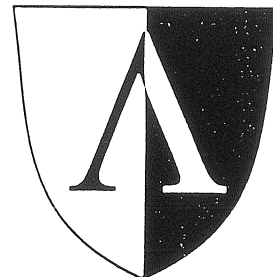
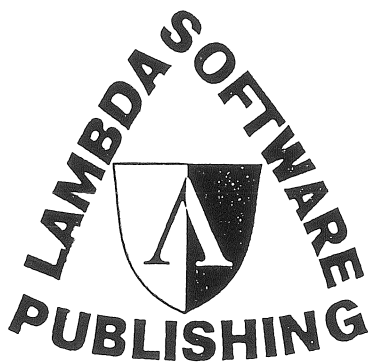
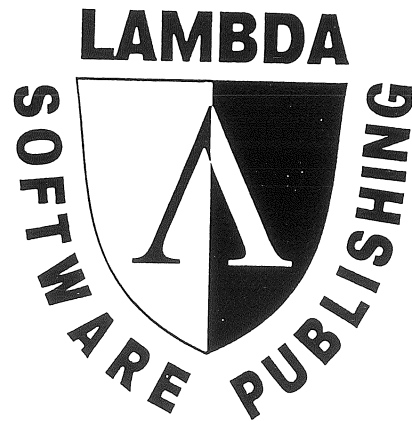
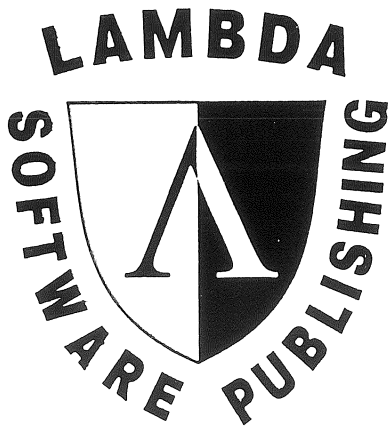


The Z-Letter

Newsletter of the CP/M and Z-System community

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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.

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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

MIX C, Editor, ASM available

Lambda has negotiated a contract with MIX Software, Inc. to sell MIX's products MIX C, MIX Editor, and MIX ASM. These products are now available for CP/M computers.

MIX C is a full-featured, fast, small C compiler. You get a complete and standard K&R C compiler with the language extensions that make it compatible with Unix C, and a fast linker with an extensive library of more than 150 functions, including most of the standard Unix C functions. Programs may be optimized either for size or for speed.

The MIX C manual is 440 pages long, divided into five sections. Getting Started shows you how to compile, link, and execute some simple C programs. The Tutorial section guides you step by step through the C language, which should be invaluable to novice C programmers. The Reference section is a complete reference manual for the C language, arranged by topic. The Functions section describes all the library function, separating the standard from the non-standard functions, and providing an example of how to use each function. Finally, the Tools section provides a description of all the supplied tools, including the SHRINK and SPEEDUP optimization tools, and a more detailed description of the compiler and linker.

The cost of MIX C, including the printed manual, is \$60.

MIX Editor is a programmable full-screen text processor. Using MIX Editor, you can also split the screen and edit two files at the same time, a rare, if not unique feature in CP/M editors (even Spellbinder can't do this!). MIX Editor can handle files larger than memory, lines longer than the screen width (up to 255 characters long), and restore deleted text (another feature Spellbinder doesn't have). MIX Editor's programmable macros feature's much more limited than Spellbinder's, resembling in scope and design the macros in WordStar 4.0. The cost of MIX Editor, including the 100-page printed manual, is \$30.

MIX ASM is a utility that allows you to link assembly-language functions to your MIX C programs. It translates OBJ or REL files, created by Microsoft's M80 assembler, to the format used by the linker of MIX C. Documentation's provided in a README file. MIX ASM costs \$20.

TEX 1.0 available

In sorting through and organizing my huge pile of diskettes, I found a copy (though not an original copy) of TEX, the Digital Research text formatter. It's now available under my Novell contract. If you want to format and print a small file without running a full-fledged word processor, this is the tool for you.

UniForm for the Osborne 1 available

UniForm for the Osborne 1 with double-density drives is now available again, thanks to subscriber John S. Butler of the United Kingdom. Cheers, John!

LeBug 5.1 available

Sorting my disks also turned up LeBug, a high-powered debugger. The author, who worked at Tandem at the time, gave me a release disk and a crate full of manuals back in 1985 and said I could sell them if I wanted to. He didn't even want royalties, he just didn't want all his work to go to waste, and hated to throw away all the manuals. At the time, I wasn't selling software, but I took them off his hands. Now that I've remembered I have this product, I'll sell it for \$20.

Free time on GENie for new users

Beery Miller, one of the sysops of the CP/M Roundtable on GENie, says that GENie's offering \$50 of free usage the first month for new CP/M users. No mention's made of any time limits on this offer. So if you're not already a GENie subscriber, and you want more information, call GENie at (800) 638-9636 during East Coast business hours.

IDE for CP/M

Herbert Johnson called me to tell me that Tilmann Reh has finished his GIDE board, and Herb'll be selling them here in the US. for about \$100 each. The GIDE is a Generic IDE board, hence the name. You install it by removing the Z80 from your computer, plugging the board into the Z80 socket, then you put the Z80 into the socket for it on the GIDE board. A cable runs from the GIDE to a modern, fast, large-capacity IDE hard disk, which is all the hardware you need to add such a hard disk to

your CP/M machine.

Herb will be selling these boards to people sufficiently skilled to make the BIOS changes and other software changes for their particular models, and requiring as a condition of the sale that they provide him with a copy of the modified operating system. That way, once someone has a working system for a given machine, it'll be available to anyone with that model.

Herb's listed in our RESOURCES section. Contact Tilmann Reh at tilmann.reh@hrz.uni-siegen.d400.de.

Hal Bower's summer projects

Hal Bower has bought a Micromint SB180LO, and is working on a version of B/P Bios for the SB180FX and SB180LO. B/P Bios has long been available for the SB180, but the differences between the SB180 and the larger board(s) prevented a single version of the operating system from working on the entire line. The new implementation's now being tested on his new computer. If all goes well, he anticipates a release sometime this summer. I trust he'll let me know when this happens.

Another project in the works is the modem program *cum* local area network for B/P Bios that he promised Ian Cottrell and Jim Thale some time ago.

Hal's also working on an Oberon compiler for advanced computers such as the Micromint and YASBECs. Oberon's the successor to Niklaus Wirth's Modula work, which in turn followed his creation of Pascal. Oberon is a single-user multitasking operating system with built-in programming language, a combination familiar to anyone who knows the intimate connection between C and Unix, or C and the Macintosh operating system.

Finally, on the hardware front, Hal's designing and building a Z180 laptop with a 9.4"-diameter LCD screen. He promises more details when this new computer's up and running.

22DISK formats added

More formats have been added to 22DISK, the best CP/M format software for the PC. I keep finding formats, and Sydex keeps adding them — not that I'm the only one sending them disks, not by a long shot.

