



The Z-Letter

Newsletter of the CP/M and Z-System community

Number 36

March/April 1995

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CATEGORIES: (SA is a credit; the rest are debits)

BT = Business trips	OE = Office equipment	RE = Repair & maintenance
DA = Account debits	OS = Office supplies	RM = Reference material
EN = Entertainment	PH = Phone bill	RP = Royalty payments
ES = Equipment later sold	PO = Postage and shipping	SA = Sales
GE = GENie account	PR = Printing and copying	SU = Storage unit rental

SOURCES: 3 = Alaska Airlines VISA card 6 = OfficeMax credit card
4 = D&D bank account in OR 7 = Fingerhut order information
5 = Lambda bank account

Sysop wanted for Z-Node Central

NEW PRODUCT

CP/M for the Commodore Amiga

Index to issues 1-34: Titles

AVAILABLE AGAIN

Turbo Editor Toolbox

UniForm for CP/M

Compiled CBASIC

How to do your taxes with your CP/M computer

An introduction to aliases, by Bob Vinisky

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Welcome to *The Z-Letter*, the newsletter of the CP/M and Z-System community. TZL is copyright © 1995 by David A.J. McGlone, Lambda Software Publishing, 149 West Hilliard Lane, Eugene, Oregon 97404-3057, phone (503) 688-3563, email d.mcglone@genie.geis.com.

The purpose of this magazine is to spread the news of our community, and to help newcomers get the most out of their machines. We welcome news, product reviews, how-to articles, praise, gripes, or just plain questions. Please submit material online to the email address above, on any size floppy disk in any soft-sector format, or typed or printed on clean white unlined paper. We cannot pay for articles, but the author of any article we publish will receive that issue of *The Z-Letter* free. If the author has a subscription, the subscription will be extended for one issue.

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The Z-Letter is indexed as time permits. The index for issues 1-5 appeared in issue 5. Sections of an index for issues 1-34 will appear all this year (issues 35-40).

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RANDOM ACCESS

Z-Node help wanted

Al Hawley has run Z-Node Central for many years now, and it was a Z-Node for some years before it was the central node of our network. Now he's burned out on the chore. If Z-Node Central is going to continue, someone else needs to pick up the load. If you're up to it, call Al at (310) 649-3575, or write to him at 6032 Chariton Avenue, Los Angeles CA 90056.

Meanwhile, the modem number is (310) 670-9465. Plug in while it's still there, and see what we would lose if it went away. And then pitch in!

AmigaZ80 available

Lambda has an actual new product to offer, not just an old product available again. Bill Haygood's AmigaZ80 is a Z80 emulator, similar to Simeon Cran's MyZ80 for the PC. The cost of AmigaZ80 is \$45. Along with the Z80 emulator software, the AmigaZ80 disk includes an implementation of CP/M 2.2 that runs on the emulator. Implementing the Z-System is as simple as running NZ-COM.

The Commodore Amiga's CPU is a Motorola 68000, 68010, 68020, 68030, or 68040, depending on the model. The AmigaZ80 disk includes emulator files called AMIGAZ80.000, AMIGAZ80.010, AMIGAZ80.020, AMIGAZ80.030, AMIGAZ80.040, and AMIGAZ80.ALL. The user choose the appropriate file to rename to AMIGAZ80, depending on his CPU. If he doesn't know or can't determine which to use, the ALL file will run on any Motorola CPU, but more slowly than the correct file. For instance, on an Amiga with a 68040, the ALL emulator will run about 20% more slowly than the 040 file.

One advantage of AmigaZ80 is that you can have as many virtual 8-Mb hard-disk partitions as you want, subject only to CP/M's limit of 16 drives (A through P), and the actual size of your Amiga's hard disk.

One disadvantage is that there is no direct access to the Amiga's disk drives from the emulator, such as MyZ80's IMPORT and EXPORT commands. However, in the command that starts the emulator, you can assign any file on any Amiga drive to the CP/M PTR device. Once the emulator is running, you can use PIP or other CP/M utilities to copy the file from the PTR device to any virtual hard-disk partition. If you discover you need a file once you're

in the emulator, you can stop the emulator, set up the file you wish to copy from AmigaDOS, and then restart the emulator. The emulator picks right up where it left off, so this is not too great a penance.

The present release, version 1.0, is known to include some errors in flags set by Z80 opcodes. Also, the CP/M interrupt system doesn't work yet, which is not too important since few CP/M programs use interrupts. However, the opcode bugs will be fixed in future releases, and the interrupt system implemented. Bill is working on faster, tighter code for the next release. He's also working on an implementation of CP/M Plus for AmigaZ80. The bank switching and real-time clock are already implemented in the emulator to support it.

Turbo Editor Toolbox available

Lambda has acquired several hundred copies of Borland's Turbo Editor Toolbox product, manual and disks both, and so can resell them to Pascal programmers who want to write an editor, or include an editor function in their programs. The price is \$40.

Turbo Editor Toolbox was intended as a PC product, but the code is written for Turbo Pascal 3.0, rather than the later versions of Turbo Pascal (which are actually Modula-2 or Modula-3, depending on the version). Also, the code does not address the PC's hardware directly, through assembly-language calls. Thus, though written for the PC, the product can be useful under the CP/M version of Turbo Pascal 3.0, or under Lambda's soon-to-be-released LPascal. Were this not the case, Lambda would not sell it.

CP/M UniForm available

Lambda has become a reseller of MicroSolutions' UniForm software, making available again the CP/M versions, which MicroSolutions itself no longer sells. The price is \$65, a shade cheaper than the \$69.95 which has always been the price for UniForm, and is still the price for UniForm-PC.

Currently Lambda has copies of UniForm for the Actrix, Epson QX-10, Kaypro, Micromint, Morrow MD-5, 11, 16, and 34, TeleVideo, Toshiba T100, and Xerox 820-II. If you have a copy of UniForm for any other CP/M machine, please contact me. Having permission to sell UniForm is only half the battle. Without an original to make copies from, the software will remain unavailable.

Compiled CBASIC available

Lambda has found a copy of DRI's Compiled CBASIC, version 2.0, which was included in the list of products in the Novell contract. Consequently, this product is available, effective immediately.

Lambda has also acquired copies of the DRI *Personal Basic Reference Manual* and *Personal Basic Tutorial* manual. A copy of the software itself still eludes us.

The price for these products is the same as for any other DRI product Lambda sells: \$25 for the software (when we have it), \$20 for the manual, or \$15 for the manual if bought with the software. When a product has more than one manual, each manual is \$15 instead of \$20 if bought with the software.

