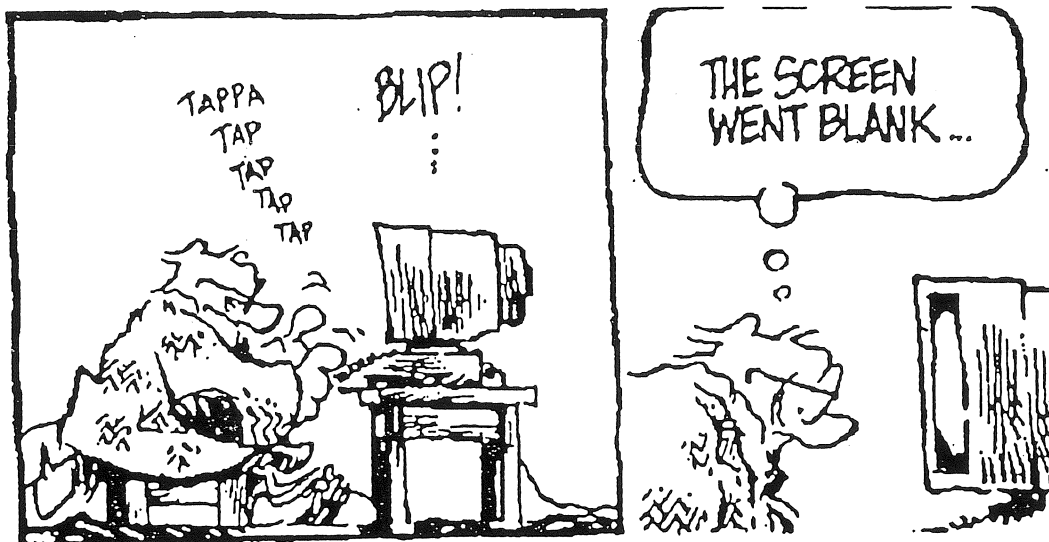


# The Z-Letter

Newsletter of the CP/M and Z-System community

Number 35

January/February 1995



DR Graph, DSD manual, CPMUG and SIG/M disks

Index to issues 1-34: Contributors

Setting up Spellbinder's soft keys

Starting to use the Z-System, by Bob Vinisky



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*The Z-Letter* is indexed as time permits. The index for issues 1-5 appeared in issue 5. An index for issues 1-34 begins in this issue.

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## RANDOM ACCESS

### More DRI and Echelon products available

Thanks to Richard Parsons of Mount Albert, Ontario, Canada, I now have copies of DR Graph, the *DR Graph User's Guide*, and the *DSD User's Manual*. Accordingly, since my contract with Novell includes DR Graph, and I own the Echelon products, these manuals and software are now available.

Rich had previously provided me with the software for DSD, Z-MSG, and DISCAT, as well as earlier versions of NZCOM and the IOPs. He also sent copies of TERM III and the assembly-language translators, not knowing I already had them. So take a bow, Richard!

### CPMUG and SIG/M libraries available

CP/M users who want to purchase volumes from the CPMUG and SIG/M collections, in their own computers' disk formats, may now do so from Lambda. Effective immediately, any disk in either collection is available for \$10. This includes disk 0 for each collection, containing the complete list of files on each disk with a brief description of each.

Lambda will sell the entire 92 disks of the CPMUG collection, including the index disk, for \$400. This is a savings of \$520 ( $92 \times \$10 = \$920$ ). The complete set of all 310 disks of the SIG/M collection, plus the index disk, is available for \$1000, a savings of \$2100.

In all fairness, it should be pointed out that both of these collections, plus the entire Sound Potentials collection, are available on the CP/M CDROM, which costs only \$40 (see RESOURCES, Walnut Creek CDROM). The CPMUG and SIG/M libraries are offered as a service for computerists who don't want to buy a PC, buy a CDROM drive, buy the CDROM, buy 404 diskettes, format them, and copy the libraries from the CDROM to the diskettes.

### CP/M CDROM begins shipping

Walnut Creek's CDROM has finally started shipping and is now fully available (see RESOURCES). The cost is the \$39.95 announced in their most recent catalog, and the contents are those of the Beta version, with the differences discussed last issue. My thanks to Walnut Creek for the complimentary copies they sent me for supplying the Sound Potentials collection and going over the Beta version. I hope that everyone who can afford

to do so will order a copy of the CDROM, whether he has a CDROM drive right now or not, to reward Walnut Creek CDROM for this service to our community.

### Sound Potentials catalog altered

Five files listed in the Sound Potentials catalog are not among the files that I got from Richard Brewster when I purchased Sound Potentials from him. These are the files from FILTER33 through FIND52, inclusive.

I have revised the catalog file to eliminate these files. If anyone has these files, please send them to me, so that I can reinstate them in the collection.

Owners of the CP/M CDROM should note that the Sound Potentials collection on it does not include these files, but the catalog file on the CDROM lists them.

### Sound Potentials II begun

Lambda has begun compiling a second Sound Potentials collection, to be available just as the Sound Potentials collection is, with a unified index file listing files available individually, rather than by disks of fixed content as the *Micro Cornucopia*, CPMUG, and SIGM collections are. So far this collection includes Gene Austin's WDCOUNT, TZL and the ECUG newsletter on disk, and a library of Spellbinder tables and macros. SBTABS20LBR will be updated to include the alternate TVI 965 table printed in this issue, making it SBTABS30LBR.

Readers are urged to write and recommend their favorite CP/M public-domain software and shareware for this collection. If possible, send the software, with all original files and documentation, on a disk. Lambda, of course, takes full responsibility for any software it makes available. So you have nothing to lose, and the gratitude of our community to win.

### TZL Index publication plan

The first section of the index to issues 1-34 of *The Z-Letter* appears in this issue. This Contributors section lists the authors of articles, people who have written letters, artists, and advertisers.

Further sections of the index to issues 1-34 will appear in the course of 1995. The entries for the 1995 issues will appear in issue 40. A combined index for

issues 1-40 will be available as a separate publication shortly thereafter.

### Changes in the RESOURCES listings

Twice a year I contact everyone listed under RESOURCES and update the information. There are always changes, usually for the worse.

Micromint confirms that the SB180, SB180LO, and 2-Mb memory boards are still available, and the prices listed are correct. However, none are in stock. If you order one, allow thirty days for them to make it from scratch. It's only the smallest difference between having none in stock and refusing to make any, so if you're ever going to want one, better order it NOW. Bear in the mind that the SB180LO, with its 9-MHz Z180 and 256K of memory, is the most advanced CP/M-compatible computer ever manufactured in quantity, comes with the Z-System, and easily supports SCSI hard disks. I have used an SB180FX (the earlier version of the SB180LO) for many years now as my main machine.

MicroSolutions no longer sells the UniDOS Z80 board for the PC, nor Uniform for various CP/M machines. I have written to them inquiring whether they will give Lambda a contract to sell the CP/M versions of Uniform, and pay them a royalty for each one sold. Keep your fingers crossed that they will respond favorably.

Kirk L. Thompson has dropped out of sight. He hasn't produced *The Staunch 8/89'er* for a couple of years now, but I continued to list him because he had products available, and started a column for *The Z-Letter*. But now he's missed the deadline for several issues, and there is no answer at his phone number. So I've dropped him from the listing. If anyone knows what's happened to him, let me know.

