the places you want to put chips. Most often you'll be replacing a chip with another, or adding memory beside existing memory. Your CPU chip will almost always be socketed, so that's a good place to look for an example.

What you'll see if you *don't* have sockets is chips that are soldered in, so that their pins (legs) go directly into the green circuit board. If you're trying to add a new chip and there's no socket, then you'll see a space on the circuit board with an outline of the chip and a number for it.

Avoid static

Once you find sockets, then you can go ahead and buy your parts. (Some recommendations are at the end of this article.) When you get them, there's one thing you need to think about right away. All chips are *very sensitive* to static electricity—256K RAM chips even more so. Sensitive doesn't just mean they hold their noses, either. Tiny amounts of static electricity will weaken chips so that they fail after you install them. This doesn't mean that installing chips is a perilous gamble, but you do have to be aware of some precautions and use them consistently.

First, when your new chips arrive, don't disturb them without taking the proper precautions. They should be in some sort of protective covering—aluminum foil, tubes, or boxes containing anti-static foam are the most common. Leave the chips in their cover until you're ready to work with them. If you get chips in the mail that aren't wrapped, ground yourself, wrap them in foil, and keep open the option of sending them back. (Installing a doubtful chip to test it won't hurt anything, but don't get mixed up about which one it is.)

When you're ready to start working, here are more anti-static precautions. Make it a habit to ground yourself by touching bare metal before you touch your chips or circuit board; do this even when your computer is unplugged. Try not to work standing on carpet. All carpets tend to build static on you as you move. If you can, work barefoot. The sweat on your feet lets your body dissipate static charges quickly. Also, wear cotton rather than wool or artificial fibers if you can—cotton creates less static.

All chips are very sensitive to static electricity.

Spread a layer of aluminum foil on your table and keep the chips on it once you've unwrapped them (after grounding yourself, right?). It's good to have the foil touching your computer to keep both areas at an equal static level.

If you're working with a plug-in board or have taken the mother board out of your computer, have that touching the aluminum foil—anything to keep from building up a charge. (I'm told that there's one exception to this. If your board has a battery on it, for a clock for example, then don't put foil where the battery's contacts can discharge. Put a piece of cardboard under the battery part of the board to insulate it.)

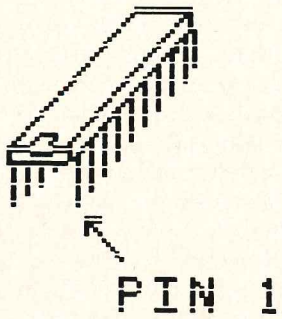
Chips up close

Now it's time to take a look at the chips and the circuit board so you can install everything in the right place and pointed the right way.

A chip is made up of a rectangular black body with a number of legs, called pins. The number of pins varies—memory chips have 16, 8088s have 40, and some of the newest chips have more. The pins connect the intricate circuitry in the chip to the board.

The pins are numbered from one on up, going along one side of the chip to the end then back along the other side. The only pin you need to recognize is number one, but that one is very important. Putting a chip backwards into its socket and turning on the power will wreck the chip, immediately and irretrievably. Pin one normally goes into slot one on the socket, and if your chip is an exception that should be clearly indicated in your instructions.

There are a couple of ways to see pin one. First, one end of the upper side of the chip is always marked with a notch, as in the illustration below. If the chip is standing on its pins with the notch facing you, then pin one is on your right and in front.



Usually there is a dot on the top of the chip over pin one.

When you've found pin one, then you need to find slot one in the socket. There are three things to look for: First, chips are usually installed with one orientation (or two, at right angles) on the board. So when you see which way the notches on the installed chips are pointing, that's a good indication of which way yours will go. Of course, if you're replacing one chip with another, the new chip will be oriented as the old one was, so make a note of it before you take the old one out.

Second, the sockets themselves have a notch on one end. The chip should be installed with its notch on the same end. And third, the sockets themselves often have slot one labeled, although this label is hidden if there's a chip already in the socket.

There are a few more things to see on a chip. The manufacturer's name is printed there, along with a couple of numbers that describe the chip according to a rather arcane code. You can usually identify your chip from part of one number—it may say "8088-2" for a CPU chip, or "4164-15" for a 64K memory chip. The part after the hyphen is an indicator of the chip's speed. The 8088-2 is a high-speed 8088, good up to 8 MHz. The 4164-15 is a fairly fast memory chip, good for access times down to 150 nanoseconds. In some cases the speed of the chips you need will be prescribed in the instructions for an upgrade. In general, it's okay to replace a chip with one faster than the original, but it's *not* okay to use one that's slower.

Installation

You should already know where your new chips are going to go. Nevertheless, check again—read the instructions for your installations, and check any diagrams or pictures of your circuit board (schematics may show components in logical groups rather than their physical ones, though). It will be a nuisance or worse if you replace the wrong chip.

The first step is to pry or pull the old chips out of the sockets. (*Make sure* that you're prying under the chip, *not under the socket*. That would cause serious damage to the circuit board.) The tool I use is a small, flathead screwdriver with a thin 1/8-inch blade. I insert it a little way between the chip and socket at one end and pry upward till the chip just moves, then go to the other end and repeat the process. The plastic outer walls of the chips are tough, so don't worry about scratching them a little.

Chips fit tightly into the sockets in order to get a good electrical contact, so a firm pressure is necessary. On the other hand, you don't want to bend the pins when the chip comes out, so move each end only a little before you switch to the other. As the pins come closer to being out of the slots, you approach a point where one end of the chip will suddenly come free—be especially patient here. (If you do bend the pins at the end, however, it is possible to straighten them using a small pair of needlenose pliers. Do this in case you have to reinstall the chip later.)

You may find that there are plastic capacitors or resistors between the sockets so that you can't pry under the chips without touching them. That's okay. They're not very fragile, so you can lean on them, even bend them a little to one side or the other. But be careful, of course. If you break one of their wire legs it will have to be resoldered, costing you time and money.

It's also harmless if the circuit board flexes a little, but not too much—the traces that carry the signals between chips are thin, and every one is critical. I try to steady the board with a finger in a clear space if I have to exert much force to get a chip to move.

Once your old chips are free, wrap them in foil and put them out of the way. You may want them as spares, and if something in your replacement project doesn't work you may need to put them back in order to trace the problem.

Putting the new chips into their sockets is another delicate job. If you're feeling pressed, this is a good time to take a break.

The idea is to get all the pins of the chip seated in their slots, then to press the chip into place as gently as possible. The best way to do it is first to get all the pins along the far side of the chip into the socket, then press the nearer pins inward by laying a thumb all the way along them, until they slide into the other row of slots.

If you can't get the nearer pins into the socket, take the whole chip out and lay it on its side on a firm surface, put a thumb along the top row of pins and press down till the pins against the surface bend evenly inward a little. Then try to fit the chip into the socket again.

Once all the pins look engaged, examine them carefully to make sure that none are caught under the chip. If you press the chip home with a pin caught, the pin will bend under, the chip won't work, and you'll have to take it out and straighten the pin. That's no fun, so try to avoid it from the beginning.

When you're confident everything is where it should be, press down first on one end and then on the other, moving each end down a little at a time. Try not to let one side of the chip get much further in than the other. Eventually the chip should fit all the way down into the socket—look at the other chips on the board for a model. Go on to the next chip, and don't forget to ground yourself each time.

Testing

Before testing your new chips, make sure you have made all the hardware adjustments necessary for the installation. When you install memory chips in a Kaypro PC, for example, you have to change DIP switches on the multi-function board so that the computer will recognize the new memory. No matter what type of chip you are installing, you often have to change switches, adjust jumper blocks, etc., to make your modification work.

When all your chips are in place it's time to have fun. Make sure all your tools are out, then carefully reassemble the computer. Put the top back on (but don't screw it down), plug in the computer and turn it on.

Now run a program that will show an effect from your modification. If you've added memory, the power up diagnostics (or the MS-DOS CHKDSK utility) should show it. If you've sped up the CPU most applications will show it to some extent—WordStar will reformat a file faster, your spreadsheet will recalculate more quickly, and any benchmark program that repeats calculations will show the effect.

If you've changed the ROM your computer should do whatever the new ROM says it will. (If the new ROM is intended to let you run higher capacity disk drives, it's a good idea to install it first without the drives. Make one change at a time, so you can see where any problems start.) Finally, enjoy the satisfaction your improvement gives you.

Troubleshooting

But suppose it doesn't work—then what? Well, then it's time to check your work. The first question to ask is, "*How* doesn't it work?" If nothing happens when you flick the power switch, that's one thing; if the computer comes on but the screen goes crazy that's another; if you get a diagnostic message that one of your memory chips is bad, or an error message from a program that used to work, that's different too. In each case, what happens gives you some idea of where things have gone wrong.

The first thing to do is unplug and open up your computer, and go over what you did (that's why you didn't screw the lid down, right?). Look to see that all the chips are in the right slots, facing the right way, and pressed all the way down. Look to see that any connectors you had to remove are connected back to the right spot and firmly in place.

Go over the instructions for your modification and see if there were any dip switches or jumpers to set that you may have gotten wrong, or overlooked. Look for things you weren't sure about. When you're pretty sure everything is as it should be, and when you've given all the chips you inserted (and any others that seem loose) an extra push to make sure they're in place, close everything up again. Try again.

Still no luck, or a more subtle problem? Well, you have to think about it. If there's a glitch in a program that ran before and almost runs now, then try to isolate it and get a full description. Try some other programs and see what happens. Try taking out the chip you put in and replacing it with the one that was there before.

If your problem persists, then you're going to have to get help. Probably the best source is your dealer, or the source of your chips. Another, often more patient source is a friend or users group that has experience with your kind of computer and maybe even your exact modification. Whoever you ask, describe your problem carefully, ask as many questions as you need to understand what they tell you, and don't take any answer as gospel.

Christopher Conly is a Seattle-based freelance writer. He works with legal data bases on a variety of microcomputers.

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THE RELATIONAL POWER OF dBASE III

Part 2 of a two-part tutorial: Building a donation-tracking system

by Joseph Comanda

This is the second, concluding, tutorial in a two-part introduction to using dBASE III. Our example is the creation of a donation-tracking system for a non-profit organization, but the information presented in this series could be applied to many other projects.

Part 1 showed how to create a data file to store name-and-address information and total contributions for each donor. In this part, you'll add a Gifts data file to store the details of each donation, and you'll learn how to work with a two-file system. Remember, this tutorial applies to both dBASE III and dBASE III PLUS.

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Related files

Though we've separated donor information from donation information by putting them into separate files, they are clearly related. Donations are made by donors, and there has to be a way of linking a particular donation to its donor.

Because dBASE is a *relational* data base manager, it can work with several related data files—up to ten at a time. It does so by means of common fields. Figure 1, below, shows a sample record from each data file. Notice that both records have a DONORID field. By comparing the contents of the DONORID fields in both files, dBASE can tell that the donation records in the Gifts file with a donor ID of "101" were given by John Milligan, who has a record in the Donors file with the same donor ID. Of course, it only works if no two donors have the same donor ID. In fact, that's the whole point of having IDs. People's names aren't unique enough.

Figure 1

A sample Donors record

DONORID	101
TITLE	Mr.
FIRST	John
LAST	Milligan
STREET	975 Winding Way
CITY	Menlo Park
STATE	CA
ZIP	94025
TOTGIVING	50.00

A sample Gifts record

DONORID	101
DATE	12/12/86
AMOUNT	25.00

Master files and transaction files

It's not just a matter of unique IDs, however. There should be only one unique record in the Donors file for each donor. In other words, the rule in the Donors file is: one donor, one record. Just the opposite is true of the Gifts file. There can be several donations from the same donor.

We can talk about a one-to-many relationship between the Donors file and the Gifts file. For every donor record in the Donors file there are many possible donation records in the Gifts file.