Files restored to Sound Potentials

Richard Brewster, the former proprietor of Sound Potentials, sent the five "lost" files announced last issue. So they are now available, and the Sound Potentials catalog file is correct again. However, these files are missing from the CP/M CDROM, because I didn't have them when I sent Walnut Creek CDROM a copy of the Sound Potentials collection.

I intend to compare the Sound Potentials files with the catalog listing. Rather than wasting a lot of time doing this manually, however, I'm waiting until I figure out a way to do it programmatically. That is, until I can write a program to compare them for me, and just report differences.

File conversion by OCR

Over the past few months I've been talking with a law firm in Florida that did all its work on a CPT computer. The CPT is a CP/M machine that, when booted, uses the auto-load feature to invoke a proprietary word processor. The word processor stores information on disk, but the disk is not a CP/M disk, has no directory, and the information is not stored in files.

Fortunately, Sydex has already confronted this problem. Chuck had already written a program to transfer data from a 3½" CPT disk to a PC disk, simultaneously translating the data to ASCII and storing it in files. The law firm's disks were 8", but Chuck confirmed by experiment that a very slight change made his program work for these, too. I therefore quoted the law firm a price for using Chuck's program to translate all their disks. The price included buying the software, and me

acquiring the used CPT machines for my collection.

The lawyers, however, came up with an alternative that never occurred to me! Since they still had working CPT machines, they printed out everything they had on disk. Then they took these pages to a local firm that read the material onto PC disks, using optical character recognition. Because the printout was fixed-pitch Courier type on a letter-quality printer, the OCR error rate was acceptably low.

While I'm sorry to lose the job, I must applaud them for their cleverness. Knowing the high error rate of OCR, it would never have occurred to me to use it this way to get around the expense and trouble of the CPT format. This gives us one more way to deal with machines whose disks can't be read on a PC using 22DISK, such as 100-tpi and hard-sector disks – provided that there's a working machine available, hooked up to a good printer with fixed-pitch Courier type.

All about LaserJets

Owners of HP LaserJets, QMS Kisses, and other laser printers based on the Canon CX printer engine should get a copy of *Canon CX-Based Laser Printers*. This is a data book and parts catalog from The Printer Works, but it's much more than that. It is bulging with information about printers that use this engine, including manufacturing history, special controllers and models, special options, exploded views with part numbers, special upgrades, etc. Computer and technology museums should get a copy, too, for they will find no better source of information for collecting these printers, repairing them, distinguishing different models from each other, and so forth. Truly this is All About CX-Based Printers. The cover price is \$9.50 from The Printer Works, 3481 Arden Road, Hayward CA 94545, phone (800) 235-6116, or (510) 670-2700 in that area code or outside the USA. They also have a FAX number, (510) 786-0589. Or you can reach them on the Internet at sales@printerworks.com.

Cleaning out Emerald Microware

Brian Garrison has decided that Emerald Microware is strictly PC from now on, and offered me all his remaining CP/M stock for a modest price. I accepted, provided he would let me pay him a little at a time. Agreement reached, Carol Jacobs drove me up to Beaverton, where I filled her van with 22 Kaypros, a Bondwell, lots of manuals and software, and spare parts for every part of a Kaypro except the box itself. As I get the chance to check out these

Kaypros, they will be for sale in the PERSONAL ADS section.

Brian is also the source of the Turbo Editor Toolbox copies mentioned above, as well as some of the CP/M versions of UniForm I'm offering. He has a couple of copies of MicroSolutions' UniDOS and the Z80 board for the PC, so if you're interested in these, call him at (503) 641-8088 before 130 PM PST and ask him what his prices are.

Organizing all your diskettes

Another important thing I did this month was go through most of my 5¼", 3½", and 8" disks. The typical computer owner has only a few disks, and can keep them in diskette boxes, or flip files. But I have thousands of disks, and those solutions are totally inadequate. My 5¼" and 3½" disks are filed in a file cabinet with seven drawers just a little taller than 5¼" disks, but wide enough for two columns of disks front to back in each drawer. Cardboard dividers divide and label the disks. The 8" disks are filed in regular file cabinets. They are kept in hanging file folders, and regular file-folder tabs are used to label them.

The 5¼" and 8" disks have to be filed separately because of their different sizes; it would be a great waste of space to file the smaller disks in regular file cabinets when I have this special cabinet better suited to them. However, in both cases the boot disks are in order by manufacturer and model, and the original distribution disks are in order by program name. For example, Eagle boot disks and hard-disk formatting software are filed under EAGLE. But Spellbinder, Ultracalc, and Accounting Plus disks are filed under SPELLBINDER, ULTRACALC, and ACCOUNTING PLUS, not EAGLE.

The boot disks are filed under make and model to make it easy to look up which machines I can supply CP/M for. Filing the distribution disks under the program names serves two purposes. First, by putting all the copies of a program together, I can see how many original copies of it I have; I only have to check twice, once for each disk size. Secondly, filing the disks by the name of the program provides a cross-reference for the manuals, which are filed by company first and then program name. If I can only remember the name of the program, I can check in the disk file to see what company marketed it. If I want to know what products a company sold, I can look in the documentation files.

Micro C reprinted

I would like to thank **Chuck Stafford** and **Ramon Gandia** for help making all the back issues of *Micro Cornucopia* available again. When Dave Thompson quit publishing *Micro C*, issues 8, 10, and 11 were out of print; and they've stayed out of print ever since. When Dave and I made the agreement that lets me sell back issues, he brought me copies of every issue except those three.

To make them available again, I took the photocopies of them that I had to Alan Newcomer, who prints *The Z-Letter* for me. The photocopies weren't good enough to reproduce. So then I asked Chuck Stafford to make *good* photocopies for me. He did so, and they were indeed much better copies; but they *still* weren't good enough for reproduction purposes. Then Ramon, a new subscriber, loaned me his **original copies** of these issues. Thanks to him generously assuming this risk, I now have masters for reproducing issues 8, 10, and 11, and have had as many printed of each issue as I have of the other issues. So thanks, guys.

Trenton again already?

Every year the Trenton Computer Faire catches me by surprise, but usually I think of it in time to tell people a little about it before the event, so they have a chance of attending. This year I forgot it entirely, partly because every time it seemed I should be remembering something, I chalked it up to the article I'd promised on doing your income tax under CP/M. I apologize for not reminding the community about Trenton. I hope someone who attends will report on it for us who couldn't attend.

Hard times for lovers

Those of you who know me personally, and who have met my lovely wife Deborah, will be sad to hear that she has decided we are through as a couple. I learned this in November, and it doesn't look like I'm going to be able to change her mind.