CPT1 is the 3½" disk format for the CPT Phoenix Jr. computer, sent me by Nancy Sine. Rummaging through my 8" disks turned up a SSDD SWP format for the Big Board computer, now designated BIG4. Bob Vinisky traded me a Davidge DSB 4/6 for one of the Ampro Little Boards that Chris McEwen gave

me, and its DSDD 8" boot disk is now DAV2. The UniForm disk for the Morrow 5, etc., turned out to be a new Morrow format, MOR8. Finally, I formatted disks in the six native YASBEC formats, not including the two that require Jim Thale's YASMIO board, which I don't have yet. But the formats I *can* use have been added to 22DISK 143 as YAS1 through YAS6.

The latest DEF file for 22DISK includes not only the YASBEC formats, but SIL1, the Silver Reed 3½" word-processing system format. There are 463 CP/M formats known to this release of 22DISK!

Oregon gets new area code

All of Oregon has been area code 503 for as long as there have been area codes. With multiple phones per household, plus cellular phones, car phones, pagers, faxes, and modems, there are no longer enough 503 numbers. Effective November 5, 1995, the northwestern corner of the state, including Portland, will retain area code 503; the rest of the state, including Eugene, will switch to area code 541. This notice will be repeated in *The Z-Letter* until the change occurs.

Area codes used to have a middle digit of 0 or 1 until the nationwide number crunch used all those up. Some older phone switches don't recognize area codes with middle numbers other than 0 or 1. To test whether YOU will be able to phone Eugene after November, dial information in a new-style area code and see whether you get through. I suggest 360, the new area code for western Washington state except for the Seattle, Tacoma, and Everett area. If you can get through to 1-360-555-1212, all's well. If not, call your local phone company and/or your long-distance phone company, and start badgering them to make the necessary changes NOW. As new area codes are established all over the country, this problem will become more and more widespread.

Lambda caps, anyone?

I recently stumbled across a local company that makes all sorts of promotional merchandise with company logos, names, slogans, or whatever, printed and/or embroidered on caps, tee shirts, sweat shirts, mugs, buttons in various shapes, and so forth. They can make a visored cap with the Lambda logo and name embroidered on the front. (The "logo" is the shield on the cover of *The Z-Letter*, to the left of the magazine's name.) The first dozen would sell for \$15 each, which covers both the cost of the caps plus a one-time charge for scanning the artwork for their embroidery machine. Subsequent dozens would go

for less, probably \$12 each.

Is anyone eager to buy a "baseball cap" with the Lambda name and logo on the front? If so, please let me know by letter, phone, or e-mail right away, so I can judge whether it's worthwhile to proceed.

Give your computer a pet

Speaking of gimmicks, I found a neat toy at OfficeMax for the nerd on your shopping list. Curtis Manufacturing makes a "keyboard calculator" powered by sunlight and a backup internal watch battery. This calculator's 6.5" long by 12.5" tall, with a little LCD display for results. It comes with two little squares of double-sided plastic material for mounting along the top edge of your keyboard, giving you a calculator at your fingertips when working on your computer. This cute idea sells at OfficeMax for \$6.99, the list price is supposedly \$9.95. Just thought you'd like to know . . .

New adventures of the mad collector

A lot of my time lately's been taken up with a full-time search for an outside job (blah!), but even so there's a lot of time in two months, and I haven't been idle.

A number of computers have wandered in my door ("Look, Ma, what followed me home"). I bought a DEC VT-180 for very cheap, but I don't have a boot disk for it. I bought a NorthStar Advantage for even cheaper, but it doesn't appear to work. From Goodwill I got a Xerox 820 8" disk-drive unit that works fine, a TeleVideo TPC-1 likewise, and an Epson QX-16 I haven't had a chance to test yet. For a slightly steep price I bought a Commodore 128 system complete with 1571 drive and monitor that works just fine.

Quite a bit of time's been devoted to a Victor computer sent me by a record collector. The idea was to trade it for a Kaypro 10, provided the Victor was a CP/M machine as he believed, transferring the data from the Victor to the Kaypro. Unfortunately, the machine was improperly packed, and I had to repair the keyboard cable and replace the power

supply before it would work. Once it did, it was apparent that it's not a CP/M machine, but a non-clone MS-DOS machine with its own weird 568K and 12-Mb formats. It achieves these by using a 96-tpi drive and *varying the drive speed*, which allows it to pack more sectors into the tracks as they spiral outward. Needless to say, no other computer can read these disks.

I've sold a few computers and some computer parts, too: a Xerox 820 system, a Fulcrum S-100 system, a CompuPro 8/16, and some Xerox 5¼" disk-drive units and keyboards. I've also sold some manuals, and I've a big NorthStar-to-Mac disk-conversion order to fill.

A friend of mine in the Bay Area who runs a Farmer's Market there has paid me to create a database program for keeping track of the farmers and the crops each is selling. She has the first draft running on her PMC Micromate computer with Wyse-100 terminal now. Still to do is the label and reports functions, and improve the graphics.

Al Paarmann sent me a diskful of software he's written, complete with descriptions for each. As soon as I organize them into libraries, they'll be available in the Sound Potentials collection.

Work on the Subjects section of the index to issues 1-34 has begun. This section will appear in two parts in our next two issues.

Herbert Oppmann has sent me software to help finish the re-sourcing of LPascal from COBOL to assembly language, so that this project can keep moving ahead. I've done the first couple of chapters of the manual, which won't be printed, but an online program with fancy indexing functions. More on that as it progresses.

CCP/M membership renewals due

Gary Stagliano, treasurer of the Connecticut CP/M User's Group, has asked me to remind all members that it's time to renew their memberships. Mail them to Gary J. Stagliano, 176-J Homestead Street, Manchester CT 06040-3062, or see Gary at a CCP/M meeting. Call him at (203) 647-8187 if you're unsure where or when the next meeting is.

NEXT ISSUE

Bob Vinisky couldn't make the deadline this issue, because he was moving, but his column will resume next issue. The Subjects section of the index to issues 1-34 will appear, and lovely blonde distraction Tina Huovinen will begin a Spellbinder column. Finally, if space permits, I'll describe getting my YASBEC running. See you in 60 days!

FIXING THE SYSTEM TRACKS OF THE TS-802H

by Zener

Sometime you may pick up a TeleVideo TS-802H computer because "it doesn't work anymore." As with all computers with hard disks, the reason's probably failure of the hard disk. However, CP/M-era hard disks are very rugged. While hard disks and hard-disk controllers do eventually die, the most probable cause of the failure's that someone's screwed up the system tracks on the hard disk. This usually happens when a novice user, confused by the extremely terse messages of the SYSGEN utility, accidentally instructs the computer to copy the blank system tracks of a newly-formatted floppy disk onto the system tracks of the hard disk.

When this happens, the system tracks must be restored. If the computer can boot from a floppy disk, as Eagles, Kaypros, and TeleVideos can, fixing the system tracks isn't very difficult. I'll explain how to do so for a TeleVideo TS-802H.

The TeleVideo procedure

First you must get a boot disk for the TS-802H computer. I bought my copy from Lambda Software Publishing, 149 West Hilliard Lane, Eugene OR 97404-3057, for \$25.

Next, find the bank of switches on the back of the computer labeled S2. Change the switch marked 6 to the down position. This tells the TeleVideo to boot from the floppy-disk drive.

Now insert the boot disk into the floppy-disk drive and turn on the TeleVideo. If the machine's already turned on, reset it by pressing the BREAK key twice with the SHIFT key held down. The TeleVideo will now boot from the floppy disk.

