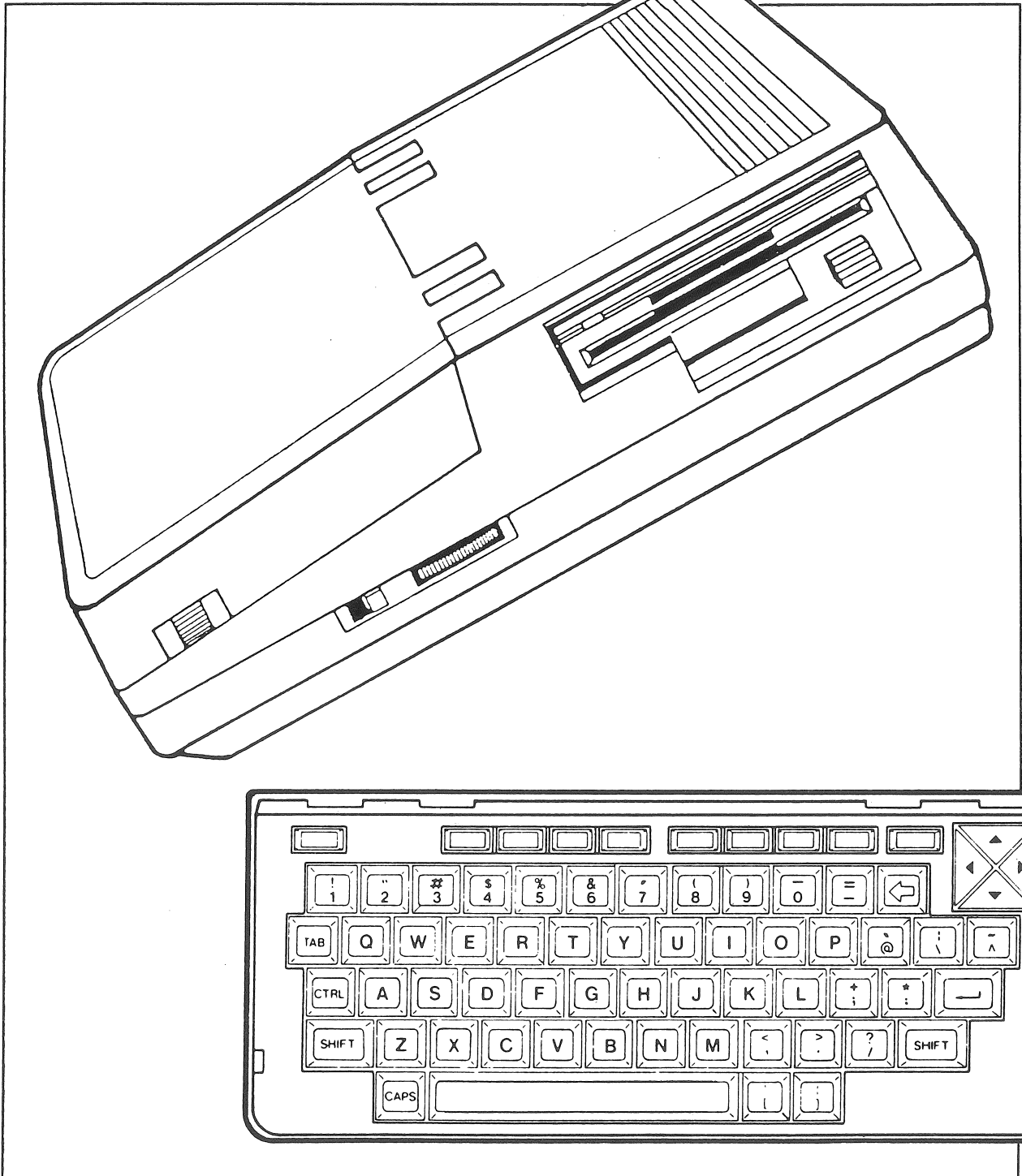


The Z-Letter

Newsletter of the CP/M and Z-System community

Number 30

March/April 1994



The Bondwell 2

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Welcome to *The Z-Letter*, the newsletter of the CP/M and Z-System community. TZL is copyright © 1994 by David A.J. McGlone, Lambda Software Publishing, 149 West Hilliard Lane, Eugene, Oregon 97404-3057, phone (503) 688-3563.