I mention this not in a plea for sympathy, but so that you will understand if things slow down a little around here. The days when I just can't get out of bed are about over, but there's still the huge task of dividing up 17½ years worth of stuff that was never intended to be divided. I'm keeping the house in Oregon, so don't worry about my address changing.

So if your order takes a little longer to get out than you think it should, please be patient with me. I'm doing all I can.

THE Z-SYSTEM APOLOGIST

An introduction to aliases
by Bob Vinisky

In this installment of our journey into the Z-world we begin to leave the realm of CP/M altogether and enter the Z-System in earnest with *aliases* and *shells*, the basic extensions that begin to transform our approach to computing. Although at first they might be intimidating, the great thing about the Z-System is that most features are consistent in their action. To illustrate, type the name of virtually any tool followed by a space then two slashes, and you'll be presented with a line or two describing the tool and giving the command syntax. For example type `echo //`, and you'll see:

```
ECHO  Version 14  (loaded at 8000h)
Sends text to the console or printer.
Usage:
```

```
ECHO {text}
```

Escape sequences recognized in text:

```
%P  Send following characters to printer
%C  Send following characters to console
%> Send following characters in lower-case
%< Send following characters in upper-case
^c  Send c as a control character
%D  Send a delete character
%S  Send a semi-colon character
%^  Send a caret character
%%  Send a percent character
```

This, along with the online help subsystem, should help you learn which tools you want to keep on hand. Aliases, which we'll cover this issue, use these tools, your application programs, and built-in functions to help automate tasks from the mundane to exotic scripts used to control entire computing sessions. One unjust knock the Z-System has suffered over the years is that it's a programmer's operating system. Aliases are often offered as an example of this contention. However, this is simply not accurate. Scripting's nothing more than examining the procedures you use to accomplish the task at hand, and recording them in an alias file. The process is intuitive and the tools that create these aliases are easy to use. You don't need to create the "Mother of All Aliases"; most of them are simple and do nothing more than make your life easier. One warning – it's an addictive activity! I find myself adding an alias whenever I do the same thing more than once, and creating that monster script can become an obsession. Before we examine aliases, however, we need to

examine a couple of command-processor features that make this process possible.

We've already seen how the command line itself was moved outside of ZCPR to provide a much larger command buffer. There's also a major change in the way ZCPR obtains its commands. The CP/M CCP gets its commands from either the keyboard, a SUB script, or (rarely) has a command patched directly into itself, as described in the Digital Research application note in issue 32 of *The Z-Letter*. ZCPR first looks in the Multiple Command Line Buffer for any remaining commands, then looks for a running ZEX script, then a running SUB script, a shell command, then, finally, your input from the keyboard! (ZEX is the Z-System version of EX, which is a public-domain SUB, taken to the nth degree. If you are accustomed to using SUB, give ZEX a try. It will knock your socks off!)

After receiving the command, ZCPR must process that command. First, ZCPR looks to see if the command's in the FCP. Flow control works because ZCPR looks to the FCP first. If the command leaves us in a FALSE flow state (if the expression in the IF command is FALSE), commands are discarded without being executed until an ELSE or FI is reached in the command line, reversing the flow state to TRUE. If the command isn't an FCP command, ZCPR looks in the RCP, then checks its own built-in commands. Next ZCPR searches along the command search path looking for the program (unless you've specified the DU). If the program can't be found, the command is passed to the Extended Command Processor. Finally, if all that fails, the command is passed to the error handler.

Aliases fall into two basic categories – stand-alone command files, and ARUNZ. All aliases work the same way, stuffing a command line into the command-line buffer and executing that command line. If you regularly type the same series of commands to accomplish a task, that series of commands is a candidate for an alias. Why type (and remember) the same commands over and over when the computer can do it for you?

So which type of alias to use? Each type has its own uses and features, but first let's look at stand-alone aliases. Here's a list of tools you can choose from to create these aliases:

```
ALIAS
BALIAS
```

SALIAS
 TALIAS
 VALIAS
 XALIAS

Each does its job a little differently. ALIAS is the most basic, and the oldest. You input command lines, in a line-editor environment, until you are through the task, input an empty line to exit the editor, then write the list out to a COM file. To use BALIAS, you type your command lines using your favorite word processor, such as Spellbinder; then BALIAS turns the text file into a COM file. VALIAS and SALIAS provide you with full-screen editors where you can input your alias, edit it if needed, then save it to a file. They differ in that VALIAS' commands are different from any word processor's, whereas SALIAS' editing commands match those of WordStar. The other two fall between these extremes, each with its own features. Examine them all and pick the one you like the best.

The main fault with having a large number of stand-alone aliases is that each one removes 2k from your disk capacity, as well as an entry in the disk directory, placing an additional burden on systems with a small disk capacity. ARUNZ to the rescue!

ARUNZ usually serves as the Extended Command Processor, by being renamed to CMDRUN. If your command isn't located on the search path, ZCPR passes the command to the Extended Command Processor. ARUNZ looks inside a text file called ALIAS.CMD for the command. If found, ARUNZ expands the script following the command and places it in the Multiple Command Line Buffer for execution. Each alias, instead of being in a separate file, takes up a line of the ALIAS.CMD file, ready for use as a command. I have dozens of commands in my ALIAS.CMD file, yet it takes up only around 12k of the disk, and a single directory entry.

Here's a simple example of an alias that I use all the time. A very useful tool in the Z-Tool set is SAPZ. SAPZ reads the directory entries, sorts them alphabetically, deletes the entries for erased files, and then rewrites the directory. Sorting the directory this way offers several advantages: it allows DIR to show an alphabetized listing, it minimizes problems when using UNERASE, it speeds up access by directory programs, and more. The "gotcha" arises when there are problems with the disk. It's possible to damage the disk directory (although it hasn't happened to me, I don't like taking chances). Another tool, CHKDIR,

helps to solve this problem by checking the directory and reporting on such things as zero-length files, duplicate directory entries, user numbers greater than 31 and other potential problems. So the safe way to use SAPZ is to first use CHKDIR, examine the listing, then, if everything looks all right, run SAPZ. You could enter a command line like `CHKDIR A;;SAPZ A;` which would accomplish the task, but what if there are problems reported by CHKDIR? This command would run CHKDIR and then SAPZ whatever CHKDIR showed, and with no pause between commands. A perfect reason to utilize flow control! Try this: `CHKDIR A;;IF INPUT OK?;SAPZ A;;ELSE;FI.` This series of commands runs CHKDIR on drive A, then the IF INPUT command puts "OK?" on the screen and pauses. If you type Y or y the alias continues by running SAPZ A; then quitting. If you type N or n, SAPZ isn't executed and the command stream passes to the command following the ELSE command, which is FI. Typing N sets the flow state to FALSE; no commands are executed unless they are flow commands. FI reverses the flow state to TRUE.