### New Year's predictions

In issue 10, I made some predictions for 1991 that were absolutely certain to come true – and they did. Let's see whether I can predict the same things for 1995.

1. *People will go on using CP/M machines.* Yes. As long as there are CP/M machines, there will be people using them.

2. *People will go on developing amazing new features for their CP/M machines.* Well, maybe not. There's been a marked slowdown of new software for CP/M and the Z-System in the past few years. Even my own efforts to expand Lambda's product line has been making old software available again, or replacing old software with new equivalents.

3. *Even more salesmen will say "CP/M? What's that?" in 1991 than did in 1990.* Awareness of CP/M, as the operating system that predated MS-DOS, actually seems to be picking up. The efforts of HCS, CHAC, and other computer history associations and computer museums may be partly due the credit for this.

4. *Even fewer magazines will cover CP/M than did in 1990.* Again, I don't think I would make the same prediction for 1995. For fewer magazines to cover CP/M in 1995, either *The Computer Journal* or *The Z-Letter* would have to cease doing so. TCJ might stop, though I think it's unlikely; TZL will not do so as long as it's published.

5. *Prices of CP/M hardware and software will continue to fall (reliability will remain high).* Fraid not. Hardware and software prices have hit rock bottom; and the machines, being five years older, are less reliable.

Still, I wouldn't want you to think the picture is all gloomy. There are still some absolutely certain predictions I can make for 1995:

1. People will go on using CP/M computers.
2. People will start using CP/M computers who never had a computer before.
3. More CP/M and Z-System software will be available than last year.
4. There will continue to be more software running, that was written in COBOL, than in all other languages put together.
5. PC and Macintosh hardware and software manufacturers, in trying to grab larger shares of a saturated market, will continue to introduce ever more ridiculous and unnecessary features, further crippling the performance of their machines. CPUs will continue to speed up, and band-width between components widen, to try to compensate for this. Fools will continue to be born every second, and will rush out and buy the latest junk.

### NEXT ISSUE

Bob Vinisky's Z-SYSTEM APOLOGIST will continue, and A PROGRAMMER CORNERED will show how you can prepare your taxes using CP/M software, accompanied by *Shoe* cartoons on the subject. If my new artist comes through, there may be a COMPUTER CLASSICS column. And the Titles section of the Index to issues 1-34 will appear. See you in 60 days.



## THE Z-SYSTEM APOLOGIST

Starting to use the Z-System  
by Bob Vinisky

With this episode we'll try to blend some of the ideas we've learned into concrete examples. I hope you've tried some of the flow-control ideas from last time — this is a core feature of the Z-System, which provides much of its power and flexibility. Now that we've gone over some of the major features, we can see just what we've done by installing NZ-COM (or Z3PLUS).

My initial reaction after bringing up NZ-COM the first time was confusion. Aside from the prompt ("A0:>" instead of "A>"), not much else seemed different. Well, what about these tools? Have you looked at a list of them? There's a never-ending list of tools in support of the Z-System, a large percentage of them with no discernible purpose!

One of the easiest ways to become comfortable with the Z-System is to not worry about all the tools, just use your computer as usual and "grow into" the Z-world.

How you use the Z-System depends on your particular computer setup. Let's start out with a two-floppy computer (KayPro IV, Morrow MD-3, Eagle III, etc.). You've much less disk capacity than with a hard-disk model, so some Z-System features won't be much use. On the other hand, we can utilize the Z-System's versatility to make our limited computer more functional than under CP/M. It's actually a lot of fun using the Z-System in this manner, wringing every ounce of performance from the old clunker!

After booting up NZ-COM, we have all the major functions of the Z-System available to us. We have the multiple command line, environment descriptor, path, named directories, flow control, resident commands, and more. To make best use of the limited storage space at our disposal, we'll create a boot disk with the basic NZ-COM files and necessary tools. In the CP/M world the procedure generally is to have a disk for each major application (word processor, database, etc.). When you're using each application, you puts its disk in drive A, and its data disk in drive B. I've found it more efficient, even with 380k drives, to place my major applications on the same disk, along with NZ-COM and system utilities. You can easily fit Spellbinder, dBase II, and some core Z-System files on a 380k disk, with room left over for temporary storage.

One of the first things you should do is examine the library file RCPZRL11.LBR, which you can find on most bulletin boards, or in Lambda's Sound

Potentials II collection. There are several preassembled RCP segments included, with a description of the commands in each segment. Look over the list and decide which commands you would like to have available. With a floppy-only system, you will want to have as many commands resident as possible. This makes your computer seem faster, and saves precious disk space on your boot disk.

The list also has the number of records each segment takes up. Remember the size of the segment you want, then run MKZCM again. One of the items in the menu is the size of the RCP — enter the size of the RCP segment chosen. Now, at the bottom of the menu there's the size of TPA this configuration leaves you. You must decide the tradeoff between a lot of resident commands and TPA. I find a TPA of around 45-50k sufficient for general use. For special purposes, such as running a program that hogs memory, you can always install another configuration with fewer features but more TPA. Of course, if the segment's *smaller* than the space you currently have available, you could just load it in and give up the extra space. You may choose to have two or more RCPs of roughly the same size, and swap them as needed or desired.

Loading these segments is a piece of cake. Let's say you've extracted one of the RCPs from RCPZRL11.LBR, and renamed the RCP to MYRCP.ZRL. Then the command NZCOM MYRCP.ZRL installs the new RCP and makes it ready to use. If the above exercise seems pointless, consider this: you may find yourself using certain tools while using a particular application. In dBase II, for example, you might want a fast look at a command file, find yourself renaming and copying files over and over, and other tasks. By keeping as many of these tools resident in memory as possible, you speed up operations considerably. Tailoring the resident commands available to the needs of each major application is an easy and satisfying way to extend your computer's functionality. (Do you realize how hard I had to work to slip that buzz-word into this piece?)

By the way, try to get a copy of *ZCPR3: The Manual*. Much of the information's dated, but the first half of the book is essential. Also check out the file ZFILEV13.LZT, available on many bulletin boards, and also through Lambda's Sound Potentials II collection. This is a listing of Z-System tools, with a

short description for each.

Next time we'll look at two other major features of the Z-System, scripts and shells. If you use your Z-System as if it were a CP/M computer, and become

comfortable with the new features, you'll be ready for the next issue. With scripts and shells we start to ease away from the CP/M environment, and into the real Z-world.

## PERSONAL ADS

### Computers for sale or trade

Each one in working condition, each one \$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 Telcon Zorba portable. One Morrow MD-2 computer; terminal not included. One Morrow MD-3 computer; terminal not included. Two working Xerox 820 computers, dual 8" drives. Three working Xerox 820-II computers, two with dual 8" drives, one with dual 5 1/4" 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.

### Epson QX-10 for sale

Working computer with two floppy drives, software, modem, PC-2 card, optical mouse, \$50 plus shipping. Contact Gregory Toone, 1098 South Marsh Circle,

Garland UT 84312, phone (801) 257-0152.

### Morrow MD-11 for sale

Working computer with CP/M Plus, 11-Mb hard disk, Morrow MDT-60 terminal. \$100 plus shipping. Contact Andre Perera, 3 Ridge Road, Walpach NJ 07881, phone (201) 948-2530 before November 1, or leave a message at (415) 583-7299 after November 1.