The floppy-disk drive is now drive A, and the hard disk is now accessible. However, the partitions on it have different names when you boot from the floppy disk. Drive C's now drive B, drive B's now drive C, and drive A's now drive D. This is

confusing, but you won't have to put up with it for very long.

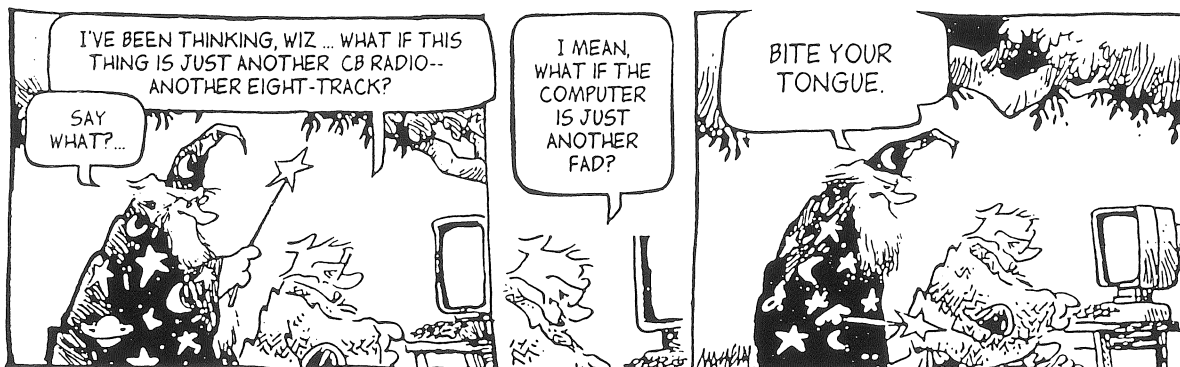
You don't want to have to boot the computer from a floppy, so the next step is to run the SYSGEN program on the floppy disk. Just type SYSGEN [RETURN] to run it. The program will ask Source drive name, to which you reply A [RETURN], [RETURN] (read the operating system from the system tracks of the floppy disk). Then the program will ask for a Destination drive name, and you enter D [RETURN], [RETURN] (write the operating system to the system tracks of the hard disk). The program will tell you that the function's complete and the program will end.

Now flip switch 6 (of the S2 switch bank on the back of the TeleVideo) back to the up position. The TeleVideo can now be rebooted by pressing the shifted BREAK key twice. Providing everything was done correctly, the computer will now boot from the hard disk just like it's supposed to, and your normal drives names will be restored.

The general case

In general, the steps above are used to restore the system tracks of any CP/M computer with a hard disk. Drive names assigned to the hard-disk partitions when you boot from a floppy will be different for other computers; check your computer's manual, or ask Lambda, or just do DIR commands on various drive letters until you've identified the partitions.

Making a computer boot from a floppy disk also differs from model to model. Hard-disk Kaypros will automatically boot from a floppy disk, if there's one in the drive. With Xerox computers, you specify the floppy disk instead of a hard-disk partition when it prompts you to load the system. With Eagles, you hold down the F key during boot to force it to boot from the floppy.



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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 Xerox 820 computers, one Xerox 820-II computer, two dual 8" drive units between the three of them. 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.

WANTED!

Will buy, or trade spare computer parts, books, manuals, software for the following items: **Boot disks:** Actrix single-sided, Actrix double-sided, Altos 8000 with hard disk, DEC VT180, Maxicom D/L with hard disk, Sanyo 2000, Sharp 5500, 5600, 5631, Sharp YX-3500, Systel 3, Telcom ECD 4000EX (3½"), TRS-80 Model II/12/16/6000 CP/M 3.0, Xerox 820 (5¼"), Zeus 3X with hard disk. **Hardware:** Three (3) 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.

BOOKS FOR SALE

Even after keeping two copies each, the following titles are extra in the quantities listed: *CP/M and the Personal Computer*, Dwyer & Crichtfield, 1 extra copy. *CP/M Assembly Language Programming*, Barbier, 2. *CP/M Bible*, Waite & Angermeyer, 2. *CP/M Handbook with MP/M*, Zaks, 4. *CP/M Primer*, Murtha & Waite, 5. *CP/M Revealed*, Dennon, 1. *dBase II User Guide*, Green, 3. *The Epson Connection: Kaypro*, Oaks, 1. *Everyman's Data Base Primer*, Byers, 1. *Kaypro User's Handbook*, anonymous, 1. *Mastering CP/M*, Miller, 1. *The MBASIC Handbook*, Ettlin & Solberg, 1. *Osborne CP/M User Guide*, Hogan, 3. *The Perfect Manual for the Kaypro*

II, anonymous, 2. *Problem Solving and Structured Programming in Pascal*, Koffman, 1. *The Programmer's CP/M Handbook*, Johnson-Laird, 6. *The Soul of CP/M*, Waite and Lafore, 1. *Using CP/M*, Fernandez & Ashley, 5. *Using dBase II*, Townsend, 3. *Z-80 and 8080 Assembly Language Programming*, Spracklen, 2. *Z80 Assembly Language Programming*, Leventhal, 1. *The Z80 Microcomputer Handbook*, Barden, 3. Will sell for \$15 each, or \$10 each if you buy four or more. Will also trade for any not listed here if I don't have two copies already, especially *CP/M Solutions* and *CP/M Techniques* by Barbier. Please help me lighten the load in my file cabinets! Contact David A.J. McGlone, (503) 688-3563.

MECHANICAL CALCULATOR FOR SALE

Lightning portable adding machine, "Mfgd. by Lightning Adding Machine Sales Co., Los Angeles 7, Calif, U.S.A." circa 1935-1955. No zip code, trademark, copyright symbol, or patent information anywhere in package (indication of age). Complete cardboard box in fair condition, 7-wheel calculator 12" x 25" in like-new condition. Metal, felt backing, 13 ounces. Bakelite (!) desk holder in mint condition, 11 ounces. Complete documentation. Calculator does addition and subtraction, up to 7 digits. Metal stylus missing, all else present. Make offer, \$200 minimum, to David A.J. McGlone, (503) 688-3563.

NorthStar Horizon for sale

S-100 system, two hard-sectored floppy-disk drives, Qume terminal, Okidata printer, \$50 for the lot. Contact Ron Davis, (415) 647-2982.

HELP!

Need a copy of the MicroSphere SUPERSPEED installation manual for the Kaypro 4 '84 and 2X models. Looking for jumper connections on the 74LS373 chip and PIO. Also want to buy Kaypro **memorabiia**. George Kleiser, P.O. Box 752, Duson LA 70529.

TRS-80 Model I, III, IV hardware wanted

... Such as the screen printer, voice synthesizers, etc. Also various versions of DOS for the above computers and other software. Please call (916) 383-0726 collect, or write to Charles Doughty, Box 60550, Sacramento CA 95860-0550.

THE Z-SYSTEM ON AN HP 125

by Gary L. Ratliff

Since taking my first course in FORTRAN over a quarter of a century ago, I've been aware of the HP reputation for quality. At the end of the semester, HP introduced a programmable calculator priced at \$795.00. One feature of this calculator was the ability to remember hundreds of steps, which could be saved to and read into memory from "cards."