We can also talk about a master file and a transaction file in this relationship. The master file is on the "one" side of the relationship, and the transaction file is on the "many" side.

The master file contains current information: in this case, the donors' current addresses and their most recent total contributions figures. The transaction file contains historical detail: in this case, specifics about each donation on a given day for a given amount of money.

A master file and a transaction file can interact in two ways.

First, *the master file can serve as a look-up file for the transaction file.* In a full-featured application it would be possible to have dBASE look up a donor's record in the Donors file in the process of entering a new donation. A set-up like that would require programming, but even without programming you can do some looking up.

Second, *the transaction file can update the master file.* After a new donation has been entered, the total contributions figure in that donor's record in the Donors file must be updated.

The concept of master and transaction files can be applied to a number of contexts. A client-billing system, for example, would have a master file like Donors and a transaction file for each billable item. An employee-review system would have a master Employee file and a transaction file for employee evaluation records.

The master file can serve as a look-up file for the transaction file.

Printing out a donor list

Since donor IDs play such an important role, let's start by printing a list of donors and their IDs. Enter dBASE and make your way to the dot prompt. If you're using a two-floppy system, put the data disk containing your Donors data file in drive B and set the default drive to B. Then make sure the printer is on and issue the following commands:

```
USE DONORS INDEX DLAST, DZIP
LIST DONORID, LAST, FIRST, ZIP TO PRINT
```

The first command opens up the Donors file with the two index files you created last time and makes the last-name index (DLAST) the master index. The second command sends a list of records to the printer in alphabetical order by last name.

Figure 2, below, has a list of donation records you will be adding to the Gifts file. Check to see that you have a donor record for each one. If some are missing, add them now using the APPEND command. You can also add other donor records, if you wish. Just make sure you continue the sequential numbering system for the DONORID and don't give the same ID to more than one donor. When you're done, print out a new donor list.

Figure 2

A list of donation records

DONORID	DATE	AMOUNT
101	12/12/86	25.00
102	12/14/86	50.00
101	01/10/87	25.00
102	01/16/87	50.00
101	02/12/87	25.00
103	02/15/87	10.00
102	02/27/87	50.00

Designing the Gifts data file

Now you can create the structure for the Gifts file. Type:

```
CREATE GIFTS
```

Figure 3, below, shows the structure of the Gifts data file. Notice that the DATE field is also a Date type. Date type fields

are automatically eight characters wide. dBASE expects date entry in the "MM/DD/YY" format. It provides the slashes for you and checks if you've entered a valid date (for example, "02/30/87" and "13/02/87" are not valid).

Figure 3

The Gifts data file structure

Field	Field name	Type	Width	Dec
1	DONORID	Character	3	
2	DATE	Date	8	
3	AMOUNT	Numeric	7	2

Adding records to the Gifts data file

Use the APPEND command to enter records for the seven donations in Figure 2. You can also add some of your own donation records as long as you have previously entered a record for their donors in the Donors file.

Financial reporting

Now that you have some donation records, you're ready to learn about financial reporting. For fancier reports with subtotaling and totaling, you'll need to use dBASE's report generator. What you'll learn here are the selection criteria to make the reports pick out records from a particular time period. You'll use them in conjunction with the DISPLAY and SUM commands.

First type **DISPLAY ALL** to see all the records. Then you can qualify the command to see only donations received in 1987. dBASE has a number of special functions for working with dates. The YEAR() function equals the value of the year in whatever date you insert inside the parentheses. The following command, for example, evaluates the DATE field in each donation record and displays only those received in 1987.

```
DISPLAY ALL FOR YEAR(DATE)=1987
```

Note the use of the YEAR function; used with the DATE field, it returns the year that date specifies, i.e., YEAR (10/12/87)=1987. The following SUM command totals donation amounts for the same period.

```
SUM AMOUNT FOR YEAR(DATE)=1987
```

Using two files at the same time

You have two data files now: DONORS.DBF and GIFTS.DBF. It's time you learned how to keep both open at the same time.

dBASE divides the computer's memory into ten work areas and lets you put a data file together with its index files into each one. Unless you specify otherwise, dBASE puts everything into work area 1. When you tell it to use a particular data file, it closes down any open files in work area 1 and opens the one you requested. To keep a file open in work area 1 and open a second one, you must tell dBASE to select a new work area for the second file. The following sequence of commands sets up data files in work areas 1 and 2:

```
CLEAR ALL (closes down any open files)
SELECT 1 (selects work area 1)
USE DONORS INDEX DLAST, DZIP (opens Donors file)
SELECT 2 (selects work area 2)
USE GIFTS (opens the Gifts file)
```

Use the **DISPLAY STATUS** command to see if you've done it right. The first screen should look something like Figure 4 below.

Figure 4

```
Display Status Screen 1

. DISPLAY STATUS
Select area: 1, Database in Use: C:DONORS.DBF   Alias: DONORS
Master index file:  C:DLAST.NDX Key: LAST
        Index file:  C:DZIP.NDX Key: ZIP

Currently Selected Database:
Select area:  2, Database in Use: C:GIFTS.DBF   Alias: GIFTS

File search path:
Default disk drive: C:
Print destination:  PRN:
Margin  =  0
Current work area  =  2

Press any key to continue...
```

At the top it tells you which files are open in which areas and indicates the data file currently selected. Then it indicates the current work area again at the bottom of the screen.

You can move back and forth from one file to the other by issuing SELECT commands. SELECT 1, for example, takes you to work area 1. You can also use the name of the data file.

Setting up a relationship between two files

The next step is to link the open files so you can get information from both of them. Suppose, for example, you want a list of donations. The Gifts file will show you the amount of each gift, but not the donor's name. If you link the two files, though, you can have dBASE look up and display DONORID information alongside each donation record. As it displays each transaction record, it looks up the corresponding record in the master file and displays the requested fields.

dBASE uses a SET RELATION command to set up a working relationship, or linkage, between two files. The following conditions must be met for it to work:

1.)Both files must be in use and in *separate* work areas.

2.)The two files must have a common field.

3.)There can be many records with the same linking field value in the transaction file (i.e., many transactions for a given donor ID), but only one such record in the master file (i.e., each donor should have a unique ID).

4.)The master file must be indexed on the common field.

5.)The SET RELATION command must be issued from the work area containing the transaction file.

We've already discussed the first three conditions. Now we'll deal with condition four. In part 1, you used two index files with the Donors data file. One was keyed by last name for last-name look-ups and to produce rough alphabetical donor lists, and the other was keyed by zip code for mailings. Since dBASE will be looking up donor records by donor ID, you'll also need an index keyed on that field. Furthermore, you'll have to make

it the master index for the duration of the relationship. You'll do that by issuing the following commands:

SELECT DONORS (selects Donors work area)
INDEX ON DONORID TO DID (creates DID index keyed on DONORID field)
SET INDEX TO DID, DLAST, DZIP (puts all Donor index files into use with DID index serving as master)

Using dBASE's SET RELATION command

The SET RELATION command you'll issue looks like this:

```
SET RELATION TO DONORID INTO DONORS
```

The syntax is confusing, but it does a fairly simple job. It tells dBASE to set up a relationship between each record in the current file (the Gifts file) and the record with a matching donor ID in the Donors file. Once established, the relationship remains in effect until a command is issued to turn off the relationship or the related files are closed.

Issue the following sequence of commands at the dot prompt to set up the working relationship between the Donors file and the Gifts file and display the result.

```
SELECT GIFTS
SET RELATION TO DONORID INTO DONORS
DISPLAY ALL DONORID, DONORS->LAST, DONORS->
    FIRST, AMOUNT, DATE
```

Notice that the DISPLAY ALL command is working on the Gifts file and drawing name information from the Donors file. To indicate fields from a file in a different work area, dBASE uses the convention of preceding the field name with the name of the file and an arrow made up of the hyphen sign (-) and the greater-than sign (>). When you design reports that work with linked files you can use the same convention to pull fields from other work areas.

To turn off the relationship, type **SET RELATION TO** by itself.

A donations-entry cycle

A complete donations-entry cycle for a given day would have the following steps:

1.)Looking up IDs for the day's donors and adding any new donors.

2.)Entering donations into the Gifts file.

3.)Updating the donor total contributions figures in the Donors file.

You already know how to do steps 1 and 2. Now you'll learn about updating. When you first added records to the Donors file, you entered total contribution figures. Actually, you shouldn't do it that way. Instead, you should start with a zero figure in a donor's record and have dBASE update it from donation records in the Gifts file. Now that you have donation records, you can do a proper update. The next sequence of steps will zero out the total contribution figures. Then you'll be ready to do the update.

SELECT DONORS (selects Donors work area)
REPLACE ALL TOTGIVING WITH Ø (sets total contributions to Ø)
DISPLAY ALL TOTGIVING (shows results of last step)

What follows is the UPDATE command you must issue. Like the SET RELATION command, it is fairly complex. Enter it as a single command all on one line. Then issue the DISPLAY command from above to see that it worked.

```
UPDATE ON DONORID FROM GIFTS REPLACE TOTGIVING
    WITH TOTGIVING+GIFTS->AMOUNT RANDOM
```

The first part (UPDATE ON DONORID FROM GIFTS) tells dBASE to update the data file in the current work area from a file in another work area (in this case Gifts) using a particular field as the key (in this case, DONORID). For it to work, the updated file (Donors) must be using the same key in its master index. The updating file (Gifts) doesn't have to be indexed if the word RANDOM is added to the end of the command. dBASE will use the donor ID to find the right donor record to update for each donation record.

The second part of the UPDATE command line (REPLACE TOTGIVING WITH TOTGIVING+GIFTS->AMOUNT) tells dBASE what to update. In this case it tells dBASE to add the donation amount to the total contribution field (TOTGIVING) and stick the results back in the field.

The updating you just did used all the records in the Gifts file. That was fine for the first time. But next time you'll need to do selective updating, using only new donation records.

dBASE offers several techniques for doing selective updating. The simplest one involves the use of a filter. In part 1 you learned how to use a filter that screened out records marked for deletion. Now you'll learn about the SET FILTER command that lets you impose a temporary filter of your own choosing on the file.

Enter a few new donations in the Gifts file using today's date. Remember to select the Gifts work area first and to use only existing donor IDs. Then use the filtering technique described below to update the Donors file.

Before you issue the filter command, you'll have to learn another date function, DATE(). DATE() picks up the date from the computer's real-time-clock. (If you don't have a clock it uses the date you entered when you booted your computer.) Using that function you could create the following filter, which would only let donations received today pass through.

```
SET FILTER TO DATE=DATE0
```

If you did it right, you should see only today's donations when you type **DISPLAY ALL**. You can turn the filter off by typing SET FILTER TO, but leave it on and issue the following sequence of commands. Make sure the printer is on.

LIST ALL TO PRINT (prints today's donations)
SELECT DONORS (goes to Donors work area)
LIST DONORID, FIRST, LAST, TOTGIVING TO PRINT (Prints out donor records before updating)
UPDATE
LIST DONORID, FIRST, LAST, TOTGIVING TO PRINT (prints out donor records after updating)

You should be able to compare the printouts from before and after to see if your update was successful.

Final words

There's a lot more to working with multiple files than we can cover in this tutorial. For example, if you have dBASE III PLUS, you may want to explore the views generator, a menu-driven approach to setting up linkages between files. More advanced relational tasks may even require programming.

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

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NEAR-DESKTOP PUBLISHING

Products that make it possible for CP/M users

by Jim Spickard

Desktop publishing has been *the* hot topic in the microcomputer world lately. "True" desktop publishing involves using page layout software to merge text and graphics and printing with a laser printer at 300 dots-per-inch resolution—not as good as real typesetting at 2,400 dpi, maybe, but certainly good enough for many printing projects.

The only trouble is that true desktop publishing is expensive—a first-class set-up can cost over ten grand—and it's only available to users of MS-DOS machines. CP/M users are left out.