### Printers for sale

One NEC Spinwriter, working, \$30 plus shipping. One Diablo 630, also working, \$30 plus shipping. Contact Ron Reymore, 9993 Broadacres Road NE, Hubbard OR 97032, phone (503) 981-8617.

### HP 125 computers for sale

Two in good working condition, each has HP 9135A 5-Mb hard disk and 5 1/4" 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.

## LETTERS

### Z3PLUS on Osborne Executive?

12 December 1994

Dear David,

I bought Z3PLUS from local distributor. Despite adverts everywhere, it WILL NOT RUN (self install) on an Osborne Executive. I have written to Jay Sage, who sent another set of disks (in case of corruption). Still no go. The error messages that I sent to Jay have him puzzled. Can you enquire whether ANYONE has ever got it to run? (Same with DSD and the similar packages from Sage.) I have had the machine serviced by ex-Osborne personnel and it is fully OK. The BIOS, etc., has not been changed.

Have I ever asked whether you have the circuits of the ADM3 and ADM5? I have service manual but no circuits or layout of board.

Has anyone ever done a generic BIOS add-on for CP/M hard disk?

Yours,

John S. Butler  
16, Uphill Drive  
London, NW9 0BU  
United Kingdom  
081-204-7203 (answerphone)

*John: If Jay and Bridger don't know what's going on, there's little chance I can figure it out. I'm printing your letter to invite responses from my readers. Anyone know what's going on here, and have a solution?*

*I have an Osborne Executive or two in my collection, but little time to spare for something with no hard disk and a small floppy-disk capacity. I'll try to find time to try out Z3PLUS on it, but I can't promise it will be soon.*

*I don't have the schematics for the terminals you mention. Again, perhaps a reader can help you.*

*The only thing close to a generic hard disk for CP/M that I ever heard of, was the hard-disk kit that Brian Garrison of Emerald Microware used to sell. It was primarily for Kaypros, but supposedly would work on almost any CP/M machine. I'm talking with Brian about acquiring all his CP/M stuff, maybe I can get the rights to that mod. If I do, you'll hear about it in The Z-Letter. — DAM*

### DRI, Turbo Modula 2, computer history

20 December 1994

David,

I saw in the latest issue of *The Z-Letter* that you are now able to sell a large number of DRI's old CP/M software and manuals (if you can find copies of them). I'm curious as to what a couple of these are — I've never heard of Access Manager, BT-80, Display Manager, or SPP.

Some time ago, we exchanged letters about the availability of Turbo Modula 2. As I have dug deeper into it, I've found that it is less than suited for systems-level programming. The primary reason is that it is WORD (16-bit) oriented, rather than byte-oriented like Turbo Pascal. This means that all one-byte variables use two bytes (a word) for storage. Where this really gets nasty is when you would like to declare a record type to correspond to, say, an FCB. The only way you can pick out individual bytes from it is to declare it as an array of bytes. Then you have to shift and add these bytes together when you have a 16-bit value to work with. It is doable, but it is very awkward. Turbo Modula 2 apparently works this way to speed up the M-Code interpreter. The M-Code interpreter allows you to have very large programs that use little space. You can also compile to Z80 machine language, which results in faster programs that are also larger.

It seems that FTL Modula 2 is better suited for this sort of programming. As far as I know, it does not suffer from this sort of alignment problem. Maybe you should look into FTL's compiler instead. A friend of mine has a copy of the FTL compiler on 8" floppy that I think I could get from him for next to nothing. He hasn't fired up his old Big Board in years, and my Kaypro and Morrow don't have 8" drives, so we might some trouble getting them read. You have a machine with 8" drives, though, don't you?

Concerning the books on computer history, I suspect that no one person is going to be able to do a reasonable job. One strategy might be to find people who are knowledgeable about the computers of a

particular manufacturer to write separate sections of a complete history, and then pull them all together into one big history. The tough part is, of course, that there were literally hundreds of CP/M computers alone. Still you could have sections on Kaypros, Eagles, Morrrows, Osbornes, Xeroxes, etc. Some machines might be grouped by type, say S-100 or IEEE-696, etc. You could also have sections on how systems begat other systems. For instance, the Big Board was the "parent" of not only the Big Board II, but also the Xerox 820 (which was a licensed BBI) and the 820-II, and the 860 dual-processor machine as well. It was apparently also the basis for the Kaypro IIs and IVs (well, really the Kaycomp, which had single-density drives like the BBI). And then there are some exotic machines like the Oneac ON! and the Deepthought DT-42. Of course, if this is supposed to be about collectible computers, you don't have to worry about most PCs, since they are far from interesting. You would probably include semi-PC clones like the AT&T 6300, the Tandy 2000, and the Slicer. You could build the Slicer from a kit, so it certainly qualifies as a real computer for our purposes.

By the way, I'm sending this to you using David Goodenough's UUCP for CP/M software. Since I'm responsible for UUCP on a Sun that we use as a communications hub at work, it's easy to set this up.

Jeffrey J. Wieland

WIELAND@ACN.PURDUE.EDU

*Jeff: I'm aware that not everyone will know what all those DRI products are. Most of my customers, whose used CP/M computers are their first computers, won't know what any of these are. But I have to make all these products fit into two pages somehow! Once the Index is done, I'm planning some more special publications. One of them will be a catalog, like Echelon's Z-Index, explaining what each product is. For now, BT-80 and Access Manager are earlier and later B-Tree products; Display Manager I believe ties into the GSX graphics system extension; and SPP is a programming tool used with PL/I-80.*

*Yes, I have 8" drives on the PC I use for translating CP/M formats, and can almost certainly read your friend's disks. I'd love to get FTL Modula 2 for my collection.*

*The sheer amount of material available to a historian of computing, and the great diversity of hardware and software produced before the PC cut most of it dead, is something I've addressed again and again. Nevertheless, single authors turn out worthwhile reference works on subjects this big all the time. They don't do it, however, by dashing off anything that comes to mind and rushing it into print. Researching your subject, compiling and cataloguing the information you accumulate,*

corresponding with people who are knowledgeable on the subject, and having your work proofread to eliminate (or at least reduce) careless typos, inconsistencies in your material and your style, and errors of facts, are **minimum** standards for a reference work!

Since I'm only interested in CP/M computers, any such work I did would not include PCs or non-CP/M machines of any kind. That's not to say it couldn't be a single volume of a larger work, with other volumes done by other authors. — DAJM

### Computer museums?

January 2, 1995

Hello David,

Happy New Year. By the way, thanks for sending that shareware or public domain terminal emulation/modem program for a Kaypro II last year. I gave it to someone at AT&T who has a Kaypro. He is the guy who tests our products for AT&T acceptance. It was good PR for me.

You often talked about setting up an "Antique Computer Museum". Is anything coming of that, other than an increasing large collection of older computers? What are your plans?

Are there any computer museums in operation that you know of?

I have not been active at all with old computers for the past couple of years. I still have my collection in the attic to hold the house down in the event of a wind storm. The last items I got were a couple of California Computer Systems S-100-bus CP/M computers, each with a 10-Mb hard disk. When it starts up, the hard disk sounds like a recording of a jet engine starting up.

I have been enjoying *The Z-Letter*. Keep up the good work. I wish the best of 1995 to you and your wife.