Having spent long hours keypunching my FORTRAN IV assignments onto Hollerith cards, I was most curious to learn how a calculator could read one of these cards. A trip to the Memphis HP dealer to see one of these electronic marvels soon clarified for me that the cards used by the HP calculator weren't the same as the ones I knew so well.

The COMPUTER CLASSICS column in the January/February 1994 issue of *The Z-Letter* on the HP 125 revealed many of the unique features which make it an ideal candidate for use in a Z-System environment. The purpose of this article is to describe the steps needed to install NZ-COM on the HP 125 as a "true" HP application. (NZ-COM will run without these changes, but they make it consistent in look and feel with the other applications bundled with the HP 125, all of which were modified for uniformity. HP later abandoned this approach, and later software packages weren't modified this way.) I'll also reveal some simple additions to the standard NZ-COM package to enhance the user's enjoyment of the Z-System on an HP 125.

This article will also discuss some of the limitations which taking this step entails, so you can see the advantages and disadvantages of such an installation.

Software tools and basic assumptions

Before starting a project a good workman will carefully lay out his tools. We'll limit the software tools we use to those included with CP/M 2.2 (DDT, LOAD, and PIP), plus those in the Sound Potentials collection (DU, TCSRC, and ZASM), until the Z-System's been installed. Once NZ-COM's running, we'll also use the utilities included in the NZ-COM software package: ARUNZ, EDITNDR, LPUT, LX, MKZCM, SALIAS, SAVENDR, SHOW, TCSELECT, VLU, and ZFILER.

An editor you're comfortable with, and a supply of blank disks in the HP 125 format, will complete the tool kit for this installation.

The hardware

There are many possible hardware configurations for an HP 125, including many types of floppy-disk drives and hard disks. The hardware used in this project was the HP 125 with the 9135A drive unit. The 9135A has a 4.4-Mb hard disk and a 248K floppy-disk drive. Switches may be set to recognize the floppy-disk drive as drives A to D, and the hard disk as drives E to H, in which case the machine boots from a floppy disk. In the case assumed by this article, the HP 125 boots from the hard disk (drives A to D); the floppy-disk drive is drive E.

The next assumption is that the "ROOT" drive will be drive B. As the HP 125 boots from drive A, and most applications will be there, only the files absolutely essential to making NZ-COM boot up will be placed on drive A.

The initial setup

First, boot up the HP 125. When the FUNCTION keys appear use the F8 key to exit to CP/M. Place each disk you received with the NZ-COM package in drive E and use PIP to copy them to the B drive, using the command `PIP B:=E:.**[V]`

(One of the aggravations we solve by making the HP 125 operate as a Z system is that programs such as PIP cause a cold boot on exit. A cold boot executes WELCOME and presents the function keys. This requires another press of the F8 key to get back to CP/M.)

Next, run the program MKZCM to determine an initial set up and save these settings in NZCOMZCM and NZCOMENV. To do this, log onto drive B and type `MKZCM NZCOM`

Third, PIP everything from B which begins with NZCOM to a blank disk which'll be placed in the E drive (see the previous note about the re-booting this operation'll cause). The command to do this is `PIP E:=B:NZCOM.**[V]`

Fourth, rename the NZCOM.COM on drive E, temporarily, to NXCOM.COM with the command `REN E:NXCOM.COM=E:NZCOM.COM` (REN's a built-in command and isn't listed in the tools). Then PIP everything on the E drive which begins with NZCOM onto the A drive: `PIP A:=E:NZCOM.**[V]`

At last you can run the Z-System. Log onto B by entering B: and start NZ-COM running by typing

The Terminal CAPability file

Once the Z-System's running, a TCAP will be installed. When TCSELECT's run the only HP terminal listed is the HP 2621. Follow the instructions in your NZ-COM manual to load that TCAP. Once this is done, try running one of the most important Z-System utilities, SHOW. You'll get the error message "TCAP inadequate".

Therefore, our first order of business in creating a workable Z-System on the HP 125 is creating an extended TCAP which'll enable SHOW, XOX and some other important utilities to function.

While he was still operating Sound Potentials, Rich Brewster sent me two absolutely necessary Z-System utilities which will make this task possible. TCSRC reads the TCAP and creates a Z80 source file which may be edited and reassembled to yield a new TCAP. ENVSRC performs a similar operation for the Z-System environment descriptor.

Placing a disk in drive E containing the software listed in the tool kit and entering the command R will reset the drive without the computer rebooting. Nor will WELCOME run and produce the lighted function keys. The Z-System's improving your enjoyment of the computer already!

Having done that, we're ready to produce the source code of the existing TCAP. Log onto drive E, then run TCSRC. TCSRC'll produce a file called Z3TCAP.Z80.

Examining this file, note several areas which show only a 0, meaning that this function isn't defined. Filling in these blank areas will give us the extended TCAP we want. The required escape sequences are found in the *HP 125 Business Assistant System Reference Manual*. See chapters 2 - 6 for more details of the meanings of the escape sequences.

The complete listing for Z3TCAP.Z80's too long for this article; but this file, and the others listed, are available from Lambda. Just mention this article. The file HPTCAP.CUT shows the changes to make to Z3TCAP.Z80 to make the file HPTCAP.Z80. The lines and arrow marks in HPTCAP.CUT mustn't be in HPTCAP.Z80 itself, but are just there to show where Z3TCAP.Z80 and HPTCAP.Z80 will differ. Please note that the character referred to in the altered RC is found on the HP 125 keyboard directly above the DEL key.

You're now ready to use your favorite editor to alter Z3TCAP.Z80. Word/125, which comes with the HP 125 system, is an HP-modified version of Spellbinder. If you use it, remember to save your files with /1 after the file name, to tell it to end every line with a carriage return and line feed, as you would in preparing source code for any programming task. If

you use WordStar, remember to use non-document mode. Other word processors may have gotchas of their own; the point is to make sure your finished file's straight ASCII text, with carriage return and line feed at the end of every line, and no embedded control characters or characters with the high bit set.

Because the resulting source code contains a macro definition, you can't use ASM to assemble HPTCAP.Z80 into HPTCAP.HEX. Instead we'll use ZASM from the Sound Potentials collection, which can make either HEX or Microsoft M80-compatible REL files. ZASM expects its input file to have the extension Z80 (e.g., HPTCAP.Z80), and it handles macro definitions with no problems. The command `ZASM HPTCAP. eee hex=0100` will read HPTCAP.Z80 and write HPTCAP.HEX and HPTCAP.PRN all on disk drive E.

Having assembled the file, our last step is to transform it from Intel HEX format. The standard CP/M utility LOAD yields HPTCAP.COM, which we rename to HPTCAP.Z3T. Log back to drive B, because the files to load the system files are presently on that drive and we haven't yet defined a search path. The command `NZCOM E:HPTCAP.Z3T` loads our extended TCAP into the environment.

For the acid test, run SHOW. The menu you'll see allows you easy access to some of the most important information about your system. Another benefit's that many other Z-System utilities can now run, determining from the TCAP how to clear the screen, turn on and off various screen enhancements, and perform other pleasant effects on the output from the programs you use.