CHKDIR runs and reports on the disk condition, command processing halts to allow you to examine the report. If you indicate that you wish to continue, the alias runs SAPZ; otherwise the alias ends and you are back to the command line. Placing this series of commands into an alias frees you from typing that command line every time you wish to clean up a disk. Simple and effective, aliases like this free you from having to remember the exact syntax for commands. With the above command line placed into an alias named, say, CHKDISK, you don't think of running two commands with flow control, etc., you think only of the command CHKDISK. This is the same as telling a human helper, "When I say check this disk, I want you to do the following: Show me what the directory looks like. If I say that's OK, sort it and pack it."

Extending the set of commands available to you personalizes your computer. As we'll see later, aliases become basic building blocks. The back issues of *The Z-Letter* are chock full of great ideas concerning aliases, in particular Jay Sage's "Script of the Month" series. There's a wealth of ideas here. Even if you don't need a particular script featured, the idea behind the creation of the script can give you new ideas for scripts of your own. In the next issue we'll begin looking at shells, many of which use alias scripts to make your daily work into a set of simple menu choices.

PERSONAL ADS

Computers for sale or trade

Each one in working condition, price \$50 plus shipping, unless otherwise specified. One Eagle III computer, two 784K disk drives, \$75 plus shipping. Two TeleVideo 802 computers. One TeleVideo 803 computer. One Epson FX-80 dot-matrix printer, \$80 plus shipping. One Morrow MD-2 computer; terminal not included. One Morrow MD-3 computer; terminal not included. Two working Xerox 820 computers, dual 8" drives. Two TRS-80 Model II computers, one SSDD 8" floppy-disk drive each. Five NorthStar Horizon computers, condition unknown, \$20 plus shipping; wood and steel covers available. Other computers come and go all the time; let me know what you're looking for. Will trade for comparable computers not in my collection. Contact David McGlone, phone (503) 688-3563.

HP 125 computers for sale

Two in good working condition, each has HP 9135A 5-Mb hard disk and 5½" floppy-disk drive. One has green CRT, one has black-and-white CRT and HP

communications interface. \$60 plus shipping, apiece. Contact Jim Opperman, P.O. Box 6718, Bakersfield CA 93386-6718, or phone (805) 399-7030, or contact on CompuServe, CIS# 70711,1130.

Xerox 820-II and Diablo 630 for sale

Computer has 5¼" double-sided drives. Computer and printer both work. Asking \$75 plus shipping for the lot. Contact Greg Eshelman, 400 West Commercial Street, Weiser ID 83672, phone (208) 549-3571.

WANTED!

Will buy, or trade spare computer parts, books, manuals, software for the following items: Boot disks: Actrix single-sided, Actrix double-sided, Systel 3, DEC VT180, Xerox 820 (5¼"). Hardware: Two (2) NorthStar Advantage hard-disk controller cards; three (3) TeleVideo hard-disk controller cards, Zenith Z-100 data separator card. Software: Any version of UniForm other than UniForm-PC and the CP/M versions listed in the price list at the back of this magazine. Contact David A.J. McGlone, (503) 688-3563.

ERRATA

The editor regrets two omissions in issue 35 of *The Z-Letter*.

First, part of the sentence at the top of page 17 was omitted. The full sentence that should have appeared was, "Then I ran CONFIGSB and told it that I had a TeleVideo terminal and an HP LaserJet printer, that I didn't want user guides or default

function keys, that I did want column/row numbering, that my drives extend from A to N, and my CPU speed is 9 MHz."

Secondly, a contributor was left out of the section of the index that appeared in that issue. Add an entry for Jacobs, Carol: Artwork 23:1.

LETTERS

LNW-80

February 15, 1995

Dear David:

The computer bug bit me back in '81 when I bought the bare boards for a computer called the LNW-80. This was a TRS-80 Model I clone with some significant extensions, e.g., hi-res graphics, color-display capability and a 4-MHz Z80. I almost bought the Sinclair ZX80 kit, but decided on the LNW due to the abundant supply of software available for the Model I.

As my computing interests grew, so did my LNW. First, 5¼" drives, then 8" drives, then a double-density adapter, then a CP/M adapter, then a hard disk. All of the hardware modifications were done from scratch, either by wire-wrapping a daughter board, or photo-etching from a layout in a magazine. The hard disk I used had a proprietary interface, so, after building the host adapter, I had to write the driver software. The LNW is very flexible. If a TRSDOS or compatible operating system disk is in the boot drive, it becomes a Model I clone; there were at least six TRSDOS-compatible operating

systems for the Model I/III/IV family. If a CP/M disk is in the boot drive, it becomes a CP/M machine. I still use the LNW, especially since it has the ability to transfer files between different 5¼" and 8" disk formats.

At the '86 Trenton Computer Festival flea mart, I bought a Xerox 16/8 Professional Computer. It's very similar to the Xerox 820, but it also has an 8086 daughter card. Like the LNW, it takes on the personality of its boot disk, although this time the choices are CP/M, CP/M-86, and MS-DOS. I don't use the MS-DOS mode very much, as the machine is not hardware-compatible with a PC. Only very simple text-oriented MS-DOS programs will work on it. However, with a Qume Sprint 11/55 daisy-wheel printer and WordStar running under CP/M, it became my document-processing work horse (the LNW could have performed those duties, but whenever I really needed to write something, the LNW was usually in the middle of some sort of hardware modification).

The following year's TCF landed me an Epson PX-8, or Geneva. To me, this little 8½" X 11" notebook that runs CP/M 2.2 is the best thing since sliced bread. All of the work I was doing on the LNW or Xerox can go with me anywhere I go! I can create my WordStar documents on the road, and print them when I get home, or access a BBS with its built-in modem. I get a few stares when I use it in public — after all, it doesn't do Windows.

I've also picked up an XT and 386 clone over the past few years, but I still find myself wire-wrapping hardware add-ons for one of my CP/M machines, or writing some code to display GIF files on the LNW. The older "classic" computers are much easier to modify, and become very good tools for learning how a computer works.

Now I have some questions that some of your readers may be able to answer:

1. Does anyone have an Epson PF-10 they'd like to sell?
2. Has anyone interfaced a CD-ROM to a CP/M machine?
3. Has anyone installed the Z-System on an LNW?
4. Are there any CP/M BBS systems left?