Bye for now,  
Rudy Stefenel  
3138 Drywood Lane  
San Jose CA 95132  
(408) 263-5332

Happy new year, Rudy. Yes, there are computer museums in operation. You've probably heard about *The Computer Museum in Boston*. There are quite a few others, most of them run by computer companies or colleges rather than independent museums like that one, but by no means all of them. I don't have a complete list, but contact the *Historical Computer Society* or the *Computer History Association of California*, or read their magazines, *Historically Brewed* and *The Analytical Engine*, respectively.

I still have every intention of setting up a CP/M

Museum, but it takes money and time I don't have right now. I can run Lambda, or I can set up a CP/M Museum, not both; and they aren't quite the same thing. Meanwhile, I keep collecting anything CP/M that comes my way, otherwise what will the Museum exhibit?

So if you want to get rid of your unused collection, you know who to contact — but I can't give you a nonprofit-contribution receipt for your income tax. — DAJM

### DRI patches not needed?

Dear David:

I noticed in issue 34 of *The Z-Letter* that your DDT is version 2.0. Mine is 2.2. Also, my ASM comes up version 2.0. Let me know via SASE whether you can use either or both. If so, I'll copy them and send them to you.

My \$250 set of CP/M books say that DDT version numbers usually reflect the CP/M version they were written for. I wonder if your DDT is an older one, while mine is for CP/M 2.2?

Beats me — all I know is it works here.

I just checked out MOVCPM.COM with DDT. The patch you described on page 17 is already there.

Incidentally, I also have MOVCPM.ASM somewhere around here, if I haven't destroyed it somewhere along the line. Want it?

Sincerely,  
Eugene Austin  
P.O. Box 115  
Tilden NE 68781  
No telephone

Thank you for the offer, Gene, but in fact I have later versions of these DRI utilities, too. In fact, I suspect everyone does. *THE HORSE'S MOUTH* is an historical feature. These applications notes and patches were released by Digital Research on the date given at the beginning of each one; for instance, the one in issue 34 is dated 21 January 1982. I am not their author(s), nor have I changed them, except by formatting them for *The Z-Letter*. — DAJM

### DRI, history of computing, Unix

6 January 1995

Hi David.

*The Z-letter* 34 just received. Congratulations on your agreement with Novell for the Digital Research software. The way things are going with Novell and its policy of non-competition with Microsoft, you had better read the fine print or you may wind up owning DR DOS . . . On a more sober level, perhaps when Borland cuts dBase from their catalog, they

will sell you the marketing rights to "Vulcan."

Have you been through the history of computing section at the Smithsonian Institution in Washington? When I saw it a couple years ago, Jerry Pournelle's S-100 "Zeke" had been installed, in addition to an Osborne and other micros which escape my mind at the moment. Even in retrospect it seems a much more enjoyable experience than reading the historical and collector's works you reviews in the latest issue of *The Z-Letter*. I suppose you did enjoy cutting these accounts down to size, but the books nonetheless seem altogether unfortunate for any prospective reader or reviewer.

I was not reading with a highly critical spirit, or with a review in mind, when I recently read Stan Veit's *History of the Personal Computer*, but in general I found it quite enjoyable and apparently accurate. I had read, and clipped, portions of the book in *Computer Shopper* years ago. The writing stood up to a second reading for me. I was impressed by Veit's willingness to consider more than one view of a particular set of events.

With both Unix clones and CP/M emulators widely available for Intel machines, I now find myself in an odd situation when it comes to the Z-System. I can start up an MS-DOS or OS/2 partition and with MY-Z80 run a friendly system modeled on Unix. Or I can boot a Unix work-alike and run a CP/M emulator under that! Porting Unix-like Z-System to a CP/M emulator running under Unix seems too contrived for me, so I haven't even seriously considered it. Even moving forward with Z-System customization seems moot at times, since I can do the same sort of customization on the Unix-like partitions on the same system. Have you been tempted at all to pick up any of the AT&T Unix systems now widely available at flea-market prices? I would guess not, but I thought I should ask.

Happy New Year!

Steve Johnson

STEVEJZOO@DELPHI.COM

*And a happy new year to you, too, Steve. I'll have to get a copy of Stan Veit's book. So far I've had too many more urgent uses for the money, but I hear it's pretty good. Be sure I'll share my opinion with everyone else, once I've read it — good or bad. As to Unix, yes, I've been tempted, but Unix hadn't been invented in my college days, and I've no experience with it. If the Z-System hadn't been invented, and I was stuck with just plain CP/M, I would probably have migrated to a Macintosh or a Unix machine a long time ago. As it is, I've no real inclination, for the exact reverse of why you haven't bothered with the Z-System. Nice to have a choice, isn't it? — DAJM*

### ADDS Multivision help wanted

Dear David,

I have corresponded with you in the past and you asked me what CP/M machines I had. I like to collect classic (any) computers so I was embarrassed to say that I had none. I am proud now to report I have four TRS-80 Model 4s. I also have an Osborne 1, and a Morrow DecisionMate on the way.

My most recent coup is acquiring an ADDS Multivision, complete with terminal and spare machine for parts. Here's what I know about this machine. It has an 8080 CPU. It runs MP/M and can support up to four terminals at one time. It has a 15-Mb hard disk and I think it has 16K of RAM.

It's a great machine and I look forward to playing with it. I would like to know more about this machine, if anybody has any information. One thing I need to know about it is what is the format of the floppy-disk drive. I don't know the density and number of sides, or whether it's soft- or hard-sectored. We tried to format a disk, but no luck. If you can help me I would appreciate it.

Mark J. Kingsbury

25 Latta

Battle Creek MI 49017

(616) 969-3043

Mark\_J.\_Kingsbury@FCL.GLFN.ORG

*Mark: The ADDS Multivision is not listed in Haddock's Collector's Guide, or the 1982 edition of the Datapro Guide to Small Computers, nor is its format listed in 22DISK. So I have nothing to offer — except grave doubt that any MP/M system has as little as 16K of RAM! If anyone knows anything about this machine, please write to both Mark and to me. — DAJM*

### More on the Amstrad

January 9, 1995

Dear Dave,

I enjoyed reading my first two issues of *The Z-Letter*, 33 and 34. I have a few comments on the Amstrad PCW review by Robert L. Edgecombe in issue 33.

Bob gave the correct model numbers, 8256/8512, which were derived from the amount of RAM installed, 256K or 512K. I liked his article, but he stated that the PCW8256 has 128 of RAM. It's actually 256K, and it's easy to upgrade this to 512K, by installing 8 more chips into sockets that are already on the PC board, and changing the positions of a few DIP switches. 512K pushes the RAM disk up to 368K. The 8512 came with 512K of RAM installed, plus the B drive.

I guess it's possible that he has 128K, because the CPU board schematic shows a memory tabulation where four chips add up to 128K, and another where 16 chips add up to 128K, but if he has 16 sockets and the dip switches, I would imagine that he could upgrade the chips and end up with 512K. I think Bob might want to investigate and see what he has. It is an easy system to work on, as long as you don't force anything. Just do the normal precautions: make a little sketch of the cables; if the keying marks on the plugs and sockets aren't visible, mark them; and look for the little catch releases before pulling the plugs. A couple of people have broken them. There are one or two ground wires, and then the CPU board with its metal shield can be slid out of its guide.

See the Tabulation and a sketch to locate the dip switches with the on/off direction at the end of this letter. The dip switches could be set wrong, and the PCW doesn't have any kind of automatic memory checking. Memory size is determined by switch settings. You no doubt have seen what previous owners can do to equipment. I hope this helps. I know one of these days, I might write and need some help.