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

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The Z-Letter is indexed as time permits. The index for issues 1-5 appeared in issue 5. The index for issues 1-24 is being prepared; the contents section has been finished.

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RANDOM ACCESS

Micro Cornucopia index available

To our expanding product line Lambda is happy to announce the addition of the subject and author index to *Micro Cornucopia*, available on disk for \$10. Please remember to specify your disk format when ordering; if you fail to do so, you will receive the index on Kaypro II disks.

A bug, or a feature?

Page 10 of the *Xerox 820 Information Processor Word Processing Handbook for 8" Disks* tells the user to check his word-processing disk for a *write protect tape*, and advises that "When you take the tape off a disk, the disk can not be recorded on or erased." It then refers the user to page 42, where the same (mis)information is repeated in greater detail.

Not having an 820 at present, I can't drag one out to discover whether Xerox goofed big-time in this manual, or whether they engineered their 8" drives to work backwards from every other 8" drive, for compatibility with 5¼" drives. As long-time computerists know, on an 8" floppy disk, the notch is not a write-protect notch, but a write-enable notch. Like the tape drives they were designed to replace, 8" floppies have to be enabled before they can be used. On a tape, you add a write-enable ring; on an 8" floppy, you cover the notch with a write-enable tab.

So did some technical writer get things seriously backwards, thus misleading who-knows-how-many Xerox 820 users? Or did Xerox somehow set up their computers so that 8" drives worked the same as 5¼" drives? I would bet on the former. Does anyone know for sure?

Thanks to Bill Kibler

Let me publicly thank Bill Kibler, editor of *The Computer Journal*, for sending me a copy of his subscriber data base. To avoid huge postage costs, *The Z-Letter* goes bulk rate. To qualify for bulk rate, I must send out at least 200 copies to U.S. addresses. Since I don't have 200 subscribers, this means scrambling through recent magazines, etc. each issue to get addresses to send sample copies to. Last issue, this issue, and quite a few issues in the future, these addresses will come from *TCJ* subscribers who aren't already *TZL* subscribers. Thanks, Bill. It's really generous of you, and it makes my job easier.

Have computer, will travel

Just before I moved from San Jose to Eugene, my wife and I traded a tandem bike we'd ridden exactly once, and a fold-up bike she kept in the back of her car, to a little bike shop just around the corner from our former South Second Street address. What we got in exchange was a Schwinn adult-size three-gear three-wheeler (tricycle doesn't seem like the right word). I even had the bike folks make a sturdy wooden box for the back, with a hasp for a padlock, big enough for even the largest CP/M computer plus my briefcase.

This wonder languished in Cupertino while more urgent things were brought north, then after it was finally brought up, sat neglected in my garage here. No longer! I have bought a helmet and tire pump, acquired a lock for parking the bike and a lock for the box, and discovered the wonders of bike riding!

To put this in perspective you have to know that I am endowed with a syndrome (I forget the name) which makes one eye nearsighted and one eye farsighted, gives me no sense of distance, and makes my sense of balance substandard. It has few consequences in everyday life, but I've never been able to learn to ride a two-wheeled bicycle (I know, that's redundant), because I can't balance it. So I am only now discovering the independence most of you learned before puberty, of being able to hop on my bike and go somewhere. I've always been a great walker; but now I can take a package to the post office, or bring home a bunch of stuff from an office-supply store, that I couldn't carry by hand. Best of all, I don't have to ask a ride from anyone, and it takes only half the time it would take to walk.

Look out, world, here I come!