Thanks again, and keep up the good work!

Sincerely,

Larry Campanell
1157 Plowshare Road
Blue Bell PA 19422-1935

Dear Larry: (1) I had one, but I sold it. (2) Not that I know of, but maybe someone will surprise us both. (3) Not that I know of, but if you're already running CP/M 2.2,

you should have no problem running NZ-COM. Why don't you try it and let us know? (4) Yes, there are. Dial up Z-Node Central (see RANDOM ACCESS, this issue) and get the latest list of CP/M BBSes. You can also dial Sage Microsystems East or Lee Bradley (see RESOURCES); they're closer to you, and run bulletin boards. — DAJM

Micromint vs. Amstrad?

5 March 1995

Dear David,

OK, I give up! I had a guy join the SIG and tell me how the SB180LO was the hottest machine around and I sent off for the information on it and wrote this member a couple letters with no response. Is there really that much advantage to using the Z180 chip?

I've got Z-System and a machine with 1 Mb of memory in my 8256. If I wanted to go faster it seems to me that the Sprinter board, which gives me an 8-MHz clock speed and 15 Mb of RAM for \$215, would be a much better choice than having to build a system from the Micromint board. Does the additional 1MHz make that much difference? Seems that for me the Sprinter board would be a much better deal, especially since they are currently in production and supported by a vibrant innovative company.

I admit that right now the hard-disk prices for the Amstrad PCWs are totally out of line for a machine that is selling in the \$100 to \$200 (or less) range, but I think that this problem would be solved as quickly by hardware hackers as was our lack of 3½" and 5¼" drives.

Are the advantages to the Micromint machines really that great that it would be worth my while to build a whole new system around these boards?

Sincerely puzzled,

Al Warsh

Amstrad PCW SIG

2751 Reche Canyon Road #93

Colton CA 92324

73300.2644@compuserve.com

P.S. I don't know how much public-domain stuff is coming from the UK and Europe, but there are all sorts of commercial stuff like DTPs in the form of Microdesign 2 and 3 being developed in CP/M over there. Supposedly there is now an Optical Character Reader available for the PCW . . . Only trouble for other generic CP/M users is these all run in CP/M+ and require tons of RAM.

Dear Al: The SB180LO is indeed the hottest

commercially-produced CP/M-compatible machine around (the YASBEC was privately produced in small quantities). The Z180 runs about half again as fast as a Z80 at the same clock speed, so the 9-MHz Z180 on the SB180LO is about equivalent to a 13.5-MHz Z80. Given the difference between that and the 8-MHz Z80 in the Sprinter board, and the expense of a hard disk for the Amstrad, I would recommend the SB180LO over the Amstrad plus Sprinter, if asked by someone who has neither.

In your case, however, you already have an Amstrad with considerable time, money, and improvements invested in it. For you, I would say go ahead and get the Sprinter, especially if you already have a hard disk on your Amstrad. It's a closer call if you still have to get a hard disk as well.

Amstrad owners who want to find out more about the Sprinter board should contact Elliam Associates (see RESOURCES). Elliam will not only sell you a Sprinter board to speed up your Amstrad, they'll even install it for you for a very reasonable fee. — DAJM

Spellbinder soft keys

March 6, 1995

Dear David:

I just discovered an error plus a possible source of confusion for readers who try to use your Spellbinder soft-key table &13 (issue 35, page 17).

You have ASCII 234 sending 'D' and commented ;Delete to mark or end. For Spellbinder, you need to add "from current cursor position." Around here, this is the most common use for the D command, so I would think that it needs to be completely accurate for publication.

You have ASCII 235 sending 'DA' and commented ;Delete All (Clear). That duplicates the display on my Eagle, but as a soft-key command it will clear *only from current cursor position*, ignoring Mark between there and the end.

Slashes in command lines do weird, unpredictable things. I think that what happens is that it sends 'T' first as a separate command, then overwrites it with 'DA' on the screen.

To make it clear the workplace, change it to T/DA'. That works like the macro sequence

T/D(n)

ON ?-3 // /-2 ;(Repeat if not done)

(T/DA inside a macro sometimes stalls.)

There are others like that. Check ASCIIs 242 and 244.

Other than that, your soft-key table is similar to the one that came with Spellbinder on my Eagle,

except that only Edit/Command, Mode Delete, and Cut/Paste work in edit mode. I did add a set of two-key off-keyboard characters that work in edit, but that system is unrelated to the soft keys. There is a "mode select" key that toggles between a choice of Delete and Cut/Paste modes in edit. There's no way to change that because Eagle uses regular keys for command functions in my integrated keyboard. I guess I got so used to it that it doesn't bother me, so I never considered changing the soft keys to add more functions. Keep in mind that I do much the same kind of stuff you do, with a primitive daisy-wheel printer I call "Ol' Clumpity-Bang."

Sincerely,

Eugene Austin

P.O. Box 115

Tilden NE 68781

Gene: I didn't put "from current cursor position" in the comment for the D command because it was a comment in a customization table, not an article on Spellbinder commands. If the user needs to know how the commands work, he or she should refer to the Spellbinder manuals. Also, adding all that would have made the line too long.

On the DA command, I regret to inform you that you are wrong. The DA command does not work from the current cursor position, but clears the entire edit buffer, regardless of cursor position. To confirm this, you need only go into command mode, and type DA manually to see how it works. It also clears the edit buffer, regardless of the cursor position, using the soft-key table from the article. I don't know why you think otherwise. I can only guess that it might have worked differently in an earlier version of Spellbinder, and you're still using that version. I've used 53 for so long, that I've forgotten most of the differences between it and earlier versions of Spellbinder.

I must also take exception to your statement that "slashes in command lines do weird, unpredictable things." A slash in a Spellbinder command line is the same as a semi-colon in a Z-System command line; it separates commands. I've never had any difficulty predicting what a string of Spellbinder commands will do; they are all completely and accurately documented in the manuals. Most of the commands in the soft-key table I've used for years and years. They are now implemented through the Spellbinder MKTAB and SOFT tables, instead of the MKTAB table alone, but they work just the same as they always have.