Bob also suggested that if you find one of these units, you change the 3" drives to 3½" drives. This can be done, and is a good idea, because the 3" disks are expensive (\$3.50-\$4.00 each), and they're becoming obsolete, and the disk drive itself is belt-driven and not as reliable as, say, a TEAC.

He didn't say what kind or how many drives he has, so I don't know whether he realizes that the 3" drive uses 12 volts and 5 volts both for power. The signal wiring and power connector are not compatible with a 3½" drive, as is. You can fry a 3½" drive in an instant if you just try to plug it in! It's too much to go into here, I haven't done my own yet, but you can get the conversion info from Harley Ristad's Amstrad Users Group, called AUGUST, and his hardware/software docs are published in the *Amstrad PCW User's SIG*.

I'm one of the people that bought a PCW8256 instead of a typewriter, and it will probably be the only CP/M computer I will ever own. I've had it since 1987 and it's reliable. I intend to learn more about it, as time permits.

The 3" drives are the only drawback, as long as you are a CP/M Plus fan. I added the eight memory chips and the B drive, and I want to change to 3½" drives in the future. The supplied dedicated printer is slow, 20 cps, so I went to an Epson, the serial/parallel interfaces are still available. From what I read, I can deduce that CP/M systems were overrun by the IBM types before a whole lot of

standardization was developed, and this PCW I'm using is probably another version of something, but I still think the diehard CP/M hobbyists will find them useful when more people become aware of them. Their basic construction is decent. I didn't want anyone to get disgusted with the Amstrad PCWs only because they fried a 3½" drive.

The failure of the drive belts eventually will land some of these Amstrad PCWs on the used market. If and when the belt slips it won't even boot. New belts can be installed if the owner realizes what's wrong, and knows how, or knows someone who can. AUGUST can help here, too.

The monitor is green, has .31 dot pitch and displays 90 columns by 32 lines of text. There's an authorized Amstrad service center: Sinotech, 218 Terrace, Terrace Trade Center, Mundelein IL 60060, phone (708) 566-0504. They have service manuals.

The Amstrad PCWs are popular in Europe, and accessories are still being developed for them. I think it's interesting that new items are being developed for a CP/M computer in what might later be called the Pentium Era. Elliam Associates imports the accessories. The back issues of Al Warsh's *Amstrad PCW User's SIG* have more information and history, as you probably know by now.

Sincerely,

John J. Pellegrino  
8 Hart Avenue  
Blairsville PA 15717-9672

Header	DIP Switches				I. C.		
Size	RAM	A	B	C	D	silks no.	QTY
512	256	OFF	ON	OFF	ON	104-119	16
256	256	ON	OFF	OFF	ON	104-111	8
128	64	OFF	ON	ON	OFF	104-119	16
128	256	ON	OFF	ON	OFF	104-107	4

See *RESOURCES* for information on Elliam, and *PUBLICATIONS* for information on Al Warsh's newsletter. The illustration of DIP switch location and orientation appears on page 22. — DAJM

### School Daze

January 29, 1995

Dear David,

I've started a school project to provide inner-city kids with affordable home computers by using "retired" 8-bit machines. Software is proving to be the main problem. Naturally, they won't read manuals (even when I have them). But they don't need complex word processors, either. Basically, all I need is (1) a SIMPLE text editor (no fonts, indents, margins, or other complexities), (2) a spelling and



grammar checker, and (3) some really elementary utilities for copying files, printing, etc.

I'd be interested to know what your readers might suggest. Ideally, it should run on any generic CP/M machine.

Welcome to 1995,  
Lee A. Hart  
4209 France Avenue North  
Robbinsdale MN 55422  
(612) 533-3226

*Lee: This sounds like a job for the CP/M public domain. If you get a copy of the CP/M CDROM, I think you will find everything you're looking for, and you won't have to worry about royalties, either. If you don't have and can't afford a copy of the CDROM, I will be glad to donate software from the Sound Potentials collection for your project. Write and tell me what you want. If you don't have a copy of the Sound Potentials catalog, let me know and I'll send you one.*

*Meanwhile, readers who have suggestions to make should write to Lee. I'd be interested to get copies of these letters, too, for printing in TZL. - 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](mailto: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. (Note: the versions of Uniform that ran on CP/M machines are no longer available.) 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](mailto: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:

*ADVISA*, November/December 1994, is the newsletter of VISA, the Vancouver Island Senior ADAMphiles. It is published by David Cobley, 17-885 Berwick Road, Qualicum Beach, B.C., Canada V9K 1N7, phone (604) 752-1984. Unfortunately, this is the last issue. It contains a complete index. [Coleco ADAM]

*AIM*, #104 (Vol. 11 No. 1, January 1995), is the newsletter of Adam's House, a company selling Coleco ADAM products. The publisher is Terry R. Fowler, Adam's House, Route 2 Box 2756, Pearland TX 77581-9503, phone (713) 482-5040, fax (713) 997-6907. [Coleco ADAM]

*Amstrad PCW User's SIG*, Vol. 8 No. 3 (January 1995), is the newsletter of a special interest group of American Mensa Ltd. This issue reprints Helmut Jungkunz' article on Amstrads from *TCJ* #67. 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]

*AUGER*, February 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*, November 1994, December 1994, and January 1995, is the newsletter of NOVAOUG, the Nova Osborne Users Group. 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*, December 1994 and January 1995, is always full of interesting bits by Al "Why are you looking at me? These other people know how to write." Paarmann. The editor is Andy Shapiro. Contact the Classic Computer Society, P.O. Box 2007, Santa Barbara CA 93120, (805) 684-8838, for membership information. [All computers]

*The Computer Journal*, #70 (November/December 1994): Ron Mitchell's "The Z-System Corner II" continues to explain the Z-System, just as Bob Vinisky is doing in *TZL* with his "Z-System Apologist" column. Herb Johnson's "Dr. S-100" talks about the S-100 IDE board some more. Helmut Jungkunz' "The European Beat" talks about European computers.

#71 (January/February 1995): Chuck Stafford's "Mr. Kaypro" column does a pretty good job making sense of the bewildering array of Kaypro models, plus all the modifications (special ROMs, external monitors, etc.) that were available for them. The Centerfold is the schematic for the DC Hayes S-100 modem card. Part 5 of Tilmann Reh's "Connecting IDE Drives" appears. "Dr. S-100" mostly talks about a CompuPro 8/16 system with graphics cards Herb was given. Walter Rothenkolber, in "DIVMOD and More", (1) benchmarks integer division and modulo in several CP/M language implementations, and (2)

talks about accessing the Kaypro keyboard. Part 7 of Brad Rodriguez' "Moving Forth" is in this issue. See our RESOURCES section for TCJ's address and subscription rates. [All computers]

*Mor-Atlanta News*, Vol. 10, No. 5 (February/March 1995), is the very professional newsletter of the Morrow Atlanta Users Group. This issue includes "Adventures in Morrowland" by Alan Wiener, "Our New CP/M CD-ROM" by Paul MacDiarmid, and "Quest Bookkeeper System" by Jay

Huddleston. See RESOURCES for MAUG's address and membership/subscription rate. [Morrow]

*Z-100 LifeLine*, #36 (November-December 1994). Thierry Klein introduces (PC) assembly language, but much of it is generally applicable to any processor. A foldout in the magazine's center describes Heath/Zenith escape sequences, including CP/M models. See RESOURCES for address and subscription rates. [Z-100]

## A PROGRAMMER CORNERED

### Setting up Spellbinder's soft keys

In issue 19 of *The Z-Letter*, I described how I programmed my TeleVideo 965 terminal for HSH, Spellbinder, and SELECTOR. I used DPROG to program the terminal's function-key sets, and set up aliases to switch the terminal to the appropriate function-key set for each application, and back to the default set upon exiting Spellbinder or SELECTOR. When inside Spellbinder, the MKTAB table was used to redefine certain "FUNCT keys" and "edit keys".