Keeps growing, and growing, and growing

On March 18 David Samson and I headed south in my mother-in-law's van; we started at 5:45 PM and got as far as the rest stop north of Redding before stopping to sleep. At 5:30 AM we were rolling again, and we got to Cupertino by 11 in the morning. Then David, Deborah and I loaded the van with computers and stuff from our San Jose storage unit. The computers included an Epson QX-10, two Osborne 1s, a lot of Dynabyte disks, a Kaypro II, an assortment of books and manuals, and a Lear-Siegler terminal. Most of this was courtesy of Ken

Thomson, who haunts Bay Area garage sales and lets me know when he finds anything CP/Mish.

After loading the van, we made the mistake of going by Weird Stuff, Frye's, Halted, and Haltek. Weird Stuff has been completely rearranged since I was last there, and the contents have completely turned over. There were a lot of HP 150 computers, and a lot of HP software and accessories. I passed on most of it, but picked up a dual 3½" drive unit for my HP 125s. I was tempted to get an Amstrad 9512, but there was also a Sanyo MBC-1166 there, so instead of getting both, I was virtuous and only got the Sanyo. With the Sanyo MBC-1100 I already have (I traded a TeleVideo 802 for it), that gives me two Sanyos, which is all I need of any computer.

Virtue was rewarded at Halted, where I picked up an Amstrad 8256 with keyboard for a ridiculously low price. They also had a DEC DecMate II, with the optional floor stand that lets it pretend it's a tower computer. They wanted \$50 for it, which was too much considering they had no monitor, keyboard, manuals, or disks for it. I told them I'd pay half that for what they did have, and left them my card. I have all the manuals and disks for the DecMate II, found in a little shop in Portland some while back.

Frye's and Haltek had nothing for me, but David was looking for some PC stuff, so we stopped both places. I have acquired a full-height 80-Mb MFM hard disk which we are attempting to make work with my PC. The Tandem 6AX's BIOS flatly refuses to handle it, so we're trying strategies such as combining all the board from the 6AX with a new box and a new motherboard with a fancy BIOS, hoping to end with a system that can read and write just about anything. The 6AX will do that, but if the newer system can run the 80-Mb hard disk with data compression, I should end with an effective disk space of up to 160 Mb. So far some things work well and some don't work at all; we may have to go back to the 6AX.

Sunday morning we got up at 5:00, and were on the road by 5:30. We got back to Eugene by 5 PM.

Computers come and go. I found a TRS-80 Model 16, which is a computer with two DSDD 8" disk drives, and both Z80 and 68000 CPUs. I sold this to Sydex, because Chuck has been looking for a system to run CP/M-68K; I also sold Sydex a pile of Digital Research products, complete with manuals and software, for PCs running CP/M-86, Concurrent CP/M, etc. A Xerox 820 8" floppy-disk drive box was sold to a Canadian wanting to hook 8" drives to his PC, and Bill Haygood, who's working on a Z80 emulator for the Amiga, drove all the way down from the Spokane area to look over my spare computers. He bought my spare TeleVideo TS-802H,

and then we all went out to dinner: him, me, David Samson, and Carol Jacobs, my wife's mother. Another gentleman who was coming this way on a trip stopped by to drop off an Epson QX-10 and a bunch of 8" disks; he's trading the QX-10 for my copying all his 8" disks to Kaypro 4 format. And the 60-plus diskettes that the Los Angeles County Office of Education wants copied from Vector 4 to Macintosh format just arrived today.

All in all, it's been an interesting couple of months. I'll be telling you more about Bill's Z80 emulator for the Amiga, especially after it's ported to the PC. And there will definitely have to be an article about the TRS-80 II, 12, and 16 series.

Taxes, my new excuse

This issue of *The Z-Letter* should have been mailed two weeks ago. I have a new excuse to offer for its lateness, one you will empathize with in your pocketbook of pocketbooks, if not in your heart of hearts: taxes.