But do you really need to do "true" desktop publishing—or will a simpler approach suffice? If your needs are not too complex, rejoice. Although your trusty CP/M machine can't play in the big leagues, it can still do creditable work. In this article I'll show you three programs that bring "near-desktop publishing" to the CP/M world. Each has its merits—and, unfortunately, its demerits. But they can all improve the look of your product.

None of them needs a laser printer: The printer you already own may work fine.

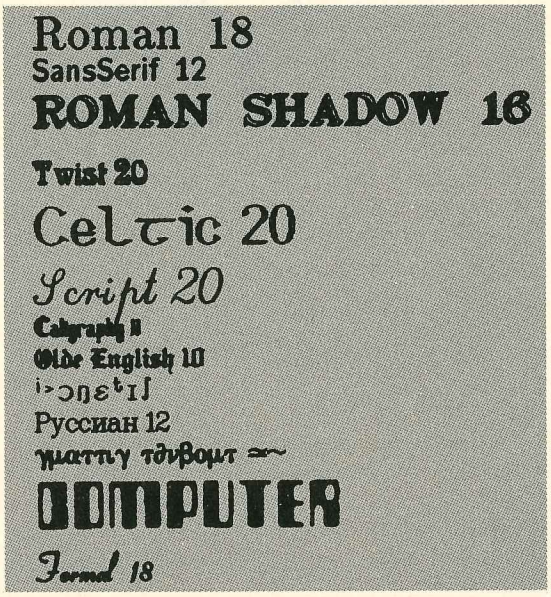
If your office newsletter needs sprucing up, or your scholarly press wants camera-ready copy (as more and more academic publishers do) you may find what you need here.

Fancy Font

Fancy Font, from SoftCraft, is the snazziest and most complete CP/M near-desktop publishing system I've seen. Basically a font generation program, it produces near-perfect text. With a bit of work, it will even write music, though you won't "see what you get." You never will with CP/M.

Fancy Font handles six- to 42-point type (there are 72 points to an inch; 36-point type, for example, is a half-inch tall) and comes with several alphabets and typestyles, some of which I have reproduced here (see Figure 1 below). The type is proportionally spaced, and you can word wrap it, justify it, center it, and shift it right or left. You can even print columns without going through the gyrations normal word processors demand.

FIGURE 1: Sample Fancy Font typefaces



The program works by inserting special characters into your text. These characters provide all the control you need. \\c centers a line, \\r shifts it right. \\w turns on word wrap while \\x turns it off. \\u underlines. \\v+2i puts a two-inch vertical space in the text, \\>3c indents three centimeters from the left

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ALL SAMPLES SHOWN AS GENERATED BY PROGRAMS

margin, \\v6i starts printing six inches from the top of the page. And so on.

Best of all, Fancy Font lets you use up to ten typestyles in a single document, plus all the native fonts your printer provides. \\fØ signals the first font, \\f1 the second and so on. When you print, you just give Fancy Font the list of fonts you want to use, and it makes the substitutions automatically.

The fonts needn't even be the same size. Fancy Font automatically adjusts for different font heights, so letters don't run into each other.

I printed birth announcements for our last baby using five fonts without a hitch. And when we didn't like the five I'd chosen, I just picked some others. I didn't have to revise my text.

Fancy Font lets you use up to ten typestyles in a single document.

WordStar users get an extra plus from WSFONT—an add-on program that automatically embeds Fancy Font commands in WordStar texts. ^OJ becomes \\j, ^PS becomes \\u, .PO changes the left margin, and so on. Write your document in WordStar, then run it through WSFONT to convert it. Not all WordStar formatting commands are covered, but most are. The program is a big timesaver.

Unfortunately, that's what you need to run Fancy Font: lots of time. At 240 by 216 dpi, the program uses 90K for a page of text. That's pretty good resolution for a dot-matrix printer, but it takes about eight minutes a page. Compare that to eight pages a minute with a laser printer and MS-DOS, and you'll see the difference price makes.

CP/M near-desktop publishing works, but it's not fast. Fortunately Fancy Font provides six rough-draft modes, so you can quickly print a copy to see if everything is in the right place. And once printed, you can up the dots-per-inch count by reducing the originals photographically. Before laser printers, SoftCraft printed their ad copy using an Epson FX dot-matrix printer and then reduced it 80 percent. Those of you who remember the ads know: The quality was marvelous.

Fancy Font comes with Roman type (eight to 24 point) in regular, italics, and bold, plus Script and "Olde English" in various sizes. It includes a 1,600-character data base containing several styles of sans serif, Russian, Greek, and Old German type, plus graphics characters. A special program, CFONT, lets you create fonts from this data. Another program, EFONT lets you edit the alphabets to clean up any imperfections. Both programs are complicated, but work well.

SoftCraft sells additional fonts from its "font library" for $15 each. The disks cover everything from international phonetic alphabets to music. You can also buy MODFONT, which will double, halve, embolden or slant a font. Using EFONT and two passes of MODFONT I made some truly huge characters. Anyone need an 84-point upside-down exclamation mark?

Fancy Font works best on an Epson FX printer or compatible—the samples here were printed on a Citizen MSP-10. It will also work with Star Micronics Gemini, Delta, and Radix printers; some Texas Instruments' printers; and the Epson MX, though the output will be less clean than the FX version.

The MS-DOS version also works with the HP LaserJet and adds several interesting utilities. But CP/M users needn't feel neglected—all the basic capabilities are here. (And if you ever *do* buy an MS-DOS machine, your fonts are upwardly compatible.)

Figure 2, on page 48, shows Fancy Font at work. A real newsletter wouldn't look so cluttered, of course. I just wanted to show the program's flexibility

FontStar

For a cheaper and less complicated WordStar add-on that provides proportional spacing plus several typestyles, you might try FontStar. Though it lacks many of Fancy Font's features, it's easier to use and certainly improves WordStar's looks.

FontStar replaces WordStar's printer driver. You write your document in WordStar as usual, then insert special codes whenever you want to switch typestyles. Instead of printing from WordStar's No-File Menu, you leave WordStar and run FS.COM.

Sixteen typestyles come with the program, each of which includes the ASCII characters plus a European alphabet. If you want more styles, just make your own.

The font generating program is easy. You form the characters by blackening the dots in a 14x17 matrix. FontStar prints those dots—half with each pass of the printhead.

You can't do big titles though—FontStar's typefaces are all in the eight- to 12-point range. (Figure 3, on page 49, has some samples.)

Though it's not really aimed at the near-desktop publishing market, FontStar can put out respectable work if you know WordStar well. Proportional spacing alone makes quite a difference. Figure 4, on page 49, shows a three-column newsletter using Helvetica Light type for the text and Micrograma Extended and Helvetica Bold for the headlines.

Combining FontStar with a headline writer—to make up for the lack of big characters—you could produce quite reasonable work.

The whole process would be easier if FontStar's makers had included a user-programmable printer control (along the lines of WordStar's ^P^E). My Citizen can feed paper in reverse, which makes snaking columns easy to write—*if* I can send the proper printer command. Lacking this, I had to play some tricks with WordStar's column mode—not really difficult once you get the technique.

FontStar also lacks Fancy Font's resolution—as one might expect, since there are one-third the number of printhead passes. On the other hand, output is three times as fast.

For high-quality jobs, you'll prefer Fancy Font; but for easier, everyday printing FontStar can serve you well.

ArtPage

ArtPage—mentioned in Ted Silveira's June 1987 "Flea Market" column—advertises itself as "the program that does it all for

FIGURE 2: Fancy Font at work

Ye Olde Newsletter

FancyFont excels!

SoftCraft has produced a winner! The FancyFont System now puts quality typesetting in everyone's reach.

You get total page control, plus use of several different fonts in a single document.

COMPUTER TYPEFACES

Many different typestyles are available. This paragraph is printed in "Twist", while the title is in "Computer". Columns may snake across the page newspaper style, or be set in blocks.

The CP/M version doesn't do graphics, but that's nothing new to CP/M users. You can leave a blank spot to drop in pictures by hand.

put a picture here

Print Quality soars!

No matter whether you print in *Formal*, SansCompressed, Русский or עברית, FancyFont's 240 by 216 dots per inch resolution gives you excellent printing. It's slow, but well worth the effort.

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Introducing the TravelComm 1200. The battery-powered, easy to use, 1200-baud modem for computer users on the go. And it's available now.

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FIGURE 3: Sample FontStar typefaces

FontStar Demo

FontStar makes use of the high-resolution graphics capabilities of *Epson* printers to obtain a variety of typestyles normally unavailable on these lost-cost printers. These fonts can be freely intermixed within a *WordStar* document. Sixteen fonts come standard with the *FontStar* package including

Bodoni
Bodoni Italic
Light Italic
Helvitica Bold
Microgramma Extended
Flash Bold
Broadway
Old English

FIGURE 4: A newsletter with FontStar

FONTSTAR PRINTS NEWSLETTERS

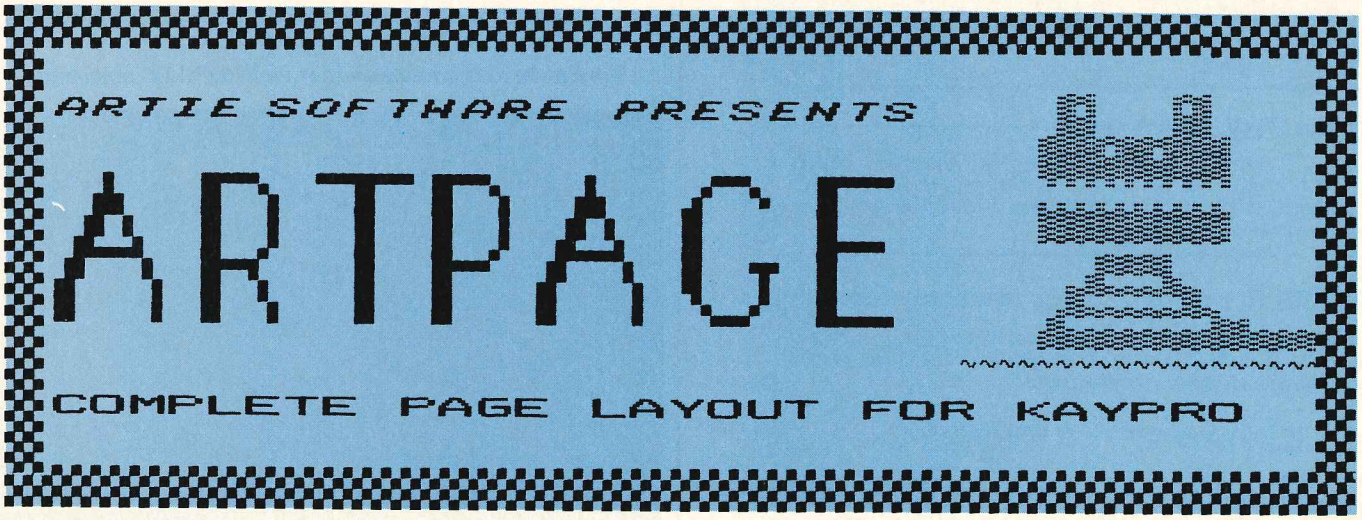
This is a Headline
This is a piece of sample text, to see whether we can get FontStar to work with columns. This is a piece of sample text, to see whether we can get FontStar to work with columns. This is a piece of sample text, to see whether we can get FontStar to work with columns. This is a piece of sample text, to

Column One
This is column one. This is column one. This is column one. This is column one.

Column Two
This is column two. This is column two. This is column two. This is column two.

Column Three
This is column three. This is column three.

FIGURE 5: ArtPage on a dot-matrix printer



(continued from page 47)

$39.95 (Canadian)!"

Nobody does it all for $39.95 (Canadian or otherwise).

Designed to work on '84 series Kaypros, ArtPage lets you combine text and graphics onscreen, then print the result on a dot-matrix or daisywheel printer. The quality is not great, but hobbyists will be able to print flyers and newsletters. (Serious amateur publishers will want to look elsewhere.)