Last week my 965 died suddenly, leaving me in the same position as "the perfesser" in the *Shoe* cartoon on this issue's cover. Rather than settle for an earlier model TeleVideo terminal, or some other kind of terminal entirely, I ordered a 995-65 from TeleVideo. This is a terminal so new that the programmer's manual has not been finished yet. Fortunately, it has a 965 mode, so I set it to that.

Instead of just running DPROG again to program the 995-65 the same way I had the 965, I took a little time and thought to review a Spellbinder feature called SOFT KEYS, and experiment with them. The experiment is a resounding success, as I shall relate.

#### The problem with MKTAB

The MKTAB table in Spellbinder is used to redefine up to three kinds of keys. It can contain up to two sections redefining keys that all begin with the same character, have the same number of characters emitted by each key, and end with the same delimiter, if any. For example, the TeleVideo 950 and later TeleVideo terminals have programmable function keys that emit a three-character sequence of *Control-A* <character> *Control-M*. TeleVideo terminals also have a FUNCT key; if you hold down this FUNCT key and tap another key, you'll get a sequence of the same kind as the function keys, only you determine the

character by the key you tap.

So you could have a MKTAB table redefining character sequences like this in the first section, and a second section redefining, say, escape sequences, which are two-character sets where the first character is ESCAPE (decimal 27). MKTAB will also allow you a section of single-character keys, so you can redefine, for instance, your computer or terminal's cursor keys if necessary. For examples of using the MKTAB table, see issue 19 or issue 22, or the examples in my *Introduction to Spellbinder* manual.

MKTAB is *not* intended to be used by itself to define keys for Spellbinder's edit and command modes. If you define one set of function keys for the edit mode and another for the command mode, as I did in issue 19, you have to remember that all the keys so defined work all the time, no matter what mode you're in. So the function keys proper will continue to emit their edit sequences even when you're in command mode, and the terminal's "editing keys", which I used for the command sequences, will continue to do their thing even when you're in edit mode. A careless moment, and you will write over your text with the string emitted by a command-mode key, and have to rewrite a few characters. This is a nuisance.

Another nuisance comes from the fact that I reprogrammed the "edit keys" to sequences similar to those emitted by the function keys, only beginning with Control-B instead of Control-A, then used MKTAB to substitute command-mode commands for these sequences. By doing so, I messed up the terminal's built-in calculator, one of the four functions of the VideoDesk ROM. Eight of the ten "edit keys" are used by the calculator, in addition to the numeric keypad. Once they're redefined, the calculator doesn't recognize them.

## How the Soft Key table works

Because it's such an old program, dating from long before terminal function keys were programmable, Spellbinder allows you to program *it* to interpret function keys differently depending on whether you're in the edit or command mode. Spellbinder has twelve "key levels", which is to say that your soft-key table can have up to twelve sections. Level 1 is the primary edit level; anything you've defined in section 1 is in effect whenever you go into edit mode. Level 2 is the alternate edit mode; anything defined in section 2 takes effect when you strike the ESCAPE key during editing. Levels 3 through 12, corresponding to the same-numbered sections in the table, take effect when you type 0 CR through 9 CR, respectively, while in command mode. So you see that Spellbinder provides you with up to two edit-mode sets of function keys, and up to ten command-mode sets.

### Step one: the MKTAB table

The Spellbinder Technical Manuals says, "it is best to first set up MKTab to deliver a single key code for each of the function keys. This provides a unique code for each function key, which can be used in the subsequent translation tables." So the first thing we need to do is set up a MKTAB table for the 965. Unlike last time, however, we won't stop there; and we won't program the terminal first.

Our MKTAB table has three sections. The largest one is for three-character sequences, where the first

character is Control-A and the third one is Carriage-Return (aka CR, Control-M). The first 11 keys in this section are FUNCT plus most of the keys across the top of the typewriter-key section; these are redefined to MagicIndex font designators, so that I don't have to type these out. The remainder of this section redefines F1 through F16, and SF1 through SF16, to the "extended-ASCII" values 222 through 253. Note that 254 and 255 have special values in Spellbinder tables, so we *must not* use them for this purpose.

The second section is for escape sequences, and it has a single entry at present. On the 965, the up arrow emits Control-K, which is just what Spellbinder wants. But the *shifted* up arrow emits Escape j, which means nothing to Spellbinder. So we redefine Escape j to Control-K; thus the terminal's up-arrow key emits Spellbinder's Cursor Up command whether shifted or unshifted.

If we had some need of the terminal's "edit keys" more important than the built-in calculator, this is the section where those keys would be redefined; because the "edit keys" all emit escape sequences.

The final section is for single-character sequences. The 965's down-arrow key emits Control-J (Spellbinder's Cursor Down command) when the shift key is held down, but the *unshifted* down arrow emits Control-V, which is Spellbinder's Next Page command. So we redefine Control-V to Control-J, and all is well. The "Home" key next to the cursor keys is also redefined here to Control-S, Spellbinder's Scan command; this is "traditional" for Spellbinder on TeleVideo terminals.

&7

001 ; MULTI-KEY LEAD-IN 1 is the ASCII value for CONTROL-A.

013 ; TERMINATOR 1 is the ASCII value for carriage return.

003 ; KEY COUNT 1 equals 3. Each key sends a 3-character sequence.

000 ; SHIFT FLAG 1 equals 1. Ignore upper/lower case.

016 ; DELAY is set to 16.

027 ; MULTI-KEY LEAD-IN 2 is the ASCII value for ESCAPE.

000 ; TERMINATOR 2 indicates no terminator is necessary.

002 ; KEY COUNT 2 equals 2. Each key sends a 2-character sequence.

000 ; SHIFT FLAG 2 equals 0. Do NOT ignore upper/lower case.

016 ; DELAY is set to 16.

;

001 ; This byte indicates beginning of first multi-key lead-in block.

; All strings following are for keys with a lead-in of CTRL-A and

; terminated with carriage return. These values are generated by

; holding down the FUNCT key and striking the key indicated. The

; function keys also emit sequences of this type. Any such

; combinations not included in this table will be ignored by

; Spellbinder.