1993 is the first year for which I've prepared a Schedule C for Lambda. The writer's group I attend devoted one of our weekly meetings to taxes. Dean Wesley Smith, one of the editors who runs the workshop, had prepared a sample tax return, including a Schedule C, for a fictitious beginning writer, and went over it, pointing out all the things that are deductible, and how to figure them. Thus emboldened, I collected all the tax forms that seemed appropriate, plus their instructions, and set to work. I went through all my check registers and receipts, and sent the resulting figures to my wife. Deborah combined them with her W-2s and took the whole thing to H & R Block, as has been our custom for some years.

Since this was the first time I'd done it, I didn't get everything right the first time, so I had to do some more work. H & R Block wanted a list of all the computers and office equipment I had, how much I'd paid for each, when I'd bought it or converted it from personal use, etc. In order to make moving expenses deductible, we had to declare that Lambda became a business in 1992, which meant doing an amended return for 1992 as well.

All this took time, and it had to take precedence over everything, even *The Z-Letter*. Next issue, if there's room, I might do a programming column on how I used Spellbinder, SELECTOR, and COBOL to manipulate the data as efficiently as possible. It looks like we're going to get a huge chunk of money back from both the IRS and the state of California. The moral of the story is, if you're going to indulge in an expensive hobby, make it a business. Not only

will it make you do it professionally, but it's deductible that way.

LPascal progress report

Herbert Oppmann has finished translating the German in his code into English, and is sending me the code, a list of bugs in Turbo Pascal that his changes fix, and a description of the features his code adds beyond what's in Turbo. When it gets here, I will combine his source code with mine, finish the manual, and announce the availability of LPascal. It should be ready by next issue.

Vendor changes

Before finalizing this issue, I took the long-overdue step of contacting everyone listed under RESOURCES and checking whether they're still at the same address and phone number, still in business, still selling CP/M products. From now on I will do this periodically, and each entry under RESOURCES will have a little indication of when it was last confirmed, e.g., [4/94].

Lee Bradley has asked to be removed from this list. While still fascinated by the Z-System, and continuing to use it himself, Lee's new job doesn't give him time to sell products and support customers. He'd rather quit that aspect of things now, rather than disappoint people with poor service. Lee will be at Trenton this month, and has promised a write-up again this year.

Paul Chidley has also asked to be removed. Paul also has a new job (it's an epidemic) and has little time for work on CP/M boards right now. Paul has only four blank YASBEC boards left, so if you want to get a YASBEC, you have exactly four chances left. Better write him at 627 Hunterfield Place N.W., Calgary, Alberta, Canada T2K 4L5, or call him at (403) 274-8891 right now. If you're really lucky, he'll have some backplanes, YASMEM, and ZVID cards left, too.

Micromint, bless their hearts, are still selling and supporting the SB180 and SB180LO computers, and the memory-expansion boards for them. The price for the SB180LO has even dropped a little, to \$329 for the bare board (\$295 each in quantities of 100), or \$429 with complete software. That's a decrease of about \$70 from the previous price.

Jay Sage is no longer carrying SLR Systems' assembly-language tools, nor handling the Z-System Software Update Service. As mentioned last issue, Jay's job is keeping him very busy. Bruce Morgen was going to take over ZSUS, but (you guessed it) Bruce got a new job and hasn't the time.

Fortunately, I'm here to pick up the slack. Lambda will henceforth handle ZSUS orders; details will be in the next issue, after I have received the material and gotten a handle on it. I have also purchased all the Echelon software, documentation, and rights that Joe Wright got from Frank Gaude. So bootable Z-System disks for Kaypros, back issues of *The Z-News*, DISCAT and TERM III, among other things, will be available from Lambda. As I get each product sorted out, its availability will be announced in *The Z-Letter*. So watch this space.

SLR tools no longer available

SLR Systems informs me that they are going to be merging with Symantec, the software company that's been busy gobbling up a number of companies selling PC and Mac utilities. SLR Systems is no longer interested in selling their assemblers and linkers for CP/M. That's OK, we still have ZMAC and ZLNK.