Next issue I intend to print another article with some additions and refinements I've added to my Spellbinder customization since last issue. — DAJM

RESOURCES

Hal Bower writes, sells, and supports B/PBios, the most advanced CP/M-compatible operating system today. Presently it's available for the Ampro Little Board, the Micromint SB180, and the YASBEC. The cost is \$69.95 plus \$3 shipping and handling. Hal Bower, 7914 Redglobe Court, Severn MD 21144-1048, phone (410) 551-5922. [2/95]

Lee Bradley sells My-Z-Demo, a package for running CP/M or the Z-System on a PC. It comes on a high-density 3½" disk with Simeon Cran's Z80 emulator My-Z80, version 1.11, the disk also contains the shareware version of 22DISK, 170 utilities, and copious documentation files. The cost is \$10.00. Lee R. Bradley, 24 East Cedar Street, Newington CT 06111-2534, phone (203) 666-3139. [2/95]

The Computer Journal is the foremost magazine for small computer systems, including CP/M. Published 6 times a year. Free sample issue available. Subscription is \$24/year surface, \$34 air, \$44/2 years surface, \$64 air, in the US. In Canada and Mexico, \$32, \$34, \$60, \$64 respectively. Elsewhere \$34, \$44, \$64, \$84 respectively. *The Computer Journal*, P.O. Box 535, Lincoln CA 95648-0535, phone (916) 645-1670. [2/95]

Corvatek sells KEY-UP, a keyboard interface for IBM-style keyboards. The DM-1 for Big Boards, DM-2 for Xerox 820, DM-3 for Kaypro, DM-4 for Franklin, DM-5 for ASCII Universal, DM-6 for Apple II are each \$129. Inquire for other models and custom key definitions and applications. Corvatek, 561 N.W. Van Buren St., Corvallis OR 97330, phone (503) 752-4833. [2/95]

dieHard, the Flyer for 8-bit Commodore computers, including the Plus/4, VIC-20, PET, C16, C64, and C128, is published bimonthly. A single copy is \$3.95 US and Canada, \$4.95 all other countries. Subscription is \$16.97/year US, \$20.97 Canada, \$24.97 all other countries. Subscriptions to the *Spinner*, a disk of the software in each issue, joint Flyer/Spinner subscriptions, and back issues are available; see the magazine for this information. Send orders to LynnCarthy Industries, Inc., 816 West Bannock, Suite 502, Boise ID 83702-5850, phone (208) 383-0300. [2/95]

Discus Distribution Services, Inc. sells Digital Research products, including its many operating systems. Their price for CP/M is \$150. They also

offer CBASIC (\$600), FORTRAN-77 (\$350), and Pascal/MT+ (\$600). 16600 Meridian Road, Salinas CA 93907, (408) 663-6966. [2/95]

Elliam Associates sells disks of public-domain software and commercial software for most CP/M computers, including the Amstrad PCW. For a 100+ page catalog, send \$8.50 plus \$3.00 shipping and handling to Elliam Associates, P.O. Box 2664, Atascadero CA 93423, or phone (805) 466-8440. [2/95]

Herbert R. Johnson is "Dr. S-100". He supports S-100 bus computers, including NorthStar, Compupro, Cromemco, IMSAI, and Vector. He can sell you S-100 boards, manuals, books, etc. Write to him at P.O. Box CN-5256 #105, Princeton NJ 08543, e-mail hjohnson@pluto.njcc.com, phone (609) 771-1503. [2/95]

Lambda Software Publishing publishes this magazine and sells a variety of CP/M and Z-System products. See our ad at the back of this magazine.

Microcomputer Mail-Order Library of books, manuals, and periodicals relating to microcomputers in general, and Heath/Zenith systems in particular, will loan you any item for 4 weeks for a handling fee plus postage. The price is deliberately low to encourage people to learn more about their computers. Inevitably, some items will be lost in the mail or not returned. Donations of printed material would therefore be greatly appreciated! For details, a list of available items, or to borrow material, write to Library c/o Lee A. Hart, 4209 France Avenue North, Robbinsdale MN 55422, phone (612) 533-3226 [2/95]

Micromint makes and sells the SB180 and SB180LO computers. These are 9-MHz HD64180/Z180 single-board computers with 256K RAM. The SB180 is the size of a 3½" disk drive, costs \$299 (\$195 each 100 quantity), or \$399 with ZCPR, ZRDOS, BIOS and ROM sources. The SB180LO is the size of a 5¼" disk drive, has SCSI, costs \$329 (\$295 each 100 quantity), or \$429 with ZCPR, ZRDOS, BIOS and ROM sources, Z-System utilities. The SB180FXMME 2-Mb memory-expansion board, populated with 256K, costs \$319. Micromint, Inc., 4 Park Street, Vernon CT 06066. Technical Assistance, (203) 871-6170. To order, (800) 635-3355. [2/95]

MicroSolutions makes several products of interest to our community. UniForm-PC costs more (\$69.95) and knows fewer formats than 22DISK (see Sydex, below), but includes a few formats 22DISK does not. MicroSolutions also sells the CompatiCard IV, which lets a PC use 4 floppy-disk drives (including 8" drives) for \$95. MicroSolutions Computer Products, 132 W. Lincoln Hwy, DeKalb IL 60115, phone (815) 756-3411. [2/95]

Morrow Atlanta Users Group is a national Morrow computer user group. Membership is \$15 per year, which includes technical support and a subscription to their bimonthly newsletter, *Mor-Atlanta News*. Send membership checks to David McDonald, 5461 E. Wind Drive, Lilburn GA 30247, phone (404) 381-1384. Send articles for *Mor-Atlanta News* to Harold Arnovitz, 1259 Kittredge Court NE, Atlanta GA 30329; or upload them to (404) 634-1612. You can also upload them to the group's BBS, (510) 654-3798; leave a message to Editor. [2/95]

Rondell Systems services and repairs all kinds of computers. Call Ron Reymore at (503) 981-8617, or write to him at 9993 Broadacres Road NE, Hubbard OR 97032. [2/95]

Sage Microsystems East, selling and supporting the best in 8-bit software. NZCOM, Z3PLUS, XBIOS, 4DOS, DSD, BackGrounder ii, ZSDOS/ZDDOS, DosDisk, JetFind, ZMATE, BDS C, ZMAC, MEX-Plus and MEX-Pack. Next-day shipping of most products with modem download and support available. Order by phone, mail, or modem. Shipping and handling \$3 USA, \$4 Canada per order; based on actual cost elsewhere. Check, VISA, MasterCard. Specify PC 360K or Kaypro 4 disk format. Sage Microsystems East, 1435 Centre St., Newton Centre MA 02159-2469, Voice (617) 965-3552 (9:00 AM to 11:30 PM), Modem (617) 965-7529 (2400 bps) or (617) 965-7046 (v.32bis) [2/95]