	KEY	CODE	FUNCTION
045	126 061 057 051 057 126 255	;"-"	~#939~ 18-point titles
048	126 061 048 049 048 126 255	;"0"	~#010~ MagicSymbol

```

049 126 061 048 048 049 126 255 ; "1"  ~-001~  Normal text
050 126 061 048 048 050 126 255 ; "2"  ~-002~  Bold text
051 126 061 048 048 051 126 255 ; "3"  ~-003~  Italic text
052 126 061 048 048 052 126 255 ; "4"  ~-004~  Bold italic text
053 126 061 048 048 053 126 255 ; "5"  ~-005~  Special symbols
054 126 061 048 056 051 126 255 ; "6"  ~-083~  Math symbols
055 126 061 055 048 049 126 255 ; "7"  ~-701~  14-point titles
056 126 061 049 056 052 126 255 ; "8"  ~-184~  Bold Greek
057 126 061 051 050 051 126 255 ; "9"  ~-323~  Italic Greek
064 222 255 065 223 255 066 224 255 067 225 255 ; F1    F2    F3    F4
068 226 255 069 227 255 070 228 255 071 229 255 ; F5    F6    F7    F8
072 230 255 073 231 255 074 232 255 075 233 255 ; F9    F10   F11   F12
076 234 255 077 235 255 078 236 255 079 237 255 ; F13   F14   F15   F16
096 238 255 097 239 255 098 240 255 099 241 255 ; SF1   SF2   SF3   SF4
100 242 255 101 243 255 102 244 255 103 245 255 ; SF5   SF6   SF7   SF8
104 246 255 105 247 255 106 248 255 107 249 255 ; SF9   SF10  SF11  SF12
108 250 255 109 251 255 110 252 255 111 253 255 ; SF13  SF14  SF15  SF16
255 ; Block Terminator
;
027 ; This byte indicates beginning of second multi-key lead-in block.
      ; All strings following are for keys with a lead-in of "ESCAPE".
      ;          BEFORE  AFTER  SB FUNCTION  TVI 965 KEY AFFECTED
106 011 255 ; ESC j    CTR-K   Cursor Up    Shifted Up arrow
255 ; Block Terminator
;
254 ;          SPECIAL TABLE FOR SINGLE-CODE KEYS
      ;          BEFORE  AFTER  SB FUNCTION  TVI 965 KEY AFFECTED
022 010 255 ; CTR-V    CTR-J   Cursor Down  DOWN ARROW
030 019 255 ; CTR-^    CTR-S   Scan         HOME
255 ; Block Terminator
;
255 ; END OF MKTAB

```

### Step two: the soft-key table

In the soft-key table that follows (*next page*), I only used levels 1 and 3. The terminal has so many function keys, and Spellbinder so few commands, that no more were needed. As it was, practically every edit command is assigned to a key, including some I never use. I could have used more command-mode levels to include every trivial variation of the command-mode commands, including a key to invoke each and every Spellbinder macro; but for my own use, this would be absurdly elaborate.

The edit keys are exactly the same as in the previous article, except that these keys are superseded by the command-mode set when I'm in command mode. With 32 command-mode keys instead of 18, many additional commands are implemented that I've simply typed manually up to now. The main benefits are (1) having a dedicated key for the SAVE macro, (2) the arrangement of the keys, not being constrained by the limits of the "edit key" set, are more logical, and (3) the greater number of keys available allows

duplication of keys between the two modes; F1, F2, F3, F9, F10, F11, F12, F15, F16, SF6, and SF10 perform the same functions, useful in both modes, whichever mode I'm in. A lot of shifting modes is thus eliminated.

I realize that this last point sounds like I'm undoing the benefits of having separate edit- and command-mode keys. But there are some functions which really are useful in both modes, which is why there are commands to do them in both modes. Very well, then they may as well be the same key, no matter which mode we're in. We still have plenty of other keys for all the other command-mode commands.

### Installing the changes

When installing such wide-sweeping changes, it's best to eliminate any possible side-effects from previous changes. Accordingly, the first thing I did was erase the file SB.DAT, thus restoring Spellbinder to a completely unconfigured and uncustomized state.

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.

With the basic knowledge of my computer, terminal, and printer installed, I entered Spellbinder. I set the Y table and YT tables to the values I use on those rare occasions when I print directly from Spellbinder, usually to print programs:

Y = 2 0 21 90 110 2 0 1 0 55 2 2 1 0 35 5

YT = 0 0 0 0 0 0 1 8 8 8

That done, I read in LASER+.TAB, my customization table for the LaserJet Plus, and the two tables above. With all of them in memory, I placed the cursor on the first ampersand of the first table, and typed the command PS. Spellbinder gave no error messages, so I tested the function keys, FUNCT keys, and cursor-key modifications. They all worked fine. So I exited with the command XS, instead of the usual X; this saved the defaults and the installed tables to the SB.DAT file, so that they will be loaded whenever I go into Spellbinder. And that was that!

&13

; TABLE OF SOFT KEY DEFINITIONS

0 ; Disable after each keystroke?

; Level 1 = primary edit mode

1 ; KEY CODE SB FUNCTION

222 017 255 ; F1 CTR-Q Edit/Command

223 007 255 ; F2 CTR-G Previous page

224 027 110 255 ; F3 Esc n Next page

225 005 255 ; F4 CTR-E Insert

226 002 255 ; F5 CTR-B Mode back

227 006 255 ; F6 CTR-F Mode forward

228 015 255 ; F7 CTR-O Cursor mode

229 020 255 ; F8 CTR-T Line top

230 027 104 255 ; F9 Esc h Hold (cut)

231 027 117 255 ; F10 Esc u Unhold (paste)

232 027 098 255 ; F11 Esc b Back (to) mark

233 027 102 255 ; F12 Esc f Forward (to) mark

234 023 255 ; F13 CTR-W Enter enhance

235 021 255 ; F14 CTR-U Mode enhance

236 027 116 255 ; F15 Esc t Cursor (to) top

237 027 101 255 ; F16 Esc e Cursor (to) end

238 026 255 ; SF1 CTR-Z Decimal tab

239 025 255 ; SF2 CTR-Y Indent

240 027 105 255 ; SF3 Esc i Clear indent

241 003 255 ; SF4 CTR-C Clear (join)

; SF5 undefined

243 019 255 ; SF6 CTR-S Scan

; SF7 undefined

245 027 099 255 ; SF8 Esc c Line center

; SF9 undefined

247 001 255 ; SF10 CTR-A Continue

; SF11 undefined

249 004 255 ; SF12 CTR-D Mode delete

250 027 009 255 ; SF13 Esc Tab Absolute tab

251 027 027 255 ; SF14 Esc Esc Line/Column

252 024 255 ; SF15 CTR-X Mark

253 014 255 ; SF16 CTR-N Soft hyphen

255 ; End of section

; Level 3 = primary command mode

3 ; KEY SB FUNCTION

222 017 255 ; F1 Edit/Command (CTR-Q)

223 007 255 ; F2 Previous page (CTR-G)

224 'F23' 013 255 ; F3 Next page

225 'R1' 013 255 ; F4 Read

; F5 Write all

226 'T/W/WD' 013 255

227 'AD' 013 255 ; F6 Load macro

; F7 Load SAVE macro

228 'AO/SAVE' 013 255

229 'T/SA' 013 255 ; F8 Search all

230 'H' 013 255 ; F9 Hold (cut)

231 'U' 013 255 ; F10 Unhold (paste)

232 'B' 013 255 ; F11 Back (to) mark

233 'F' 013 255 ; F12 Forward (to) mark

234 'D' 013 255 ; F13 Delete to mark or end

235 'DA' 013 255 ; F14 Delete All (Clear)

236 'T' 013 255 ; F15 Cursor (to) top

237 'E' 013 255 ; F16 Cursor (to) end

238 'X' 013 255 ; SF1 Exit from Spellbinder

239 'T/PA' 013 255 ; SF2 Print all

240 'FF' 013 255 ; SF3 Form Feed

241 'T/VA' 013 255 ; SF4 View All

242 'Y' 013 255 ; SF5 Y table

243 019 255 ; SF6 Scan (CTR-S)