Making NZCOM an HP application

The second task required to create a fully functional Z-System on the HP 125, is making NZCOM into an application which may be installed onto the A drive, where its name will appear automatically on one of the function keys each time the machine's started. Here a careful reading of Appendix C in the *HP 125 System Reference Manual* is necessary. This involves creating an *nzcom.wel* file, which the HP 125 WELCOME program reads and uses to create the text of the function key and install "NXCOM.COM as an application. This file's presently on a disk we placed in drive E. There was no typo as we renamed it — a very subtle method will be used to restore it to its proper name.

The BDOS of the HP 125 implementation of CP/M 2.2 has several extensions. These operate from the standard BDOS jump at location 0005; one extension allows chaining and loading of file names which are in lower case. Normal CP/M will convert the entire

command line to upper case.

Because NZ-COM replaces the BDOS with its own DOS (normally ZRDOS) we won't be able to run other HP-installed applications under NZ-COM. WELCOME will determine whether the system's an HP and whether it contain the expected extensions to the BDOS. Once WELCOME learns that these extensions aren't available it'll produce the text for the function keys. You'll then need to reset the computer. To run other applications use the OFF, EXIT, or CPM alias.

The *nzcom.wel* file will be created using DDT. Text for the function key, size of the application to install, and a list of the command to run when this application loads will be entered into RAM. The example presented in the HP documentation will be followed exactly, substituting of course the information required.

The entire DDT session required to produce the *nzcom.wel* file is contained in the file NZCOM.DDT. This file will reside on the floppy as well as the file NXCOM.COM.

When you're copying files to the floppy which will be used in the installation process, make sure you don't have WELCOME.COM on that disk. The memory image created in the DDT session will need to be saved using SAVE 1 NZCOM.WEL; however, upon exit from DDT the HP will look for WELCOME, and run it if it finds it. (Although we're running the Z-System, you could be running CP/M some other time, so we need to protect against that possibility.)

The final step is to adjust the file names so that the names are in lower case and have certain flag bits set. For this operation we have to edit the disk directory. This step will also help explain why HP applications don't show up when you run the CP/M DIR command.

One of the best tools to use for disk editing is the program DU, found in the Sound Potentials collection. The area of the disk we want to edit is the directory. This'll be found on track 3, sector 1 of the hard disk, or track 2, sector 1 of a floppy. (The location of the hard-disk directory is given so you can explore and learn how the HP actually uses the ?????????.wel file.)

Start DU and wait for its prompt, a colon (:). Once it appears, log onto drive E by typing le. At the next prompt, type G0 to find the directory.

We wish to find the file NZCOM.WEL, so we'll use DU's ASCII search facility. Type =WEL. DU will stop when it locates the text "WEL" in the directory (if the command fails, for instance because you forget to insert the disk or inserted the wrong disk, the entire disk will be searched and the message *not found* will appear after a long wait).

Now a D (DUMP) command will list on the screen

the area of the directory containing *nzcom.wel*. The numbers at the side will be the base hex address. The file type will be offset 09 from the beginning of a line. Therefore, if *nzcom.wel* appears on your system at address 40, the WEL portion of the file name would be at address 0049. WEL translates into hex as: 57 45 4C.

The DU command to change hex has the format *CHaddress,byte,byte . . .* So enter the command **CH49,77,65,6C** Then use the D command to dump the segment and confirm that NZCOM.WEL's now listed as NZCOM.wel.

If all's well, issue a W command to write the altered directory segment to disk. Because this operation alters the directory, it's very dangerous in the hands of anyone who doesn't check and recheck that everything's correct. A mistake altering a hard-disk directory could wipe out the hard disk. Direct disk editing and formatting disks are the most dangerous operations on a system.

In the sample DDT session in NZCOM.DDT, you'll note that the HP practice of using lower case for the installed applications command was followed. Therefore the file NXCOM.COM on the disk in drive E will need to be renamed. The Install mode of the WELCOME program installs any files marked by having their initial bit set high.

Using the same DU technique as above, find the file NXCOM.COM. That is, give a G0 command to reset to the start of the directory; then type =NXCOM to find NXCOM.COM. "NXCOM" in hexadecimal is: 4E 58 43 4F 4D. This part of the file name has an offset of 1.

Assuming for the sake of example that NXCOM.COM resides at address line 60, the command **CH61,EE,7A,63,6F,6D** sets the high bit of the first letter of the name (4E + 20 + 80 = EE), and it sets the rest of the name to lower case. Again, use the D command to verify the changes you made were correct, then issue the W command to write the sector to disk (it was in the HEX command that NXCOM was renamed to *nzcom*).

Now you're ready to install the application. Press CTRL SHIFT and the RESET key. This'll reboot the computer and the function keys will show the presently installed applications. To enter the install mode of WELCOME, press the CTRL SHIFT and @ keys. The screen will display instructions confirming that you've entered the install mode.

Earlier versions of the HP-125 operating system assumed that the Work disk was in drive A, and the Master disk in drive B. Once hard disks were introduced, the operating system was changed to allow using the function keys to select any set of drives. This change was fully explained in the

previously cited issue 29 of *The Z-Letter*.

The Source disk's in E and the Work disk is drive A of the hard disk. The source disk only has to have the files NZCOM.wel and nzcom.COM (high bit of initial n set).

Press the function key corresponding to "Change Source". Then keep pressing the key showing "Next Source" until the indicated drive is E. Once this is so, press the function key showing "Previous Menu". Then press the function key showing "Install Appl". The message "Save in Progress . . . DO NOT DISTURB" will appear on the screen. Then the system will reboot and you'll see a key with the text NZCOM upon it. Pressing that function key will now run NZ-COM.

Just as the HP 125, when it boots, will execute the WELCOM program, NZ-COM executes the alias STARTZCM when it runs. You create STARTZCM using SALIAS, which is part of the NZ-COM package. Instructions for using it are found in the NZ-COM manual. As there are five drives on the HP 125, my alias uses the path a0: c0: d0: e0: b0: The last directory in the path is called the root directory, where some important and frequently-used files will be kept.

Finishing touches

The extended TCAP uses the reverse video as the default enhancement setting. The ALIAS.CMD file and its documentation show some definite additions which may be made to enhance the performance of your newly installed Z-System.

The editor of choice may be used to add to the example ALIAS.CMD file whatever aliases you wish to create. The ALIAS.CUT file included on the disk accompanying this article shows the editing of the NZ-COM ALIAS.CMD to provide optional enhancements, a quick peek into the TCAP area of the environment, and chaining to LX.

LX runs COM files which have been placed in a library file. The default name of this file is COMMANDLBR, and its default location is the root directory. The VLU utility's used to place files in the library. Please note that VLU by default "crunches" files as small as possible. VLU's help menu will show you how to specify that the COM files you put into COMMANDLBR don't get crunched.

The files which mustn't be placed in the command library are ARUNZ.COM (which is usually renamed to CMDRUN.COM to serve as the Extended Command Processor) and LX.COM itself. The copy of NZCOM.COM which still has its name in upper case will be placed in the library. This program will be used often to change the system modules.

The library which VLU builds needn't be on the

same drive as the COM files. Once the files selected by the user are in the library, ZFILER may be used to tag and delete the original COM files, and move COMMANDLBR file to the root directory.