New YASBIO board

Paul Chidley, Jim Thale, and Hal Bower have invented a new I/O board for the YASBEC. Jim and Hal confirm that the YASBIO board lets a YASBEC use new 1.4-Mb 5¼" and 1.76-Mb 3½" floppy-disk formats, in addition to the formats the YASBEC shares with the Ampro Little Board, Oneac On!, Micromint SB180 and SB180LO, and the SemiDisk DT42. The new I/O board provides 2 RS-232C serial ports with full handshaking, and three parallel ports that can be configured in a number of ways, including as 2 Centronics parallel ports. Jim is selling these in two forms: for \$150 you get the board, with surface-mount parts, PAL, and big chips attached. For \$210 you also get all the other parts in a kit (you still have to solder them on), and full data sheets and documentation. Jim is sending me the full details for an article in our next issue. Meanwhile, Hal is doing a full implementation of B/PBios for the YASBEC with this board, and BYE and MEX overlays. See RESOURCES for Jim's address and phone number.

B/PBios for SB180FX soon

The SB180FX is the original configuration of what is now called the SB180LO. The chief difference, as far as I know, is that the SB180FX was available with up to 512K RAM on board; to add more memory than 256K to the SB180LO, you purchase memory-expansion cards from Micromint.

Hal Bower told me, at Trenton two years ago,

that B/PBios for the SB180 won't run on the SB180FX because of the differences between the two boards; and that, if he could get hold of an SB180FX, he would be glad to do a version of B/PBios for it. Well, Bruce Morgen is sending me an SB180, and Jim Thale is providing the 20-MHz Z180 I need to finish my YASBEC. So as soon as either one is up and running, I will be able to loan Hal my SB180FX, and Hal can start on a version of B/PBios for it. It will be announced here in *The Z-Letter* when it's available.

Ampro, Davidge computers extinct

Dean Davidge informs me that the Ampro Little Board Z80 is no longer available. Davidge

Corporation got the rights to produce the Little Board from Ampro when Ampro folded. No Little Boards remain, none will be produced unless someone orders a hundred or so, and frankly, Dean is not certain that all the parts are still available. So the Ampro Little Board is dead, sad news for our community.

The same is true of the Davidge series of Z80 and HD64180 single-board computers. These never made the splash they should have, because the BIOS was never finished by the consultant hired to write it. In any case, they are all gone. Some DSB-4000s might still exist, and might be available from Lambda with a version of B/PBios in the future; if this happens, there will be an announcement in *TZL*.

A PROGRAMMER CORNERED

The Evolution of ZDB
by Joseph I. Mortensen

ZDB, the Z-System name and address data-base manager, has evolved to its present state of sophistication over more than three years from its origin as one of my first attempts to write assembler code. This development came about through extended electronic collaboration between me in Michigan and Terry Hazen in California. Our communication has taken place almost entirely by electronic means; we have yet to meet in person or even to speak to one another on the phone. Modem transmissions and an occasional letter or disk through the mail have been the sole channels of contact. Yet over these years we have kept up a fairly constant exchange of ideas and innovations which have shaped ZDB into its present state.

The story begins ten years ago when I bought Borland's hot new Turbo Pascal. My old Kaypro II '83 came bundled with the Perfect package of software, including Perfect Filer, an oxymoron if ever there was one. Perfect Filer always seemed a duncker to use. Its multi-level menus made it anything but user-friendly. So when Borland offered their Turbo Toolbox for developing data bases, I used the Toolbox to write a name and address program more to my liking. Later on Borland came out with Turbo Modula-2 (yes, Virginia, there really was such a program), which I used to write another name and address data-base manager. I posted M2-DB on a few bulletin boards and uploaded it to CompuServe. A few people found it useful and let me know. M2-DB, however, had at least one big drawback: size. The run-time package in Turbo Modula-2 bloated even the simplest "Hello,

World" program to about 12K. My data-base program compiled to about 28K.