Chuck Stafford sells products for Kaypro computers: Advent TurboROM, \$35; hard-disk conversion kit, \$175 (without clock); *Micro Cornucopia* Schematics and Theory of Operations for Kaypro II/2/IV, Kaypro 10, '84 Kaypros, \$15 each, any two for \$25, all three for \$30; Kaypro 10 Tinker Kit, \$10; Teac 96-tpi drives, \$15 each or two for \$25. Prices include tax and shipping. He sometimes has hard disks for sale: ST-225, ST-251, and others. Write him at 4000 Norris Avenue, Sacramento CA 95821, or phone (916) 483-0312 evenings or weekends. [2/95]

The SEBHC Journal is the magazine of the Society of Eight-Bit Heath Computerists, dedicated to Heath/Zenith H-8 and H-89 computers. It is published by Leonard Geisler, 895 Starwick Drive, Ann Arbor MI 48105, phone (313) 662-0750. [2/95]

Sydex sells PC software useful for copying CP/M files and handling CP/M disk formats (22DISK), running CP/M programs on a PC (22NICE), and copying CP/M boot disks without having the original machine (AnaDisk). Free sampler disks with the limited shareware versions are available. The registered versions, which are more powerful, are \$25 each for 22DISK and AnaDisk, \$40 for 22NICE (which includes 22DISK). Add \$2.50 for shipping and handling with each order. Talk to Chuck or Miriam at Sydex, P.O. Box 5700, Eugene OR 97405, phone (503) 683-6033. [2/95]

Jim Thale sells the I/O board which gives the YASBEC two additional high-capacity disk formats, two serial ports, and two Centronics ports. The board is available with surface-mounts, PAL, and big chips only for \$150, or with the additional parts for \$210. James S. Thale, Jr., 1150 Somerset Avenue, Deerfield IL 60015-2944, phone (708) 948-5731. [2/95]

Trio Company of Cheektowaga, Ltd. sells several CP/M packages as well as PC software. They offer InfoStar 1.5 (\$160), SuperSort 1.60 (\$130), and WordStar 4.0 (\$130). Write P.O. Box 594, Cheektowaga NY 14225, or call (716) 892-9630. [2/95]

Steven W. Vagts publishes *Z-100 LifeLine*, a bimonthly journal dedicated to the Zenith Z-100 dual 8088-8085 computer. A one-year subscription is \$15 per year to any U.S. zip code, \$18 to Canada or Mexico, and \$20 to any other country, from Steven W. Vagts, 2409 Riddick Road, Elizabeth City NC 27909, phone (919) 338-8302. [2/95]

Walnut Creek CDROM sells the CP/M CDROM, containing over 480 Mb of CP/M public-domain software and freeware, including the Sound Potentials collection and the entire CP/MUG and SIGM collections. The cost is \$39.95. California residents add 8.25% sales tax. Shipping is \$5 in the US or Canada, \$9 elsewhere. Walnut Creek CDROM, 4041 Pike Lane, Suite D-893, Concord CA 94520. Orders can also be placed at (800) 786-9907, or orders@cdrom.com. For questions phone (510) 674-0783 or fax (510) 674-0821. [2/95]

PUBLICATIONS

The following magazines and newsletters were received since last issue:

Amstrad PCW User's SIG, Vol. 8 No. 4 (March 1995), is the newsletter of a special interest group of American Mensa Ltd. The SIG chairman and publisher is Al Warsh, 2751 Reche Canyon Road #93, Colton CA 92324, phone (909) 370-0359, CompuServe 73300,2644. Contact him for membership or subscription information. [Amstrad PCW]

The Analytical Engine, Vol. 2 No. 3, May 1995, is published February, May, August, and November by CHAC, the Computer History Association of California, 3375 Alma Street, Suite 263, Palo Alto CA 94306-3518, fax (415) 856-9914, Internet engine@chac.org. This issue has an article on *The Discolouration of Plastic Computer Cases* by Dr. Edward Then; everything else is non-CP/M. Subscriptions are \$35 per year individual, \$85 per year corporate or institutional, \$25 per year low-income, student, or senior. The ENGINE is available online or hard copy. [All computers]

AUGER, March 1995 and April 1995. *AUGER*

(*ADAM Users Group Educational Report*) is the newsletter of ECAUG, the Emerald Coast ADAM Users Group. Membership is \$15 per family per year. A 36-page list of the disks in the group's public-domain library, plus the year's issues of *AUGER*, come with the membership. Send the money to Norman J. Deere, Treasurer and Editor, at P.O. Box 4934, Fort Walton Beach FL 32549-4934, phone (904) 244-1516. All back issues of *AUGER* are available; see the ad in any issue. [Coleco ADAM]

A Bit More, February 1995 and March 1995, is the newsletter of NOVAOUG, the Nova Osborne Users Group. The March issue publishes some Bitnet discussion on the idea of a National Software Archives. Membership is \$12 per year from William E. Kost, 7007 Brocton Court, Springfield VA 22150, phone (703) 569-2213. [Osbornes and PCs]

Classic Computer Society Newsletter, February 1995, is edited by Andy Shapiro. Contact the Classic Computer Society, P.O. Box 2007, Santa Barbara CA 93120, (805) 684-8838, for membership information. [All computers]

A PROGRAMMER CORNERED

How I did my taxes

Turbotax for Windows and Macintax for the Macintosh are two examples of the tax programs available today. Programs like this are released anew each year, with the current tax forms built into them, and help screens advising you how to get the most tax dollars back according to current regulations and their interpretations. Once you've prepared your taxes with them, you can print out the forms, with your figures, or in some cases, submit them directly to the IRS and your state tax agency via modem or fax.

Such programs are direct descendants of tax programs written for CP/M and the Apple II operating system. Their CP/M ancestors usually did not show the actual tax forms on the screen, because CP/M computers generally do not have graphics capable of displaying the forms. They also did not print the forms, because most printers were not capable of doing so, and the IRS wouldn't accept computer printout back then. Nor did they have the capability of sending the data in directly by modem or fax; the IRS did not accept returns by modem, and

faxes had not been invented. Even if the programs had done all these things, no one has updated them in years. Even when the company that wrote them still exists, you can be sure that its current product is for the PC, Macintosh, or both.

Nevertheless, when you get right down to it, a tax program is just a special-purpose data-base program. You can use a general-purpose CP/M data-base program such as Condor, dBase, FMS-80, or SELECTOR V to collect your tax data, sort it by date and by category, and print it out in order with a total for each category. This is what I've done and will discuss here.

If you're not itemizing deductions, or running a business, or something else similarly complicated, there is no reason to use a computer to do your taxes. Collect your W-4s, etc., and use the short form. Always remember, the point of a computer is to make things easier. If it's too easy already, computerizing it will be a lot more trouble than it's worth.