The libraries which NZ-COM will search for on booting, and the files NZCOM.CCP, NZCOM.ENV, and NZCOM.ZCM, will be placed on drive A. The alias STARTZCM.COM should also be on drive A. The extended TCAP which we created earlier should be renamed NZCOM.Z3T and placed within the NZCOMLBR which holds the default RCP, FCP etc. You can do this with the command LPUT NZCOM.LBR NZCOM.Z3T

The advantages and disadvantages

The Z-system offers named directories, a search path, and automation for frequently-performed operations. The HP 125 adds to these features a 120-line screen RAM. The help files which scroll by under other CP/M systems can be recalled at a touch of the NEXT PAGE or PREVIOUS PAGE keys. The ability to create aliases lets you customize commands to your preferences.

The entire computing session can run under the Z-System without the rebooting and exiting to CP/M which the WELCOME program of the normal HP 125 system forces.

The above items are just a few of the advantages that the Z-System brings to the HP 125. But there are also some disadvantages:

The installed applications won't run from the Z-System. This was previously explained as being due to the extensions made by HP to their implementation of the CP/M 2.2 system. However, it isn't absolutely mandatory to make the installed application have a lower-case name. The Condor data-base management program, among others, retains an upper-case name. An application which doesn't use the HP extended functions can run under the Z-System.

The act of preparing software to function as an application is long and a bit confusing. However, experience will almost make this process seem automatic.

Third, there may be so many applications already installed on drive A that there isn't enough space left. The HP documentation mentions deleting applications, yet I couldn't find in them a way to do so. However, I learned by trying a logical guess that pressing and holding down the CTRL SHIFT and DEL keys will place you in this mode. The WELCOME program must be functional; that is, the function keys displaying the applications available and the machine waiting for you to choose an application.

Wrapping up

If you haven't yet tried the Z-System I would encourage you to do so. The many new features will greatly enhance your enjoyment in using a CP/M computer, be it an HP 125 or other model. Just as my

visit to an HP dealership clarified my initial misunderstanding about a card reader, I hope your reading of this article has clarified your ideas about what's involved in installing NZ-COM as an HP application on an HP 125.

LETTERS

Xerox hard-disk information wanted

March 28, 1995

Dear Mr. McGlone,

I was fortunate enough to rescue two Xerox 820 computers from certain death. Their owner was going to take them out and use their monitors for target practice because he couldn't think of anything else to do with them. Unfortunately there isn't any documentation or software and that's mainly why I'm writing.

First let me describe what was given to me. Two Xerox computers with keyboards, a Corvus Systems 5-Mb hard disk, a set of 5¼" drives, and a set of 8" drives. I don't know how much of this works for certain, but I've no reason to doubt that all of it works (except, perhaps, the hard disk), as this equipment was originally owned by the State of Idaho.

The hard disk came with an intervening interface box that has one 34-pin ribbon cable coming out one side and a 40-pin, plus a 20-pin ribbon cable coming out the other. The interface wasn't connected to anything, but its ends were inside one 820's case. I'm guessing that the 20-pin and 40-pin connectors fit on the 820's motherboard as it has open connectors that match these. I'm guessing also that the 34-pin connector goes into the "Processor" connector of the hard-disk unit. The other 34-pin connector on the hard-disk unit's labeled "Drive" so I'm guessing that the unit allows throughput (though I don't know whether this is necessary on the 820 as it still has its free disk-drive slot). A lot of guessing here, but that's all I can really do at this point.

I did try booting off the hard disk without luck. The hard disk geared up, but its Fault light and Busy light stayed on and occasionally the Ready light would blink. It did the same thing without being hooked up to the 820, so I don't know whether there's a board problem, or whether I just have something hooked up wrong. It's also possible that the 820 doesn't boot from the hard disk.

When I hooked up the disk-drive units and tried

to boot (without a disk), the computers did activate drive A in both cases, with both sets of drives, so that looks encouraging.

If anyone out there using 820s would like to share some information, I would be very grateful. I don't know whether I'll keep these Xeroxes or pass them along, but I would like to see them work, at least. My biggest problem's the hard-disk unit. I've no idea what its switches do. On the front panel it has four switches; three are toggles, and one's a momentary contact switch. On the back of the unit are four dip switches. Inside, on the board, is a bank of 8 dip switches. The strangest part of the unit, to me, is that it also has a 20-pin connector for "VCR" and two RCA jacks that say Video Input and Output. I haven't got a clue what this is all about. Even if I can't get the system to work, I would still love to know what VCR and video inputs and outputs are doing on a 1981 CP/M hard-disk unit.

Sincerely,

Ron Blizzard
114 Harrison Street
Twin Falls ID 83301
(208) 734-5642

It sounds like we're dealing with an old Corvus 8" hard-disk unit here. Such units typically have the displays and switches you describe. One switch is probably to write-protect the disk; the button's probably a reset button.

The Xerox won't boot from the hard disk in any case. All three makes of Xeroxes boot up in BOS, a Xerox monitor program, and prompt you to use the machine as a terminal, typewriter, or load an operating system. L followed by the drive or hard-disk partition name is the syntax used to boot from any of them; on a 16/8 with a hard disk with four partitions, for instance, LA boots from the floppy disk, LE from hard-disk partition E, LF from partition F, LG from partition G, and LH from partition H. Each floppy disk and each partition can have its own operating system and its own startup routine, and becomes drive A when you boot from it. A Xerox program called SWAP lets you rename the drives however you want.

I don't know anything about the VCR and video inputs and outputs. They could be for echoing the screen

display to a large monitor for classroom instruction, or for tape backup as you suggest. They mightn't work on the Xerox at all; the whole hard disk could be cannibalized from another system entirely, with no work done to make those features useful to the Xerox.

If anyone replies to your questions, I hope he'll send a copy of the reply to me as well. - DAJM

Z-Nodes surveyed

May 15, 1995

Al Hawley
Z-Node Central

Dear Al,

I called all the Z-Nodes on your list. The following describes the results of my survey. There are currently five Z-Nodes that I could verify as functional; Z-Nodes 2, 3, 10, 33, and 36 are functional, and Z-Node 6 is likely functional but I don't know its telephone number.

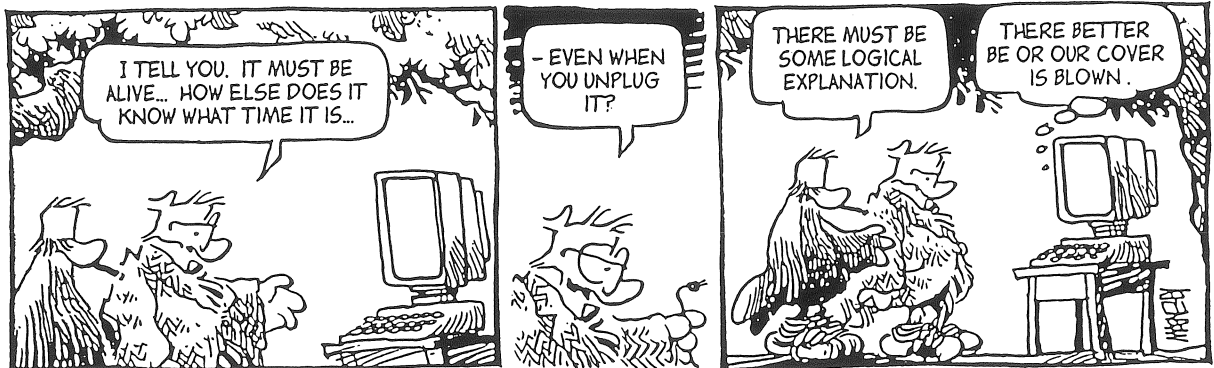
- 2. Al Hawley, (310) 670-9465
Functional at 2400 bps (Z-Node Central).
- 3. Jay Sage, (617) 965-7259
The modems would connect at 2400 bps but the software didn't. I assume Jay's using something other than 8,n,1.
(617) 965-7046
Functional at 14,400 bps. PC based for ZCPR/CP/M.
- 4. Ken Jones, (503) 370-7655
Answered with voice.
- 5. Ian Cottrell, (613) 952-2289
Answered with voice.
- 6. Robert Dean, (610) 623-4040
No answer. However, a Mike Finn called my BBS sying he was sysop of Z-Node 6. He didn't leave a phone number.
- 7. Dave Trainor, (513) 791-0401
Answered with voice.
- 9. Roger Warren, (619) 270-3148
Answered with voice.
- 10. Ludo Van Hemelryck, (206) 481-1371
Functional at 2400 bps.
- 11. Carson Wilson, (312) 764-5162