When I bought the NZCOM package (and later ZSDOS), I got into the Z-System in a big way. I learned about TCAPs and relocatable code and all the other arcane stuff of the Z subculture. A subscription to *The Computer Journal* opened my eyes to the existence of libraries of routines for writing programs in assembler. Now, I can wade comfortably in the waters of theology and church history (I have a doctorate in the latter), but nothing in my educational background even remotely equipped me for deep-sea diving in assembly language. Nevertheless, a certain fascination drew me on. When Al Hawley put out his ZMAC/ZML assembler and linker package, I jumped in.

After doing a few trial programs of the "Hello, World" variety in Z80 assembler, I had to have a bigger challenge. Since I had done data-base programs already in Turbo Pascal and Turbo Modula-2 and had some grasp of how they worked, a data-base program in Z80 assembler seemed the thing to do. Furthermore, most of the Z80 programs making the rounds of the BBS circuit seemed to be utilities rather than applications, Carson Wilson's superb ZDE editor being a notable exception. So I began.

I set out to produce a fast, easy-to-use name and address file manager. Its commands would be single keystrokes. You could browse back and forth through it at the touch of a key. Of course, it would produce mailing labels and print addresses on envelopes. The file could be sorted. It also seemed a neat idea to use

the graphics facilities of VLIB4D and the extended TCAP of the Z-System to dress up the screen. I spent many hours of a summer vacation at the lake pounding away at the keyboard of my Kaypro, achieving black-belt status as a reset-switch pusher. Knowing so little, I struggled long and hard, but at last had a program that didn't crash too often.

After more rough tuning (I didn't know enough to fine tune), I posted ZDB on a bulletin board or two, including Ladera Z-Node. It drew a few takers and a few bullets. Fortunately for me and the development of ZDB, Terry Hazen got into the act with me around version 0.6. For reasons not completely clear to me, except that he can't resist tampering with any Z80 code he comes across, Terry became my mentor and collaborator on the project. Much credit goes to him for making ZDB the slick thing it has become. He transformed my kludges and clumsy routines into spare code beautiful in its simplicity.

The basic thrust of ZDB has not changed: fast, compact, user-friendly, and innovative. Throughout its evolution, however, there have come many improvements and added features. The latest release (version 2.2) not only fixes a bug or two in the search routines; it also introduces a new way to set a default return address and change it on the fly. Before this release, you had to hard-code the return address in the COM file. Changing it required a patch. The newest version also includes a ditto feature to speed entry of repetitive data. Other releases along the way incorporated an index in RAM for fast searches and sorting, a telephone dialer borrowed from Bruce Morgen's DIALER, multiple printing and file-output options, and selection of records for output by specific keys. Terry worked out the postal bar-code printing routine for version 1.9. A wish for more definitive searches resulted in the two-string, multi-field search system introduced in version 2.1. As I write, version 2.3 is about to be released. It swats another bug or two, and extends the output options a bit.

Some of these refinements arose from either Terry's or my encounter with a bug, or a report of one from someone else. Others came as requests from users. Many entered as dreams in the night. I quote from a note sent to me by Terry: "Oh, oh! I've been thinking again! In my sleep, no less. I woke up this

morning with another suggestion for an 'improvement.'" And off we'd go, working independently on a problem, often as not on parallel lines, exchanging messages and code by modem, and then arguing the details. Each of us won some and lost some of the arguments, but the debate usually resulted in better performance and more compact coding. Terry did all the work on the CFG and HLP files, but in much of the actual code we can no longer remember which of us started what or who implemented which idea. Synergy is a real part of ZDB's development.

ZDB has had two offspring. ZBIB is a bibliography data-base manager done at the request of Howard Schwartz. ZDT (Z-System Day-Timer) adapted ZDB to create a daily calendar and scheduler (Terry helped on this one, too). Some people use it as a diary. It makes much more use of graphics features than its parent.