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by David A.J. McGlone and Zener

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Article titles appear in quotation marks, e.g., "What the World Needs Now." Column titles appear twice; once as articles, once under the column heading, both times in quotes. Titles of features and columns do not appear in quotes, but are capitalized, e.g., SCRIPT OF THE MONTH CLUB. Titles of items within features are not capitalized but appear without quotation marks, e.g., Lambda, DRI sign contract.

Masthead material (letter policy, subscription information, etc.) appeared in early issues on the table of contents, both under individual titles and as sections of a feature called WELCOME or ABOUT THIS NEWSLETTER. These titles are not indexed.

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The first step in itemizing deductions, or preparing a Schedule C for a business, is to organize your receipts by category, such as Sales, Office Expenses, Business Telephone, Shipping and Postage, and so forth. There doesn't seem to be an IRS publication that lists the possible categories, with an explanation of the criteria for each. You can get an idea, however, by looking over the lines of the Schedule C to see what categories already have lines for them. After that, however, you're on your own. You will probably think of new categories as you sort your receipts; you may even decide that an existing category needs to be split into two. Don't get too hung up about it, as long as there's a logical reason for the category. Most of them get deducted the same way and in the same place. As long as your categories make sense to you and to the IRS, you shouldn't have any problems.

Once you've sorted your receipts, notes, etc., you need to add them up, with a total for each category. If you're simply going to transfer these totals to your tax form, you don't need a computer. What makes a computer worth it, for most people, is the extra features that a PC or Macintosh tax program have. Without those, doing your taxes on a computer is a marginal operation.

I did my 1992, 1993, and 1994 taxes on my computer, using SELECTOR V. Deborah and I have been having our taxes done at H&R Block because of the complexities of Lambda on the one hand, and her writing business on the other. It was worth setting up a SELECTOR data base and typing the data into it, because I could use a SELECTOR report to print out the data by category, and within category by date, with a subtotal for each category. This avoided any arithmetic mistakes I might make, or adding everything up twice to make sure my totals were

right. The output file went straight to Deborah on a 3½" PC disk, which she could read on her Macintosh and print out to take along to H&R Block; this saved postage. Finally, having it in a data base meant that items could be transferred to new categories, if Deborah or the tax preparer requested it, simply by changing the entry in the category field. Then the new totals were derived, without any confusion, crossing out, etc., by running the report again.

Whichever data-base manager you use, you will create a screen for displaying each item of data, similar to the one on this issue's cover. At a minimum, you will need the date of the item, the category (C) it belongs to, a description (DESC) of where the money came from or went to, and the amount. I also added an S field to note where the information came from; my personal checking account, Lambda's checking account, etc. This allows me to refer back to the original check register or bill, should I need to verify or double-check an item. Also, it's a good idea to have your abbreviations right there on the screen, as in this case, if you can get them to fit. It's simply the most convenient possible place to put them, or to look them up.

Another reason to put this information in a data base is that the information is useful for more than just tax purposes. If you link this file with a name and address file, cross-referencing who you bought or sold from, you have a means of tracking who your customers and creditors are. Add a field for the date you paid them or vice versa, and you have the core of what an accountant would call Accounts Payable and Accounts Receivable. Or link this file to a file with the statement information for your accounts, and you have the raw data for balancing your checkbooks; the program to do so is really just a special report program that manipulates this data in a particular way.

Lambda Software Publishing Price List

149 West Hilliard Lane, Eugene, OR 97404-3057
(503) 688-3563

AmigaZ80 – \$45.

CPMUG public-domain software –

Catalog disk: \$10. Lists all 92 disks.

Individual disks: \$10 each.

Complete set: \$400 (save \$520).

Digital Research Inc. (Novell) –

Software is \$25 each. Manuals are \$20 each,

\$15 if purchased with the software.

Access Manager 1.1

Programmer's Guide

Reference Manual

BT-80 1.0

CBASIC 2.8

Reference Manual

CBASIC Compiler 2.0

Graphics Guide

Programming Guide

Reference Manual

CP/M 2.2

Operating System Manual

CP/M 3.0 (CP/M Plus)

Programmer's Guide

System Guide

User's Guide

The CP/M Card

User's Guide

CP/M Software Finder

CP/Net 1.1

Despool

DR Graph

Reference Guide

GSX

Programmer's Guide

User's Guide

Link 1.31

Operator's Guide

MAC 2.0

Language Manual and Applications Guide

MP/M

MP/M II

User's Guide

Pascal/MT+ 5.6.1

Reference Manual

Personal Basic Reference Guide

Personal Basic Tutorial

PL/I-80 1.4

Applications Guide

Language Manual

Programmer's Utilities Guide

RMAC 1.1

Reference Manual

SID

Reference Manual

User's Guide

SPP 5.5

User's Guide

TEX *User's Guide*

ZSID

Eagle Computer Users Group newsletter –

July 87-October 90 in one volume, \$15.

Echelon products –

Software and manual, \$40 each;

Manuals only, \$15 each.

Assembly Language Translators

DISCAT (version 13)

DSD

TERM III (version 12)

ZAS/ZLINK (version 3.0)

Z-MSG

Publications, \$15 each,

\$10 each if four or more ordered.

JetFind User's Guide

Kaypro Z-System Manual

ZCPR3 and IOPs

ZCPR3: The Libraries

ZCPR 33 User's Guide

ZDM/ZDMZ/ZDMH User's Guide

Z-Index, index to *The Z-News*

The Z-News, complete set

Z-Node Configuration

ZRDOS 1.0 Programmer's Guide

Z-System User's Guide

MagicIndex text formatter (version 3.00) – \$100.

Micro Cornucopia –

Back issues:

Issues 8, 10, 11: \$8 @ US, Canada, Mexico,
\$10 each elsewhere.

All other issues: \$4 @ US, Canada, Mexico,
\$6 apiece elsewhere.

Complete set: \$150 (53 issues).

Author and subject index on disk: \$10.
Kaypro disks –

Catalog disk: \$5. Lists all 49 disks.
Individual disks: \$5 each.
Entire set of disks: \$200. Save \$45.

Big Board disks –

Catalog disk: \$5. Lists all 30 disks.
Individual disks: \$5 each.
Entire set of disks: \$100. Save \$50.

SIG/M public-domain software –

Catalog disk: \$10. Lists all 310 disks.
Individual disks: \$10 each.
Complete set: \$1000 (save \$2100).

**Sound Potentials and Sound Potentials II
public-domain software –**

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