- No answer.
- 12. Lee Bradley, (203) 665-1100
No answer.
- 13. Larry Moore, (519) 843-7314
Call couldn't be completed as dialed.
- 15. Liv Hinckley, (212) 489-7370
Disconnected or out of service.
- 16. John Anderson, (518) 489-1307
No answer.
- 17. Bill Biersdorf, (813) 961-5747
Disconnected or out of service.
- 20. Brian Grover, (604) 299-0935
No answer.
- 21. Dick Roberts, (908) 757-1491
No answer.
- 32. Chris McEwen, (908) 754-9067
No answer.
- 33. Jim Sands, (405) 237-9282
Functional at 2400 bps.
- 36. Richard Mead, (818) 799-1632
Functional at 14,400 bps. PC system for ZCPR/CP/M.
- 40. Greg Kopp, (204) 224-1282
No answer.
- 45. Robert Reid, (713) 937-8886
Modem connected and then was rejected.
- 58. Kent Mason, (405) 943-8638
Modem answered but my USB wouldn't connect.
- 65. Barron McIntire, (307) 638-1917
No answer.
- 66. Roger Van Horn, (714) 546-5407
Answered with voice.
- 77. Lindsey Haisley, (512) 259-1261
Modem answered but my USB wouldn't connect.
- 78. Gar Nelson, (206) 943-4842
No answer.
- 81. Robert Cooper, (805) 949-6404
No answer.

Any additional information on these (or other) systems known to be functional would be desirable.

Wil Schuemann
(702) 885-7362 (voice)
(702) 887-0408 (BBS)

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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 doesn't. 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]

David Morrison deals in Xerox 820, 820-II, and 16/8 computers, software, and manuals. P.O. Box 1911, Mishawaka IN 46546-1911, phone (219) 257-0193. [5/95]

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. NZ-COM, 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 (v32bis) [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's published by Leonard Geisler, 895 Starwick Drive, Ann Arbor MI 48105, phone (313) 662-0750. [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]

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's 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 entire Sound Potentials, 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:

AIM, #110 (Vol. 11 No. 4, April 1995) and #111 (Vol. 11 No. 5, May/June 1995), is the newsletter of Adam's House, a company selling Coleco ADAM products. The publisher is Terry R. Fowler, Adam's House, 1829-1 County Road 130, Pearland TX 77581-9503, phone (713) 482-5040, fax (713) 997-6907. [Coleco ADAM]

Amstrad PCW User's SIG, Vol. 8 No. 5 (May 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]

AUGER, May 1995 and June 1995. *AUGER* (ADAM Users Group Educational Report) is the newsletter of ECAUG, the Emerald Coast ADAM Users Group. Membership's \$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, April 1995 and May 1995, is the newsletter of NOVAOUG, the Nova Osborne Users Group. The April issue is the now-traditional "A Bit Much", an annual thick compilation of computer jokes. Oh, my aching ribs! Membership's \$12 per year from William E. Kost, 7007 Brocton Court, Springfield VA 22150, phone (703) 569-2213. [Osbornes and PCs]

Classic Computer Society Newsletter, April 1995 and May 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]

The Computer Journal, #72 (March/April 1995): Herb Johnson talks about CompuPro 8/16s and tells

how he got one running. "Beginning PLD" by Claude Palm will interest hardware hackers of any stripe. "Support Groups for the Classics" gives the advance information for Trenton this year. Part 7.5 of "Moving Forth" by Brad Rodriguez appears.

#73 (May/June 1995): "GIDE" by Tilmann Reh is part 6 of his IDE series, discusses the new IDE board for CP/M and Z-System. Chuck Stafford talks about MS-DOS Kaypros, repeating a variant of the old lie about Gary Kildall in the process. Herb Johnson reports on Trenton and GIDE, and answers letters. See our RESOURCES section for TCJ's address and subscription rates. [All computers]

Historically Brewed, #8 (undated), is published by the Historical Computer Society. To subscribe join HCS, send \$18.00 (\$20 Canada, \$24 elsewhere) to HCS, 2962 Park Street #3, Jacksonville FL 32205. [All computers]

Mor-Atlanta News, Vol. 10, No. 6 (April/May 1995), is the newsletter of the Morrow Atlanta Users Group. This issue interesting articles (unfortunately with non-descriptive titles) by Mike Roe, Bill Steele, Benjamin H. Cohen, Jim Hedstrom, and Willis Cook. Mr. Cook has some very thorough, if hair-raising, practical advice about protecting your computer against lightning damage. Finally, they reprinted part 1 of Bob Vinisky's "Z-System Apologist" column from this magazine. See RESOURCES for MAUG's address and membership/subscription rate. [Morrow]

Smithsonian, April 1995. This issue has an article on small museums, called "If you can't bear to part with it, open a new museum." Sound familiar? Pictures by Theo Westernberger.

Z-100 LifeLine, #37 (January-February 1995) and #38 (March-April 1995). #37 has inserts on the Z-100 ANSI console driver and the Z-110/Z-120 power supply. #38 reports the death of Henry Fale, founder of H-SCOOP and Quikdata. Mike Zinkow speaks knowledgeably on "Seagate Hard Drive [sic] Problems". Robert F. Hassard tells how to install a "V20 Replacement for 8088". See RESOURCES for address and subscription rates. [Z-100]

THE HORSE'S MOUTH

Application Note 02, 2/20/82 Reversing the BACKSPACE and RUBOUT key functions and making RUBOUT identical to BACKSPACE

Whenever space permits, this column will reprint one of the Digital Research CP/M application notes or patches until they've all been printed. Like the DRI CP/M manuals, these very technical notes are intended for the advanced system programmer. Less knowledgeable readers are urged to attempt these only with the close personal assistance of a long-time CP/M guru. These notes won't be explicated or fleshed out, but will be printed with minimum alteration of content. In the examples, lines in lower case are typed by the user; other lines are program output. — DAM

Applicable products and version numbers:

CP/M 2.1 and 2.2

Program: BDOS

In the following code segment procedures, addresses given are hexadecimal offsets from the base of the CP/M system. The CCP is usually located at 980H but can be located at A00H if a two-sector boot is used.