Will there be any other Sons-of-ZDB? Perhaps. ZDB-Plus, a completely customizable data-base manager, languishes in prolonged gestation. The latest sonogram of this baby reveals some of its features, chief of which is an ASCII definition file read on startup to set up the screen and define the fields, record size, index keys, printing formats, and everything else.

The amateur telling this tale of collaboration has gained more than anyone else: friends in the Z community, encouragement from real pros, words of appreciation from those who use ZDB, and wonderful tutoring in Z80 programming. I continue to be amazed at how a "primitive" 8-bit system can run rings around 386s and 486s and 680x0s at some tasks. Above all, I have a feeling of satisfaction at contributing something of use to others.

About the author

Joseph I. Mortensen served as pastor of the First Baptist Church, Midland, Michigan, for nearly 24 years before retiring in 1993. He is currently engaged in freelance writing and interim pastoral ministry. His articles have appeared in Profiles and Micro Cornucopia. E-mail addresses: jmort@delphi.com, J.MORTENSEN3 on GENie, or 70037,3161 on CompuServe.

Shoe



PERSONAL ADS

Computers for sale or trade

One Kaypro 10 computer, good condition, \$100 plus shipping. All standard software on disk, comes with some manuals. Two Epson QX-10 computers, good condition, each with two DSDD floppy-disk drives, \$50 plus shipping. One NEC PC-8801A computer, monitor, dual 5¼" floppy-disk drives, working condition (2 key caps missing), \$50 plus shipping. One Morrow MD2 computer, good condition, \$50 plus shipping; terminal not included. Two Eagle File 10 external hard-disk units, excellent condition, \$100 plus shipping. Two working TRS-80 Model II computers, one SSDD 8" floppy-disk drive each; one with keyboard \$50 plus shipping, one without keyboard \$30 plus shipping, or both together for \$60 plus shipping. Two TRS-80 Model 3 computers, one with 16K, one with 32K, condition unknown, \$20 each plus shipping. 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 represented in my collection. Contact David McGlone, phone (503) 688-3563.

Coleco ADAMs for sale

For sale, two or more like-new ADAMs in boxes, \$80 each plus shipping. Ramen G. Griffin, 3 Robin Hood Road, Albany NY 12203-5113, phone (518) 456-3293.

Terminals and printer for sale

Three Esprit Executive terminals, one Microterm 5510 terminal, one HP 2671G thermal printer with Centronics interface. Each \$30 plus shipping (probably \$50 total for each item). Includes manuals. Call Zener, (503) 344-6230.

Epson Geneva laptop for sale

CP/M laptop with all the fixings, \$75 plus shipping. 80 column x 8 line LCD display, full-sized keyboard, 64K RAM, microcassette recorder, 64K RAM disk, internal 300-bps modem, RS-232 adapter. Software on removable ROM capsules includes Portable WordStar, BASIC, CP/M utilities, PortaCalc spreadsheet and Scheduler (these last two on one ROM). Various other programs and utilities available on microcassette (slow, but very reliable). Includes all manuals, extra tapes, case, and AC adapter. Write Lee Hauser, c/o

Williams, Kastner, & Gibbs, P.O. Box 21926, Seattle WA 98111, or call (206) 233-2985 during business hours.

Morrow MD-11 computer, etc., for sale

Excellent hard-disk Morrow with all the fixings and lots of extras, \$500 firm. Package includes Morrow, all the software and manuals that came with it; MDT 60 terminal; MP 200 wide-carriage daisy-wheel printer with tractor feed; Hard Disk Revival Kit with manual; Whizlist; full set of Morrow service manuals, with complete service info and schematics; various CP/M magazines, blank disks, printer ribbons. Will sell on take-all basis only. Contact Harry Strawbridge, 5202 W. Broadway, Atwater CA 95301, or phone (209) 358-4120.

Morrow Micro Decision 2 for sale

In perfect working order. Includes ADM 21 terminal, all software and manuals, JRT Pascal, boxes and boxes of diskettes. \$50 plus shipping. Larry Baladino, 907 Milsom Place, Windsor CA 95492, (707) 838-7576.