I've seen a demo version that let me create a screen combining drawings and text but wouldn't print it. I was able to print a sample page provided by the publisher, though. Figure 5 gives you an idea of what's in store. (*Ed. note: A full-featured version of ArtPage was not made available to our reviewer.*)

ArtPage puts the entire Kaypro keyboard to work. Various control characters are toggles: ^Q turns on the menu, ^T turns on headline mode, ^P turns on pixel drawing, and so on. The keypad mimics arrow keys; DEL toggles an eraser on and off

TurboROM

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- Mounts inside the Kaypro

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256k RAM Disk	$349.95	Expansion Board (0k).....	$202.50
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768KkRAM Disk	$429.95		

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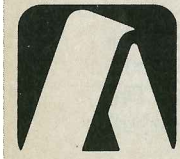

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(for corrections). Even with the demo (which lacks documentation) the system is easy to figure out.

Using fonts is relatively simple: You just type your message and specify the font. (The demo had only one style; the full version promises more.)

Drawing is also easy, though you can't get true curves, just boxy approximations. Erasing is harder: you have to do it one space at a time. Erasing a headline is particularly onerous.

ArtPage will supposedly read WordStar text files, including underlining, boldface and italics. I wasn't able to try this on my borrowed '84 series machine. I successfully entered text from the keyboard, though: it nicely wrapped each line under the one above, allowing me to avoid the headlines and graphics I had already in place.

ArtPage doesn't work at all on '83 series Kaypros—not even to print demo files. I can't say I like its output much, but if I only needed to put out flyers and didn't want to invest much (*and* if I had an '84 series Kaypro) I'd consider it.

If you're interested, download a copy of PAGEDEMO.LBR from the KUG ROS bulletin board (619/259-4437). Extract the library files (with LU.COM or other library utility) and try it.

In conclusion

You will never get high-quality desktop publishing out of your CP/M Kaypro computer. But if near-desktop publishing or just combining some graphics and text on a single page is enough for you, then these programs could be the perfect solution.

Near-desktop software is available for MS-DOS also. Look for a round-up on the affordable alternatives for your Kaypro MS-DOS computer in the near future.

Jim Spickard is a remote editor for PROFILES *magazine.*

Quick Reference Summary

Product: Fancy Font
Manufacturer: SoftCraft, Inc.
222 State St.
Madison, WI 53703
Phone: (608) 257-3300
Sugg. List Price: Fancy Font System: $180, WSFONT: $15; Font Disks: $15 each; MODFONT: $15

Product: FontStar
Manufacturer: MicroNova
R.R. #5
Canning, Nova Scotia
Canada B0P 1H0
Distributor: Central Computer Products
330 Central Ave.
Filmore, CA 93015
Phone: (805) 524-4189
Sugg. List Price: $49

Product: ArtPage
Manufacturer: Artie Software
964 Heywood Ave., #220
Victoria, B.C.
Canada V8V 2Y5
Phone: (604) 383-4955
Sugg. List Price: $29.95 (US), $39.95 (Canadian)

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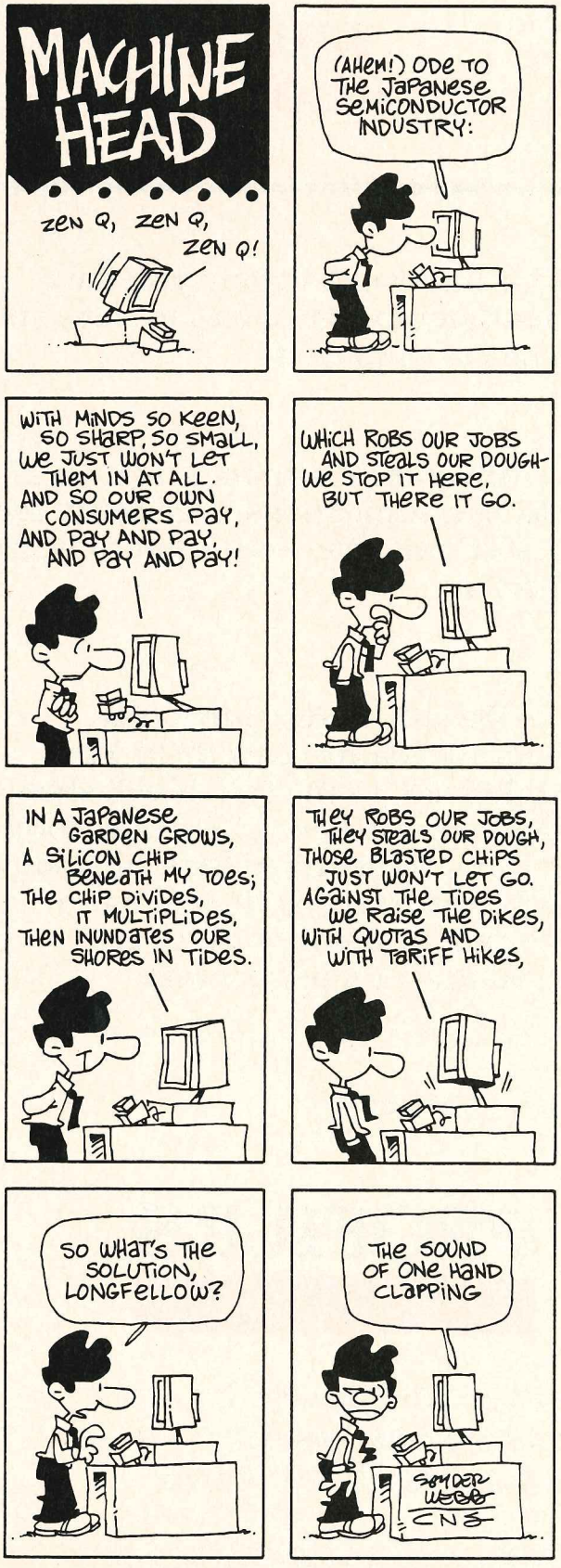

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EDITOR'S CHOICE

Kamas, v. 2.25

by Thomas Enright

My "Editor's Choice" this month is Kamas, version 2.25, an idea processor for MS-DOS systems from Kamasoft. Kamasoft has produced idea processors for several years. They made the original Kamas for CP/M systems before the terms "idea processor" or "outline processor" even existed. They also publish Out-Think, another idea processor specifically for eight-bit CP/M systems.

Kamasoft's previous experience has allowed them to produce Kamas as a mature, well-thought-out product right from the start. It has menus to guide the new user, as well as a command-driven interface to satisfy power users. And to top it all off, the documentation is as well done as the software.

The overall package

The Kamas disk contains KCUSTOM for customizing Kamas, an online help facility, and two sample outlines. The help file is a 93K Kamas outline and is an excellent example.

Kamas comes ready to run, so no installation is required. The KCUSTOM program alters screen colors, printer support, the drives used during text searches, and program defaults.

The screen colors option lets you change the color used for CGA or EGA video systems. Kamas writes directly to video memory and may create some "snow" on CGA systems. If your system demonstrates this problem, use KCUSTOM to enable its "anti-snow" feature. This slows down screen writes enough to eliminate the problem. If you have an EGA card and monitor you can set screen size to 80 columns by 43 lines.

Kamas comes installed for IBM and Epson printers. Using KCUSTOM, you can select any one of 29 other printers from a menu. If your printer is not on the menu, you can edit the printer commands to match your printer.

The file handler

Kamas is divided into two basic sections: a file handler and the idea processor. We'll look at the file handler first.

When you run Kamas, it enters the file handler, where each command operates on entire files. Here is where you select the outline or idea file to work on. It is also where you create new files, erase old ones, and set security levels for each file.

Each file has a 31-character description.

The way Kamas treats files is interesting—each file has a 31-character description, including spaces. The first eight characters, with spaces removed, are used as the file name where MS-DOS is concerned, and Kamas adds the file extension KAM. The file manager screen displays the 31-character description.

In addition to the full file description, the file manager shows the drive, date and time of last change, security level, and file size in kilobytes. To begin editing a file you simply move the cursor to a file and press Enter.

The bottom line of the screen displays valid commands and status information. The F1 key selects context-sensitive help, F2 selects the menu system, and Escape backs up to the previous level.

Commands can be entered directly or via a system of menus, entered with F2. Newcomers will appreciate the support provided by the menu system. However, once you become familiar with Kamas, the one- and two-keystroke commands are the fastest way to work.

One very interesting ability of Kamas is an electronic flashcard mode. By formatting an outline in a certain way, Kamas will display a question that you have entered, and after you press a key, it will display the answer. A demonstration file is included to show you how to utilize this function, and it is well covered in the manual. This feature should be popular with students and teachers.

The idea processor

The idea (or outline) processor part of Kamas is where you spend most of your time. A Kamas outline is a hierarchical series of title lines under the main heading of the file. Each title may have subtitles (called children or branches) to divide the parent subject into more detailed subsections. Each subtitle can have subtitles of its own, and so on down the line. A title at any level may also have a block of text attached to it (called a text leaf).

Text leaves are not shown onscreen along with the outline. A text leaf is shown when you select the text editor.

Figure 1 shows a Kamas outline as it appears on the screen.

Notice in the figure that each title has a symbol in front of it. Because the outline can be compressed, with only some levels visible, these symbols provide information about a title. An asterisk indicates that the title has both children and a text leaf. A plus sign indicates children but no text. A colon means that a text leaf is present, but no children. And a bullet (a round dot) means no text and no children.

Kamas has a wealth of commands for moving around an outline, entering new titles, and editing existing ones. The primary menu (accessed by pressing F2) lists the following command classes: Show, Go, Mark, Edit, Alter, Format, Print, Outfile, and Infile. Each of these selections takes you to another

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EDITOR'S CHOICE

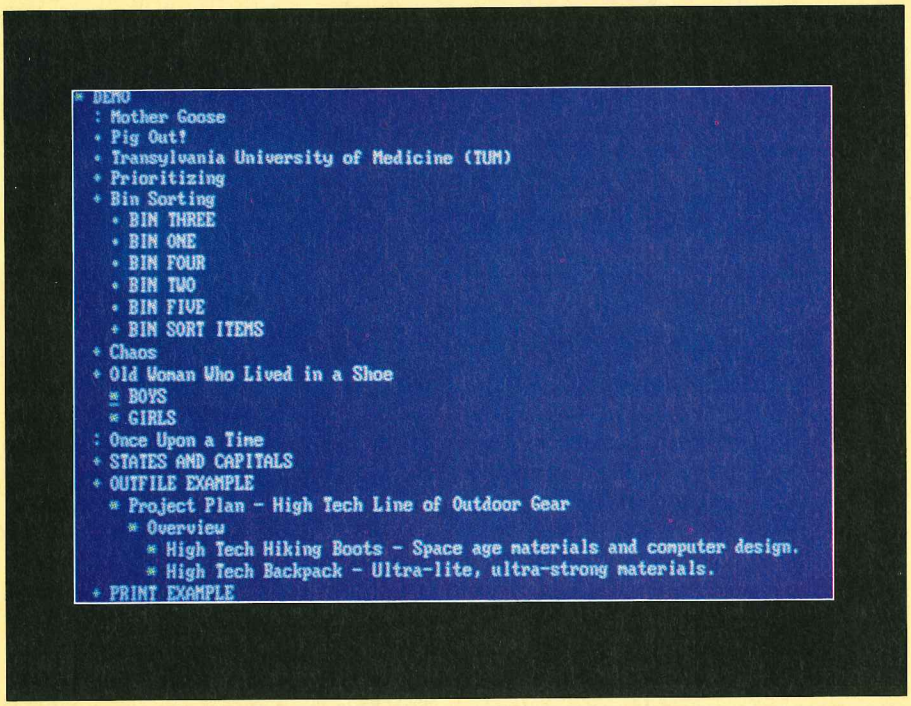

FIGURE 1: A Kamas outline onscreen

menu of more detailed commands.