You can assemble the patch for your size memory system. The cpmbase equals the BDOS entry point address at locations 6 and 7 in the base page of memory minus 806H. You must change this entry point address when you load DDT or SID. Under DDT or SID, follow the jump at location 5 until an address is found with a least significant digit of 6. In the following example, the cpmbase would be E506H-806H or DD00H.

```
0005 JMP CD00
CD00 JMP D3A4
D3A4 XTHL
D3A5 SHLD E452
D3A8 XTHL
D3A9 JMP E506
```

Procedure to reverse the BACKSPACE and RUBOUT key functions:

Patch into the SYSGEN or MOVCPM image exactly as you would patch in a new version of your BIOS, using the DDT i command followed by the DDT r command. You can use the same offset as your custom BIOS and install the following code:

```
;subtract 806h from address at location 6
cpmbase equ ?
org cpmbase + 0A02h
```

```
    cpi 7fh          ;was cpi 08h
    org cpmbase + 0A16h
    cpi 08h         ;was cpi 7fh
```

Or, you can install the above procedure directly into MOVCPM if you have MOVCPM.COM on your system disk. The patch is applied automatically to any size system that you build using MOVCPM. Make a back-up copy of MOVCPM.COM before using DDT to make the following changes:

```
A>ddt movcpm.com
DDT VERS 2.2
NEXT PC
2700 0100
-11402
1402 CPI 08
1404 JNZ 0A16
1407 MOV A,B
1408 ORA A
1409 JZ 09EF
140C DCR B
140D LDA 0B0C
1410 STA 0B0A
1413 JMP 0A70
1416 CPI 7F
1418 JNZ 0A26
-s1403
1403 08 7f
1404 C2 .
-s1417
1417 7f 8
1418 C2 .
-g0
A>save 38 movcpm1.com
```

Use the new program MOVCPM1.COM in place of MOVCPM.COM. The BACKSPACE and RUBOUT key functions are reversed for any CP/M system generated with MOVCPM1.COM.

Procedure to make RUBOUT identical to BACKSPACE:

Before you install this patch, the code at cpmbase + 0A1Bh should read:

```
mov a,b
ora a
jz cpmbase + 09EFh
mov a,m
```

```

dcr  b
dcx  h
jmp  cpmbase + 0AA9h

```

Patch into the SYSGEN or MOVCPM image exactly as you would patch in a new version of your BIOS, using the DDT i command followed by the DDT r command. Use the same offset as your custom BIOS and install the following code:

```

cpmbase equ ?
;
;
;      org  cpmbase + 0A1Bh
;
;      mvi  a,8h
;      jmp  cpmbase + 0A07h
;      end

```

Or, you can install the above procedure directly into MOVCPM if you have MOVCPM.COM on your system disk. The patch is installed automatically in any size system that you build using MOVCPM. Make a back-up copy of MOVCPM.COM before using DDT to make the following changes.

```

A>ddt movcpm.com
DDT VERS 2.2
NEXT PC
2700 0100
-1141b
141B MOV A,B
141C ORA A
141D JZ 09EF
1420 MOV A,M
1421 DCR B
-a141b
141B mvi a,8
141D jmp a07
1420 .
-g0
A>save 38 movcpm1.com

```

Use the new program MOVCPM1.COM in place of MOVCPM.COM. The RUBOUT and BACKSPACE key functions are identical in any CP/M system generated with MOVCPM1.COM.

Licensed users are granted the right to include these changes in CP/M software.

ENGINEER DISEASE

(based on Dire Strait's "Industrial Disease")
by Lee Hart

Hello Mrs. Murphy, how has Tommy been today?
You said he stays indoors and reads while others
are at play?
He doesn't care a whit for sports, and doesn't
watch TVs,
Unless it's a computer screen of mindless jargonese.

You said you tried Nintendo games, the ones that
I prescribed,
But he disassembled them to see what was inside.
Last week he mixed the chemicals you keep under
the sink.
It ate holes in the vinyl floor and made an awful
stink.

There's grease under his fingernails, ferric chloride
on his jeans,
These marks upon his fingers are RF burns, it seems.
There is no need for further tests, dress now if
you please.
Young man, I fear you're suffering from
Engineer Disease.

It was rampant in the 60's; it drove men to the moon.
And it could happen yet again if cures are not
found soon.

It's showing up at MIT, and in the Japanese
They face an epidemic of the Engineer Disease.

In early stages patients tend to ask "why" all the time.
Next they disassemble things, then "fix" things
that are fine.

Though math and science skills excel,
emotion atrophies.
It's all the sad prognosis for the Engineer Disease.

Compose yourself, my dear, it's not as hopeless
as you think.

It isn't like he uses drugs, or alcoholic drink.
But you must control his use of tools and
fancy new PCs
To help control the progress of his Engineer Disease.

At last that kid is finally gone, Nurse call X-ray repair.
He moved this wire here, I think, but I don't know
from where.

They just can't leave a thing alone; next
patient please.

Let's hope it's not another case of Engineer Disease!

Lambda Software Publishing Price List

149 West Hilliard Lane, Eugene, OR 97404-3057
(503) 688-3563 After 11/5/95: (541) 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 1.0

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 1.3)

DSD

TERM III (version 1.2)

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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 3.3 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

LeBug (version 5.1) – \$20.

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,
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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.

MIX ASM (version 1.1.0) – \$20.

MIX C (version 2.1.0) – \$60.

MIX Editor (version 1.1.0) – \$30.

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 –

Catalog disk: \$10.

Any software in the collection: \$10/disk.

Spellbinder Word Processor (version 5.3H) – \$60.

SuperCalc 2 – \$30.

TeleSolutions-80 – \$25.

Turbo Editor Toolbox – \$40.

UniForm – \$65.

Versions available:

Actrix

Epson QX-10

Kaypro

Micromint

Morrow MD-5, 11, 16, 34

Osborne 1 (DD)

TeleVideo 801, 802, 802H

Toshiba T100

Xerox 820-II

Z-Fonts catalog – \$3 (US, Canada, Mexico),
\$5 (elsewhere).

Z-Fonts – \$8 each.

The Z-Letter –

Subscription: \$18/12 issues (US),

\$22/12 issues (Canada & Mexico),

\$36/12 issues (all other).

Back issues, 1-11 at a time:

\$3 each (US, Canada, Mexico),

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Back issues, 12 or more:

\$1.50 each (US),

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\$3 each (all other).

Z-System software –

NZ-COM (version 1.2H) – \$20.

Z3PLUS (version 1.02F) – \$20.

ZCPR 3.4 source code – \$15,

\$10 if purchased with NZ-COM.

I/OR – \$25.

B/Printer – \$25.

NuKey (version 2.03) – \$25.

All three at once – \$60.

We have extra copies of many other computer manuals, software manuals, and books, in quantities too small to list here, for \$15 each (\$10 each if you order four or more). Call us and ask!

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Disk copying service – \$10 per disk. Discounts over 20 disks.

HOW TO ORDER

Include your name, company name if any, address, home and business phone, and the computer format in which software should be supplied. Specify completely what merchandise you want. Please allow 4-6 weeks for delivery.

Sorry, no credit cards or CODs. If you live outside the U.S., payment should be in U.S. funds in an international money order. Don't add anything for shipping and handling; it's included in the price. Don't add anything for sales tax; Oregon has no sales tax.