244 'YT' 013 255 ; SF7 YT table

245 'SR' 013 255 ; SF8 Search repeat

246 'Z' 013 255 ; SF9 Tabs

247 001 255 ; SF10 Continue (CTR-A)

248 'M' 013 255 ; SF11 Memory available

249 'ST' 013 255 ; SF12 File status

250 'G' 013 255 ; SF13 Get/Get Next

251 'GD' 013 255 ; SF14 Get Done

252 'GQ' 013 255 ; SF15 Abandon Get operation

253 'H0' 013 255 ; SF16 Empty hold buffer

255 ; End of section and table

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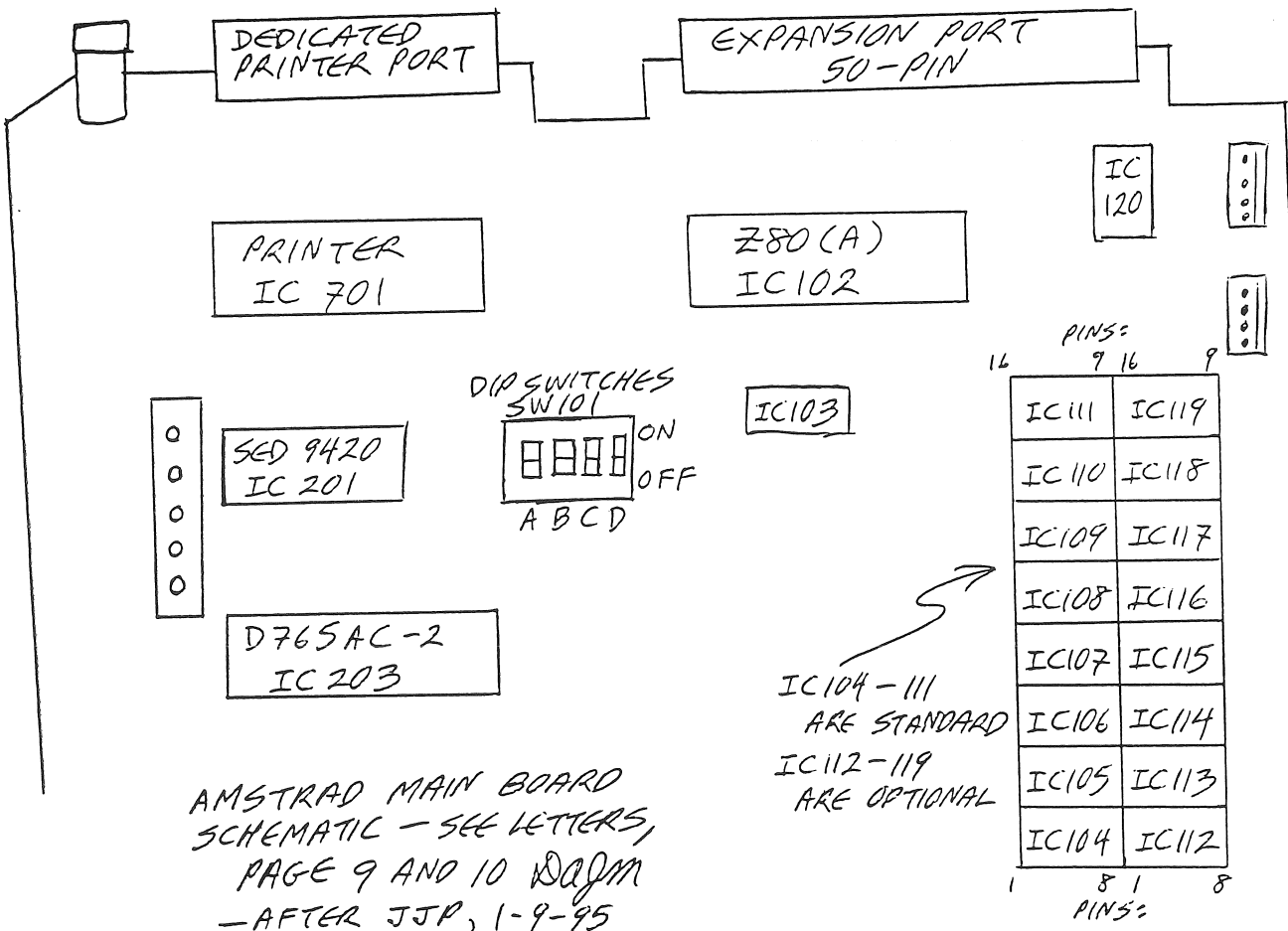
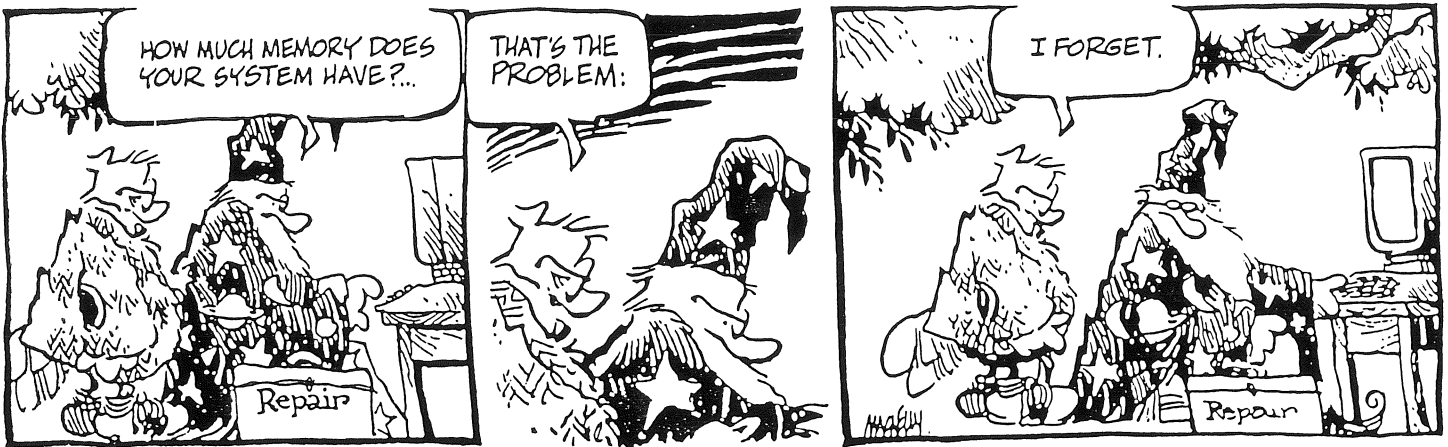
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# Lambda Software Publishing Price List

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Software is \$25 each. Manuals are \$20 each,  
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### MP/M II

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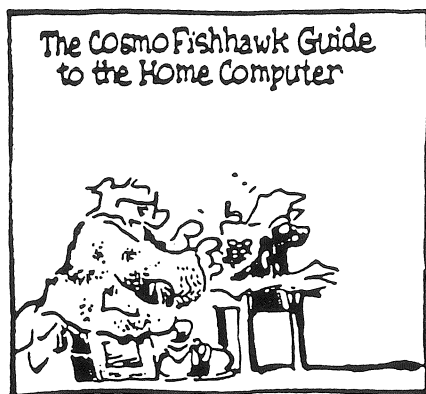
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