Show commands are used to view parts of the outline not currently visible. You may also use these commands to view a list of other outlines and to get system status information.

The Go commands let you move to another area of the outline or to a different outline altogether.

Mark is used to tag or mark items in your outline prior to moving, copying, or deleting them. You may also set up numbered bins in which to place marked items.

Edit commands let you revise the titles, subtitles, or text leaves. Editing commands also allow you to temporarily zoom in on the current title so that it and its subtitles are the only things on the screen (this is called UPLIFTing). Other editing commands REVEAL or HIDE sections of your outline.

Alter commands change the outline structure by inserting, deleting, moving, copying, or sorting outline elements. Each subgroup of Alter accesses yet another menu of more detailed commands.

Format commands set the page format prior to printing.

Print commands are used to print all or part of the current outline. Options include titles only, titles and text leaves, or sections of the outline.

Outfile commands are used to output the current outline to a standard text file for editing with a word processor.

Infile commands input standard text files into your outline.

An example of a Kamas command could be inserting a new title at the same level as the last title. This can be done in two ways. Using the menu system you would press **F2 A I N**. The F2 key starts the menu system, A selects Alter menu, I selects Insert menu, and N selects Next. (At each keystroke you are presented with a line of valid commands for the next step at the bottom of your screen.) You would then type the title and press Enter. Alternatively, the same result can be obtained by pressing **I N** (Insert Next) and entering the new title. Direct command entry is faster, but you must know the commands.

Earlier I mentioned that each title can have an optional block of text attached. Each block of text can be up to 32K in size. You can bring up a text leaf by putting the cursor at the title where you want the leaf and pressing Enter. This will activate the text editor.

The Kamas text editor is a full-screen editor with a complete set of editing commands. In addition to its own commands it recognizes nearly all WordStar editing commands.

Documentation and support

The Kamas manual is as good as the program. The bane of all software publishers is producing manuals that are useful to both beginners and experienced computer users. Kamasoft is one of the few that have succeeded.

The Kamas manual is divided into three sections. The first section (chapters one through three) is for newcomers to outline processing. Chapter one is an overview of the program and manual. Chapter two deals with the terminology of outline processors, and chapter three is a tutorial.

The second section (chapters four and five) is for advanced users. Chapter four covers overall strategies used in outlining and gaining the most benefit from the program. Chapter five deals with tactics for specific situations.

The third section includes chapter six and the appendices. Chapter six is a reference for Kamas commands and menus. The appendices cover KCUSTOM, error messages, and command aliases.

Each title can have an optional block of text attached.

The manual is very well written in an interesting style and is not afraid to use conservative humor in its examples. It is a refreshing approach to what could be a dry subject.

Conclusions

Kamas is useful to students, authors, and anyone else who has the need to organize thoughts and ideas. It can also be used to plan the steps in small projects or even, in flashcard mode, to write exams for teachers. Kamas is an outstanding and powerful program for a very reasonable price.

Quick Reference

Product: Kamas, v. 2.25
Manufacturer: Kamasoft Inc.
2525 S.W. 224th Ave., Box 5549
Aloha, OR 97007
Phone: (503) 649-3765
Sugg. List Price: $69.95

AT A GLANCE

Multiplan 2.0 and Sideways

by Sam Hicken and Norman S. Wei

Other products reviewed this month are a spreadsheet and a utility program that lets you print files sideways on dot-matrix printers. The spreadsheet is Multiplan, from Microsoft Corporation. The utility program is Sideways, from Funk Software.

Multiplan, version 2.0

In the beginning was VisiCalc, and VisiCalc begat Multiplan. Version 2.0 of the venerable spreadsheet from Microsoft Corporation handles like a reliable work truck—no fancy paint job, no souped-up engine, a few dings—but it's friendly to drive and gets the job done. Multiplan 2.0 requires an IBM PC, XT or AT compatible (under DOS 1.1 or higher) with at least 128K of memory and one 360K floppy disk drive.

Features and Performance. Multiplan 2.0 can work with up to 4,095 rows and 255 columns of data—a big enough grid for almost any application. Twenty rows are normally visible at any time.

The basic "look" of the program is quite pleasing. You select commands and options from a series of menus at the bottom of the screen. A command is invoked by typing its first letter, or by using the space bar and backspace key to highlight the command, and then pressing Enter. While the space bar-backspace combination isn't immediately intuitive, it frees the arrow keys for selecting the active cell. Below the menu is a line for prompts and errors, and a status line that displays, among other things, the percentage of free memory remaining.

Formulas in Multiplan consist of constants, cell references and functions. You don't have to type specific cell references—Multiplan fills them in as you move the cursor between cells. All you do is type the necessary operators (+, −, %, SUM, etc.). Formulas normally utilize relative cell references, which means they can refer to different cells (though *relationally* they're the same) when copied. Multiplan provides nearly 50 mathematical, statistical, financial, text, and logical functions that can be used in formulas.

You can also "lock" cells that contain formulas or calculated data and jump between "base cells" (which contain independent data) using the "next-unlocked-cell" and the "previous-unlocked-cell" keys. The ability to modify base cells without corrupting formulas or calculated cells is particularly handy in "what if" analyses.

Multiplan automatically recalculates the spreadsheet whenever values change.

Multiplan automatically recalculates the worksheet whenever values change, unless you toggle this feature off. Calculations take place in the background, so the user can continue to navigate and make alterations.

Because Multiplan can open several windows on the screen, you can view data from widely separated sections of the worksheet at the same time. Two windows can be linked, in which case scrolling one window scrolls the other. Windows can have "borders," and on color systems, the windows can be "painted." The Window-Split (Titles) command is used to freeze row and column titles while cells beneath the titles are allowed to scroll.

Multiplan's outstanding feature is its ability to work with multiple worksheets. A main or "dependent" worksheet can be linked to "supporting" sheets, after which Multiplan automatically updates the main sheet when anything in a supporting sheet is changed. Setting up the links requires planning and work, but once the links are made, Multiplan remembers the relationships between worksheets.

Multiplan's potent macro system lets users store a series of keystrokes in otherwise unused worksheet cells. Unfortunately, the program doesn't support "key-logging" to automatically record the user's keystrokes as he or she works. Instead, a macro is entered as text, with the help of a Macro Edit mode. The macro key sequence reels off like a player piano when you activate it by typing its two-letter "command sequence," or with a Goto command. A macro can also be set up to automatically execute when the worksheet is loaded, and interactive macros can pause to accept input from a user.

Multiplan incorporates a mini-programming language consisting of a dozen command codes that can be embedded in macros to support conditional and absolute branching, subroutine calls (to other macros), and custom menus.

Iteration is an advanced mathematical feature Multiplan can use to resolve some otherwise unresolvable circular reference calculations (via a series of

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AT A GLANCE

"successive approximations" that converge to a result). Unless iteration is invoked by a command, formula or macro, Multiplan (like most spreadsheets) will display a "circular references unresolved" message and then abandon a calculation if two cell values depend one on the other. Iteration models can be developed in must-use situations to resolve specific circular mathematical and financial relationships.

Multiplan supports Microsoft's mouse and comes with the mouse drivers. With a mouse, a user can traverse the worksheet, make menu selections, and highlight cell ranges. The reviewer enjoyed running the program with a Mouse Systems mouse after installing that company's standard driver. Presumably, any Microsoft- compatible mouse could likewise be installed.

Multiplan supports Microsoft's mouse and comes with the mouse drivers.

Multiplan also includes a separate program to convert data from columnar and delimited ASCII text files, DIF files (VisiCalc and SuperCalc), SDF files (dBASE), Microsoft SYLK files (Chart), and Lotus WKS files to Multiplan format. In addition, VisiCalc, Lotus, and Symphony files can be loaded directly.

The program can also save worksheets in Lotus format. There are documented restrictions, however, and some data will at times be lost. It took more than nine minutes for the CONVERTD program to translate a 13-column-by-300-row worksheet from Lotus format to Multiplan format, plus another five minutes to load it. Yet it took less than three minutes for Multiplan to directly load the same file. In addition, the CONVERTD program introduced numerical precision errors, whereas direct loading did not. You should use direct importation when possible and think twice before considering mass conversions.

Multiplan has other quirks. It requires you to select the ALPHA command before entering text. Once ALPHA is invoked, it's easy to use the arrow keys to switch cells and type. But as soon as a different command is issued, the user must re-invoke ALPHA, or Multiplan interprets subsequent keystrokes as commands.

Also annoying was Multiplan's disallowance of columns narrower than three characters. It's convenient to use buffers one character wide between adjacent data columns to prevent text from running together.

Multiplan lacks several powerful features available on other spreadsheets. It offers no graphics or data base functions. Also absent are goal-seeking, auditing, multi-dimensionality, and support for expanded memory.

Documentation and Support. Multiplan's documentation consists of a 350-page manual in a three-ring binder, plus a Quick Reference guide.

The manual includes a table of contents, an index, and a glossary. An initial "Getting Started" section details how to back up the disks (there is no copy protection) and how to install and start the program. The manual is well structured and includes seven progressive tutorial chapters, four reference chapters and four appendices. No previous spreadsheet knowledge is assumed.

Multiplan offers generous on-screen documentation, which is summoned by selecting the Help command from the main menu or by typing "?" at any time. Context-sensitive help screens frequently spare you from referring to the manual. Although Microsoft doesn't have a toll-free number, its phone support system is a pleasure to use. Automated branching connects a caller to live, specialized assistance in no time, and the support personnel patiently and knowledgeably answer even the most mundane questions. —*S.H.*

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

Sideways, version 3.10

Sideways is a highly functional utility program designed to print all the columns of a spreadsheet on one continuous, sideways page. And though the program has its limitations, it's easy to use—especially for experienced Lotus 1-2-3 users. Sideways also works with programs such as Symphony, WordStar, dBASE II and III, WordPerfect, and any program that generates an ASCII file. It runs on all Kaypro MS-DOS machines.

Features and Performance. Besides sideways printing, Sideways offers a host of interesting features. It automatically calculates the number of pages and width of printouts, and it can also print special effects, such as bold type, for cells within the print range. Another feature allows the printer to skip over the perforations of the printer paper instead of treating the printout as single long sheet.

If you have many files to print, Sideways also has a batch mode that prints a series of worksheets automatically.

Sideways offers an amazingly wide array of fonts and character sizes. Its nine fonts range from minuscule (14.4 characters per inch [cpi] at 10 lines per inch [lpi]) to mammoth (5.53 cpi at 0.74 lpi). However, it is difficult to visualize the size and shape of the characters before printing. (More on this later.)

Using the smallest print size, 80 rows will fit on an 8 x 10 sheet of paper. Unfortunately, the smallest print size is almost illegible. Using the "normal" font setting (7.27 lpi), 58 rows fit on the same size paper.

A key claim made for Sideways is that it eliminates, or at least minimizes, the cutting and pasting needed to reassemble wide printouts. Does it live up to its billing? Well, it depends.

If you have a spreadsheet with more columns than rows, then Sideways is the program for the job. In this case you can spread (no pun intended) the data over as long a sheet as necessary.
On the other hand, if your spreadsheet has more rows than columns, Sideways doesn't really help in reducing the amount of cutting and pasting.

Here's why. Sideways prints as many rows as it can fit onto a page (sideways, of course) while it prints all the col-

umns. When it finishes with the columns, it form feeds to another sheet and starts with the remaining rows. The more rows, the more runs there will be.

The bottom line is that Sideways is great for wide and short spreadsheets, but not so great for long narrow ones.

Sideways works well with programs that can generate ASCII text files. The manual provides specific conversion hints for popular programs. The programs covered are dBASE II and III, Electric Desk, Framework, Javelin, Microsoft Word, MultiMate Advantage, Multiplan, Smart, SuperCalc, Timeline, VisiCalc, Volkswriter, WordPerfect, and WordStar.

The reviewer followed the hints for converting WordStar files into Sideways format. Instructions were clear and concise and the file conversion proceeded flawlessly. Both WordStar (version 3.30) and WordStar 2000 (release 2.0) were tested successfully.

Two other programs not listed in the Sideways manual were also tested. These were Condor I, a data base management program, and Perfect Writer. Data files were converted into ASCII format according to their respective manuals and ran without any problems on Sideways.

Error handling is also well done. The program successfully avoids crashing when the printer is turned off during printing—its print setting screen simply reverts to its "ready" mode.

Installing Sideways is easy. The program is not copy protected and loads readily to a hard disk. The first thing to do is select your printer from a menu of 16 supported printers. There's also a special set of printer drivers for printers that are not listed but are Epson-compatible. If you have a question about your printer, there's a built-in test program.

Once Sideways is installed, it takes no more than a minute to get the program into its ready mode. Lotus users will immediately recognize the menus and print setting screens. If you have a working knowledge of Lotus, you'll be up and running in no time. This is especially important for business users who haven't the time or energy to learn another set of commands just to print their work.

Documentation and Support. Sideways comes with an 82-page manual that is indexed and well organized. Separate chapters are devoted to the use of Sideways with Lotus and Symphony, and a third chapter covers other programs. A two-page troubleshooting section deals with printer interface problems, and a separate three-page configuration guide contains information on printer support and video displays.

The writing is lucid, enabling novices to use the program immediately. For more experienced users, the manual offers details on optional enhancement features that can make printouts quite attractive.

Good as it is, one area in Sideways' documentation needs improvement: It would be easier to choose type sizes and fonts if the manual showed samples.

Sideways does not provide a toll-free number for customer support, nor does it accept collect phone calls. However, the technical support staff is courteous and knowledgeable. —*N.W.*

SCORECARD

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

Sam Hicken is a programmer and project director at the Arizona State University Microcomputer-Based Learning & Research Lab and moonlights as a freelance consultant and writer.

Norman Wei is a business consultant with a master's degree in engineering.

Quick Reference

Product: Multiplan, ver. 2.0
Manufacturer: Microsoft Corporation
P.O. Box 97200
Bellevue, WA 98009
Phone: (800) 426-9400
Sugg. List Price: $195

Product: Sideways, ver. 3.10
Manufacturer: Funk Software, Inc.
222 Third St.
Cambridge, MA 02142
Phone: (617) 497-6339
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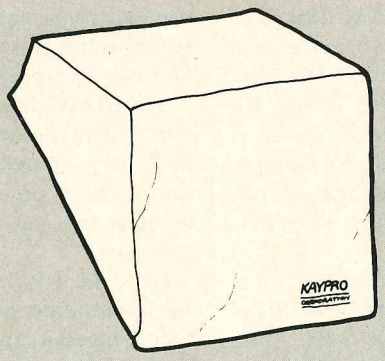

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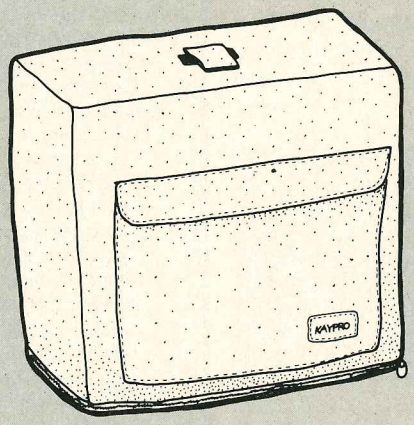

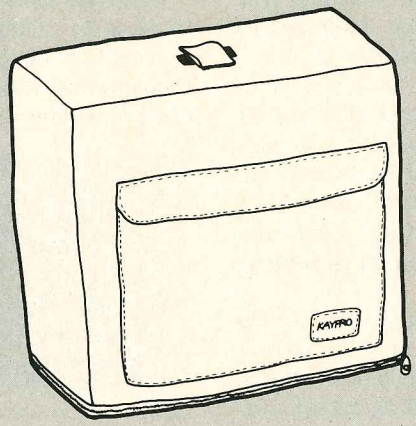

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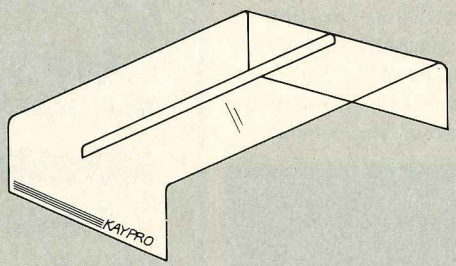

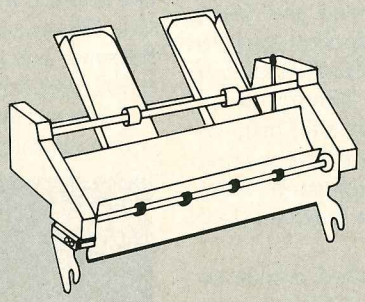

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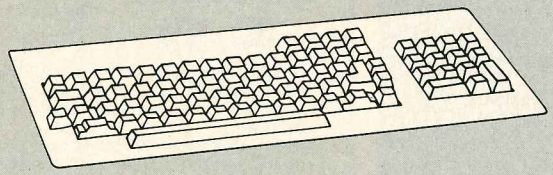

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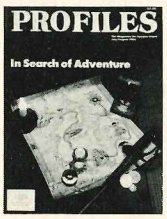

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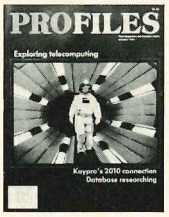

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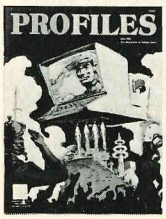

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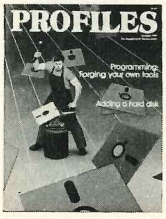

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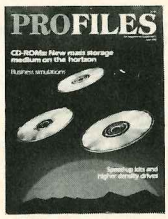

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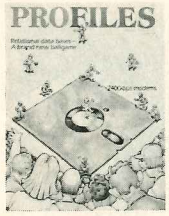

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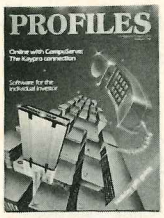

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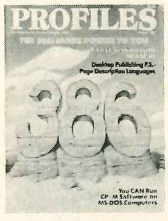

AUGUST 1987
- You *can* run CP/M software on MS-DOS computers
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PROFILES BACK ISSUES
P.O. BOX 2889
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Q&A

by Marshall L. Moseley

Beginning this month, the focus of "Q & A" is changing. In the past, this column had dealt strictly with questions readers asked in letters to the magazine. Now, PROFILES *will contact Kaypro dealers each month to find out what questions their customers ask most often. These questions will be the basis of this column. Questions will also be drawn from Kaypro Technical Support and from readers' letters.*

CONFIG.SYS

What is a CONFIG.SYS file, and how do I use it?

CONFIG.SYS is an optional ASCII file containing commands that configure your system. These commands alter the characteristics of MS-DOS, such as memory and file usage or the number of drives in the system.

When MS-DOS starts, it looks for CONFIG.SYS in the root directory and follows the commands in it if the file exists. If there is no CONFIG.SYS file, then MS-DOS runs using *default values*, which are pre-defined characteristics.

A typical CONFIG.SYS file might look like this:

```
BUFFERS=24
FILES=16
```

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

The FILES command designates the number of files that MS-DOS can have open at one time. An open file is one that is ready to be read from or written to. The default value is eight, but again, some programs demand more; dBASE III needs at least 20 to operate efficiently.

The most powerful configuration command is DEVICE, but before you can understand what it does, you have to know what a device is. A device is a part of your computer system that can send or receive data. Devices MS-DOS already knows about are disk drives, serial ports, parallel ports, the console (your screen), and the keyboard.

The DEVICE command installs *device drivers* in MS-DOS. A device driver installs some new device that MS-DOS doesn't already know about. For instance, the file VDISK.SYS, included with your MS-DOS utility files (under MS-DOS 2.1 it's called RAMDISK.BIN), is a device driver. Once VDISK.SYS is copied to the root directory, CONFIG.SYS can use it to create a RAM disk (a portion of RAM that behaves like a disk drive). The command in the CONFIG.SYS file might read:

```
DEVICE=VDISK.SYS 256
```

The phrase "DEVICE=" tells MS-DOS that a device driver is being installed, while "VDISK.SYS" names the file containing the data and instructions to access the new device. The number "256" designates the size of the RAM disk in kilobytes. When the computer powers up or is reset, MS-DOS will read CONFIG.SYS and use VDISK to set up the RAM disk.

(By the way, device drivers are not restricted to MS-DOS utilities; many commercial programs work by installing devices in the operating system. The MS-DOS version of UniForm by Micro Solutions and Kaypro's own CP/M to DOS Kit use device drivers.)

To reiterate, CONFIG.SYS is an ASCII text file containing system configuration commands. These commands can set system options, such as FILES and BUFFERS, or they can install new devices in the operating system. CONFIG.SYS must be located in the root directory, and any files that it uses (such as VDISK.SYS in the example above) must be there, too.

VSWITCH

What does VSWITCH do, and how do I use it?

VSWITCH is a Kaypro-specific program to switch video modes on Kaypro multivideo boards. It works only with multivideo boards from Kaypro, not with boards purchased from other sources. Its purpose is to switch your video from monochrome to color and back again, or from monochrome to color emulation and back again, depending on the video board in your system. VSWITCH is RAM resident; once run, it waits in memory for you to call it up with a specific sequence of keystrokes.

Each version of VSWITCH works with a specific video board, so you must first determine which video board you have. Look at the video connector on the rear panel of your computer. If that vertical slot contains both a DB-9 connector *and* a block of paddle switches, then you have an EGA half card, which does not use VSWITCH at all (so this information does not apply to you). If the slot has three connectors—two DB-9 connectors and an RCA jack—then you have the full-length multivideo board (FLMV). A single DB-9 indicates a half-length multivideo board (HLMV).

When used with the FLMV board, VSWITCH toggles your video between monochrome and CGA. That way the video board will work with either a monochrome or a CGA monitor.

With the early FLMVs, each DB-9 connector served a different purpose—one was for monochrome video and one was for color. You can connect both types of monitors to their matching connectors and use VSWITCH to switch video modes. The ports on the later FLMVs, however, do double duty. Both connectors send either color or monochrome signals. *Do not* connect both types of monitors to this board (one of the monitors will receive the wrong type of signal, which may damage the monitor). Look at the back of your board; if there are several wires soldered togther near the connectors, then you have the later FLMV board.

With the HLMV board, VSWITCH

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Q&A

switches the video from monochrome to *color emulation*. In color emulation mode the HLMV itself accepts color signals from the computer and translates them into different shades of a single color.

To use VSWITCH, place your MS-DOS utility disk in the A drive, or copy the file VSWITCH.COM to the disk you are currently using. Hard disk users should change to the UTILITY directory. From the system prompt, type **VSWITCH** and press Enter. You will see the following message:

<< VSWITCH version 1.*XX* >>

(*XX* is the version number.)

VSWITCH 1.00 is designed for use with the FLMV, while versions 1.01 and 1.02 work with the HLMV. If your version number does not match your video board, *do not* use that version of the VSWITCH program or you may damage your monitor. Reset your computer immediately and contact your Kaypro dealer to get the correct version.

To switch to CGA or emulation mode, simultaneously press the Ctrl, Alt, and greater-than (>) keys. To switch back, simultaneously press the Ctrl, Alt, and less-than (<) keys.

Sometimes RAM-resident programs like VSWITCH have trouble working with each other or with applications software. If this happens, FLMV owners can use the MS-DOS program MODE-.EXE instead of VSWITCH. HLMV owners can use the program MS.COM, which allows the HLMV board to support CGA monitors in addition to monochrome monitors, and to use Hercules graphics on a monochrome monitor. Both programs should be on your MS-DOS disk or in your UTILITY directory. Instructions for using them are in your user's guide.

The switch settings chart on page 68 of the August 1987 issue contained incorrect information. If there is no 8087 math co-processor installed, set switch 1 to ON; if there is one installed, set switch 1 to OFF. PROFILES regrets the error.

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On the Practical Side

The multi-function board

by Marshall L. Moseley

Note: Removing the cover of your Kaypro computer will void your warranty. Take this into consideration before attempting any modifications. Your Kaypro dealer can make authorized repairs and modifications.

Last month I told you how to set DIP switches inside your Kaypro PC, and how to adjust the switches on the processor board. This month we move on to another hardware adjustment in the Kaypro PC—jumpers—and to a different system component, the multi-function board.

Jumper settings

You will remember that a DIP switch is a break in an electric circuit; if the switch is ON or CLOSED, the circuit is active; if it is OPEN or OFF, the circuit is inactive. When your Kaypro PC powers up or is reset, it checks the status of these circuits. The pattern of active and inactive circuits tells MS-DOS exactly what hardware is present. Jumpers function in a similar way.

A jumper is a series of two or more metal posts set close together perpendicular to the circuit board. Like a switch, each pair of posts is part of a non-active electric circuit. To make it active, the posts must be connected by slipping a small plastic and copper block, called a *jumper block*, over them. Jumpers are usually shipped with blocks over them, but if you need blocks, a local computer repair shop should have them.

Jumpers and DIP switches are often used when a single board can have many configurations. The multi-function board inside your Kaypro PC is a perfect example.

Different hats

The multi-function board includes a floppy disk controller and memory system, a parallel port, and a serial port. You must adjust this board when you add memory, a serial port, or a parallel port.

The multi-function board is in the full-length slot closest to the power supply. Note that a ribbon cable connects it to the floppy disk drives; remove this cable by gripping the top edge of the board between your thumb and forefinger. Then, while holding the board in place, gently tug on the cable at the point where it is attached to the multi-function board. Pull first on one side of the cable and then the other, until it comes free.

Remove the board from its slot by following the instructions in last month's column. Place it in front of you with the external connectors pointing to the right and the card-edge connector pointing down.

When you install new equipment, you sometimes need to change device names (in MS-DOS, printer ports are designated by the device names LPT1, LPT2, etc., while serial ports are COM1 and COM2).

Let's assume that you have installed an internal modem that insists on using COM1. You can change jumpers and switches so that the port on the multi-function board becomes COM2 instead of COM1. Let's do that.

First, at SW2, set switch 1 ON and for the parallel port (see Figures 2 and switch 2 OFF (see Figure 1). Now, at the space between positions U37 and U38 you will see two vertical jumpers of three posts each; the leftmost jumper is for the serial port and the rightmost is 3). On the left jumper, place the jumper block so that the topmost and center posts are covered. This changes COM1 to COM2. You can make a similar change to the parallel port if you wish.

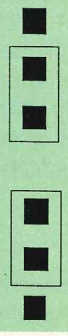
Coming attractions

That's all for now. Next month I'll cover the various graphics boards sold with the Kaypro PC.

FIGURE 1: Switch settings at SW2 for parallel and serial ports

1	2	3	4	
ON	ON			COM1 (3F8h)
ON	OFF			COM2 (2F8h)
OFF	ON			Disables serial port
OFF	OFF			Disables serial port
		ON	OFF	LPT1 (378h)
		OFF	ON	LPT2 (278h)
		OFF	OFF	Disables parallel port

FIGURE 2: Jumper settings for the leftmost jumpers between U37 and U38



COM1 Selected

COM2 Selected

FIGURE 3: Jumper settings for the rightmost jumpers between U37 and U38

LPT1 Selected

LPT2 Selected

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KAYPRO INSIDER REPORT

by Michelle Breyer

In response to frequent reader requests, PROFILES has added the "Kaypro Insider Report," a new department aimed at keeping Kaypro owners up to date on new products, policies, and people at Kaypro Corporation. Information is correct at press time, but prices and product availability are subject to change.

The Kaypro 2000+

Kaypro has introduced its new laptop, the Kaypro 2000+, in two models. The 2000+ utilizes a revolutionary new screen technology that makes it twice as readable as previous LCD screens. The 2000+ has a high-contrast, "super twist" LCD backlit screen, with full EGA capability as a standard feature. It also includes a connector for an external EGA, CGA, or MDA monitor.

The first model, due out in late summer, comes with two built-in 720K, 3 1/2-inch disk drives and 768K of RAM. A second model, to follow, is equipped with a 10 megabyte hard disk drive. Both models are powered by a built-in rechargeable battery pack. By using an optional battery carrier the 2000+ can be run temporarily on D-cell batteries.

A selection of name-brand software, including WordStar, Polywindows, MailMerge, GW-BASIC, and MS-DOS, is bundled with the Kaypro 2000+.

Reduced prices

Kaypro Corporation has reduced prices on the Kaypro 386 line of supermicros, the Kaypro EXTRA! EXTRA! complete desktop publishing systems, the Kaypro 16_E, and the 16_{2E}.

Prices on the Kaypro 386 Models A and E have been reduced by $500. The Model A, with 512K of RAM and a 1.2 megabyte floppy disk drive, retails for $4,495. The Kaypro 386 models E-40 and E-130 sell for $5,795 and $8,095, respectively. The Kaypro 386 is available with either a 40 or 130 megabyte hard disk drive.

All configurations of the Kaypro EXTRA! EXTRA! desktop publishing system have been reduced by $500.

The Kaypro 16_E, a transportable IBM PC-compatible computer with 768K of RAM and a 20 megabyte hard disk, now retails for $1,595. The dual floppy Kaypro 16_{2E} is available for $1,395.

Desktop publishing

The Kaypro EXTRA! EXTRA! desktop publishing system is now available in eight different configurations (see chart below for details). The basic system, available for $7,498, includes the Kaypro 286i Model C with 640K of RAM and 40 megabyte hard drive, EGA video card, high-resolution monochrome monitor, the 300 dpi Kaypro Page Printer II with Hewlett-Packard "B" fonts, an assortment of downloadable fonts, a mouse, and all interface cabling.

Systems are available with such features as the IBM PC-compatible Kaypro PC-30 with 30 megabyte hard drive, full page monitor and adaptor, and EGA card. The systems range in price from $3,395 to $8,745.

Two upgrades are also available through Kaypro. The first, which retails for $1,549, includes software (Ventura Publisher, version 1.1, GEM Desktop, GEM Paint, and GEM Draw+), and a mouse. The second upgrade, available for $4,544, includes the software, a mouse, and a laser printer.

System Name	Retail Price	EGA Card	Monitor Type	Laser Printer	Software Package	Mouse
286 Model A	$4,603	Yes	Monochrome 13"	No	Yes	Yes
286 Model B	$5,885	No	Full-Page	No	Yes	Yes
286 Model C	$7,498	Yes	Monochrome 13"	Yes	Yes	Yes
286 Model D	$8,745	No	Full-Page	Yes	Yes	Yes
PC-30 Model A	$3,395	Yes	Monochrome 13"	No	Yes	Yes
PC-30 Model B	$4,795	No	Full-Page	No	Yes	Yes
PC-30 Model C	$6,390	Yes	Monochrome 13"	Yes	Yes	Yes
PC-30 Model D	$7,738	No	Full-Page	Yes	Yes	Yes

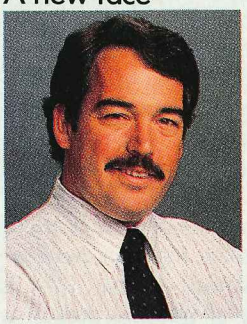
Full-Page monitor includes video adaptor

Corporate award

Kaypro Corporation Chairman and Chief Financial Officer Andrew F. Kay has been awarded a Corporate Leadership Award by the Massachusetts Institute of Technology. Kay, a 1940 graduate, is among 64 MIT alumni to receive the prestigious award.

Corporate Leadership Awards are given to alumni who are chairmen, vice chairmen, presidents, or managing partners of leading business, financial, and industrial organizations. The award honors individuals whose responsibilities in private industry mark them as exceptional contributors to the continued strength and well-being of the economic system.

A new face



Gary McAvoy recently joined Kaypro Corporation as the Director of Corporate Communications. He has previously worked as a management, a marketing, and a communications consultant for a number of firms in California and the Southwest, developing business plans and improving overall organization and efficiency. Prior to becoming a consultant, McAvoy was western regional marketing administrator for GTE Information Systems, based in Stamford, Connecticut.

McAvoy is enthusiastic about joining the Kaypro team. "I look toward enhancing Kaypro's image internationally while extending its growing marketing influence," said McAvoy. □

Michelle Breyer is Director of Public Relations for Kaypro Corporation.

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.

Technical analysis program

Compu/CHART 3 is a trend analyzer package that goes online via modem with Hale Systems' Dial/Data Service and retrieves price and volume information in its own format, automatically.

This package allows you to formulate a trading system with the use of time-tested methods of analysis. Market data is easily retrieved at a very low cost on a daily and/or historical basis, and it includes stocks, commodities, indexes, and funds.

Other features include: price/volume chart, including on-balance volume; point and figure chart; window comparisons, comparing up to four different securities per screen; and more.

$299.95, or optionally packaged with a 1200-baud Hayes-compatible modem for $388.95. Kaypro MS-DOS computers. NewTEK Industries, P.O. Box 46116, Los Angeles, CA 90046; (213) 874-6669.

AI retrieval program

Golden Retriever is a text pattern recognition program that lets you scan files and locate data even if you're not sure of the exact phrase to search for.

It searches only the files you want. With combinations of wildcard character, file date, and sub-directory option, you can create a "file name" string specifying which area of the disk you want to search.

When searching for a single word, Golden Retriever can search 2,000 characters per second. It also has the ability to search any file on your disk, and if a file contains both text data and other control codes, Golden Retriever will skip the control codes automatically.

$99. Kaypro MS-DOS computers. SK DATA INC., P.O. Box 413, Burlington, MA 01803; (617) 229-8909.

Mathematical equations

TK Solver Plus is a new edition of an algebraic equation processing program. It will satisfy advanced users who require powerful mathematical tools, as well as beginners.

With high-resolution graphics, the TK Solver Plus supports 8087 or 80287 math co-processors, reads and writes Lotus 1-2-3 and DIF format files, offers easy-to-use tables for input and output, adds complex number arithmetic, supports user-defined procedure functions, and more.

The new pull-down, plain-text menus, along with context-sensitive online help and totally revised user documentation, make TK Solver Plus much easier to use.

$395. Kaypro MS-DOS computers. Universal Technical Systems, Inc., 1220 Rock St., Rockford, IL 61101; (815) 963-2220.

Learning games

The Early Learning Series provides a fun and challenging way for children from pre-school through third grade to acquire fundamental learning skills and become familiar with computer operation.

The series emphasizes such important skills as matching, sequencing, basic math, problem solving, and shape, number, and word recognition. The games make extensive use of graphics and interaction to provide an exciting learning experience.

Each disk features a variety of educational games to appeal to children aged three to eight.

The series provides four disks a year, delivered quarterly. $29.95 for the Early Learning Series, which includes four disks. Single disks available for $9.95 each. CP/M Kaypros with graphics. Pegasus Educational Software, P.O. Box 236, Goshen, KY 40026; (502) 228-4337.

Multi-lingual word processor

ChiWriter "The Scholar's Edition" is a word processor that allows you to see foreign characters on the screen, as well as print them.

It offers fast processing and lets you load up to 20 fonts at one time, all selectable from the function keys. The package comes with 14 fonts, including bold, script, and gothic, and four alphabets including Roman, Greek, and Biblical-modern Hebrew.

The Scholar's Edition supports footnotes, columns, online help, text-only macros, block moves, searching and replacing, page numbering, proportional spacing, and more.

The package comes with two disks and a 145-page manual.

$99.95. Kaypro MS-DOS computers

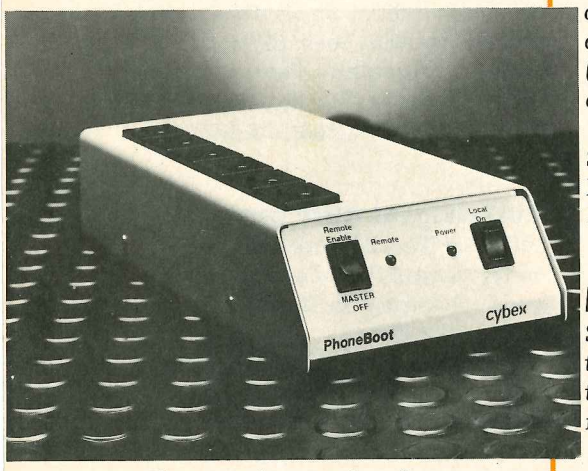
with CGA video and a supported nine-pin printer. Additional disks available for Hercules, EGA, and AT&T graphics cards and for other printers. Paraclete Computer & Software, 1000 E. 14th St., Suite 187, Plano, TX 75074; (214) 578-8185.

Remote control

PhoneBoot allows you to boot your computers, peripherals, and other electrical devices from a remote location using the telephone. It also provides security and solves other problems associated with allowing system access via modem.

The computer need not be left on—the PhoneBoot can turn it on and then turn it off when it is finished.

The product comes equipped with six 110V AC outlets, a telephone receptacle, a modem receptacle, and a six-foot power cord. Surge protection is provided for the telephone and the modem, as well as the six outlets.



There are three modes of operation: Remote Enable, which allows PhoneBoot to monitor the incoming telephone line for ring signals; Local On, which lets PhoneBoot serve as a conventional surge protector; and Master Off, a switch that renders PhoneBoot inoperable.

$329. All Kaypro computers. Cybex Corporation, 1860-B Sparkman Dr., Huntsville, AL 35816; (205) 830-1100.

Laser printer

EXPRESS Series II is an eight-page-per-minute laser printer with complete Hewlett-Packard LaserJet Plus emulation.

It includes 19 standard fonts from which multiple fonts can be produced via bolding and software-selectable character spacing.

Other features include a resident RS-232 and Centronics interface, a duty cycle of 5,000 pages per month, a print engine life of 300,000 pages (five years), and full-page (300 x 300 dots per inch) text resolution.

$2,295. OASYS Office Automation Systems, Inc., 8352 Clairemont Mesa Blvd., San Diego, CA 92111; (619) 576-9500.

Map it out

StreetSmart is street map software that provides detailed street directions and plans delivery routes for maximum efficiency.

Up to 100 destinations can be entered for one trip. StreetSmart sorts the destinations into an efficient order to minimize distances traveled.

The software allows you to build a customized map of any town. Using the four arrow keys, you maneuver through a town, adding streets and intersections.

The manual is also written for the novice map designer—it leads you through a comprehensive tutorial. All you need is a good printed map of your area to work from.

StreetSmart requires 256K of memory and takes advantage of up to 640K, allowing 6,000 intersections.

$89. Available in 5-1/4 and 3-1/2 inch disks for all Kaypro MS-DOS computers. Street Map Software, 1014 Boston Circle, Schaumburg, IL 60193; (312) 529-4044.

Bundled software

UNIDEX is a software package that includes 25 data base management templates and mail merge files to be used with DataStar, ReportStar, WordStar, and MailMerge.

Included on two fully documented disks are templates and files to help you do mailing lists, indexing, labels, reports, form letters, bibliographies, invoicing, and more. All are ready to run.

$24.75. Kaypro CP/M computers. BIMAL Micro-Computer Service, P.O. Box 389, Welcome, NC 27374.

Backup

QuickSave is a new hard disk backup program that maintains rigid backup schedules and prevents the data

losses associated with infrequent backups.

The program allows you to set up

schedules that are then monitored by QuickSave. Up to nine different backup schedules can be tracked at a time. When the backups are due, you are alerted, and then QuickSave automatically backs up the appropriate data in less than eight minutes.

An advanced error correction technique allows QuickSave to detect and correct up to 3,200 errors per floppy disk, thereby assuring the reliability of data stored on backup disks.

QuickSave can backup 360K, 720K, and 1.2 megabyte floppy disk drives.

$99. Kaypro MS-DOS computers. Micro Interfaces Corp., 16359 NW 57th Ave., Miami, FL 33014; (800) 637-7226.

Desktop music publishing

Score is a desktop publishing system that will print any piece of music with engraver quality. Its full complement of graphic editing and page layout commands provide complete control over the placement, size, shape, spacing and output resolution of music notation.

Pitches, rhythms, marks, beams and slurs may be input independently, and notes may include grace notes and percussion note heads. All possible rhythms are supported including arbitrary tuplets, and beaming is automatic or manual including complex and partial beams.

Output resolution ranges up to 4,000 dots per inch, depending on the output device.

$495. Kaypro MS-DOS computers with 640K RAM and a graphics display adapter. Passport Designs, Inc., 625 Miramontes St., Half Moon Bay, CA 94019; (415) 726-0280.

Software art collections

Graphics & Symbols 1 is the first in a series of "software art" collections called DeskTop Art/PC.

The series will include themed collections of graphics selected and digitized from a library of more than 20,000 illustrations.

Graphics & Symbols contains more than 200 pictograms, seasonal symbols, and design elements of all kinds, stored in PC Paintbrush format.

Additional collections are planned for such categories as sports, education, and business.

$74.95. Kaypro MS-DOS computers. Dynamic Graphics, Inc., 6000 N. Forest Park Dr., Peoria, IL 61614-3592; (309) 688-8800.

Data compression

SQUISH is a new file compression program that makes more space on both hard and floppy disks by compressing files.

SQUISH lets other software (dBASE III, R:base, PFS: File, etc.) read or even update compressed files while they remain compacted on disk. When the compressed files are used, expansion of data takes place spontaneously in memory rather than on disk, so extra disk space gained by file compression can be freely reused.

Average data bases compress by 70 percent, while average text files and spreadsheets compress by 40 percent.

$79. Kaypro MS-DOS computers. Sundog Software Corp., 264 Court St., Brooklyn, NY 11231; (718) 855-9141.

Product Updates

Millionaire II provides an introduction to the stock market in an entertaining simulation. The new version has all new company and market data and enhanced graphing capabilities. Britannica Software, San Francisco, CA ☐ **PrintMaster Plus** has added new fonts ranging in size from 12 to 60 points and a variety of new borders, several for specific holidays and special occasions. The update lets you create banners, etc., utilizing high-quality, high-density graphics and lettering. Unison World, Berkeley, CA ☐ **Easy Color** for Lotus 1-2-3 and Symphony has been updated to version 4.0. This version boasts improved EGA support with faster execution. Now you can select colors for the foreground and background, spreadsheet borders, menus, graphs, and more. FrontRunner Development Corp., Van Nuys, CA ☐ The original shareware CP/M version of **PC-File 80**, the full-screen input data base program, has been upgraded to include most of the facilities available in PC-File III, MS-DOS version 3.0. KaftorWare Corp., Chicago, IL ☐ **Fancy Word**, version 3, offers high-quality graphics in a variety of fonts. It includes a graphics command that allows you to include screen-captured images, plus PC Paintbrush files, Microsoft Windows clipboard pictures, and more. SoftCraft, Inc., Madison, WI ☐ Version 1.2 of **FormSet**, a forms generator program, can now incorporate an onscreen preview option. Orbit Enterprises, Inc., Glen Ellyn, IL ☐ The new version of **Smartcom III**, a stand-alone communications program, offers a flexible interface, with menus for the beginner. Other features include an integrated text editor, file compression/scrambling, and a peruse buffer. Hayes Microcomputer Products, Inc., Atlanta, GA ☐ Version 3.0 of **PRESTO**, a multi-function software supercharger, uses less memory and includes a floating point calculator, screen dumps to printer or file, and a Rolodex-like function. Spectre Technologies, Inc., Woodland Hills, CA.

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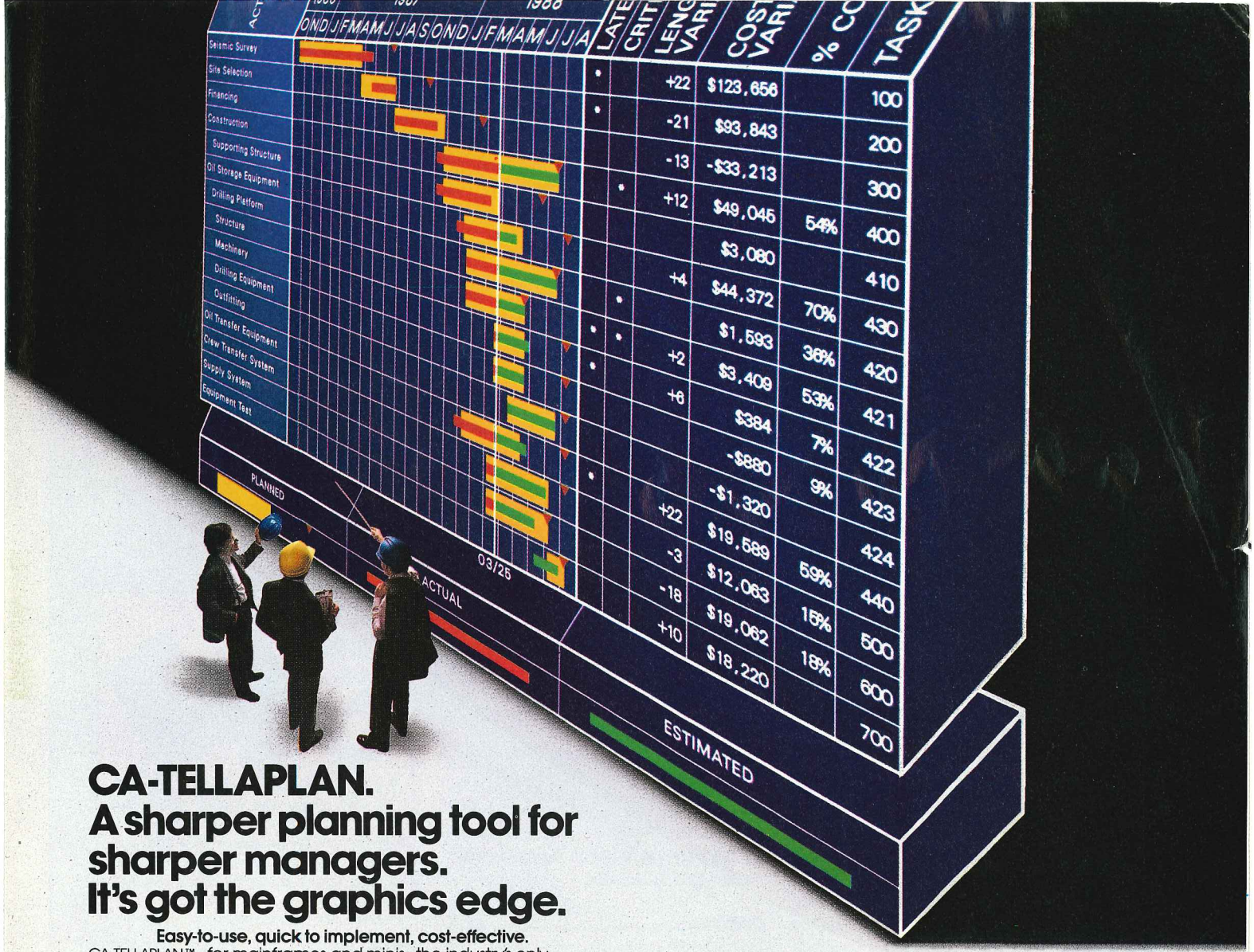

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