Kaypro 2X, Silver Reed EXP-400 for sale

Computer has internal modem, 2 DSDD drives. Printer is daisy wheel. Includes software, manuals. Asking \$200 OBO. Terry A. Chaney, 1111 N. Main, Joplin MO 64801, (417) 624-2518.

Morrow Micro Decision 3 for sale

Includes computer, most if not all software and manuals. Does not include terminal. \$45 plus shipping. Dorene Minter, 1121 Key Peninsula Hwy S, Lakebay WA 98349, (206) 884-2574.

Printer for sale

Juki 6100 daisy-wheel printer, tractor feed, extra print wheels, cable for use with Kaypro computer. Works fine! Close-out price: \$45 plus shipping. Dave Templin, 2978 Spruce Way, West Sacramento CA 95691, phone (916) 371-2964.

Amstrad 8256 for sale

In excellent working condition. Includes additional chips to make it an 8512, a second 3" drive, original Parallel/Serial interface, lots of Amstrad software on original 3" disks with original user guides. Make an offer. Peter Hollander, 820 West End Avenue, Suite 12E, New York NY 10025, (212) 865-6567.

ERRATA

The editor apologizes for several mistakes in issue 29. On page 6, the last sentence of the third paragraph of the right column should begin, "Forwards not only eliminate order-of-declaration *errors* . . ."

On page 7, in the program listing, the type Str14 should be declared as STRING[14]; and the variable Tab as STRING[25].

Page 18, near the bottom of the left column, should read "It was announced *that* HP stopped

selling the 120 . . ." Near the top of the right column, read "in all three *sizes* of floppy disks"; near the middle of the page in that column, "most if not all standard CP/M programs should work just *fine*."

These errors demonstrate that there is no substitute for an awake and alert human being proofreading text before it's printed. None of these errors are spelling mistakes which could be discovered by spelling checkers.

LETTERS

More Model 100 info

The following letter has been awaiting publication for some time. There just hasn't been room the last two issues. But here it is at last. — DAJM

November 13, 1993

Dear David:

Hello from Minnesota —

- where I came, I thaw, I transferred
- where many are cold, but few are frozen
- mosquito supplier to the free world
- land of many cultures (mostly throat)
- where the elite meet the sleet
- where ducks don't fly south, people do
- where they only grow three things; older, colder, and fatter
- where one day it's warm, and the rest of the year it's cold
- Minnesota: glove it or leave it
- survive here, and the rest of the world is easy!

Yes, I have moved from mitteny Michigan to frostbitten Minnesota. Actually, the weather has been quite nice. A beautiful fall, and only a couple dustings with snow so far.

I'm coming to fully appreciate your cover about having to abandon one's priceless possessions along the trek west. My Michigan home is for sale, and I had to move out the junk so it looks "normal". But I had no destination in Minnesota. So my priceless treasures had to be stashed in garages, basements, friends' spare bedrooms, and even (sob) set on the curb for the recyclable resource concentrators (formerly sanitation engineers).

Model 100

I got your September 15 letter. There are two ways to expand the Model 100: the Radio Shack route, and the CP/M route.

I'll take Radio Shack first. The internal operating system is diskless. All software is kept in ROM (use plug-in ROMs to add more). All data is kept in battery-backed RAM (sockets for 32K inside, or expansion boards if you want more). Expansion RAM and ROM is indefinitely large; you just switch banks one 32K block at a time. But no file or program can be bigger than 32K.

Many expansion ROMs are available; they run \$50 to \$200 new, and can be found used. I use a "Super ROM", which has a WordStar-like word processor, Lucid spreadsheet, a simple data base, and thought outliner. They're fine if you don't mind learning a different program. But they ain't Spellbinder, SuperCalc 2, or dBase II.

If this route is adequate, I think I could find a Super ROM for \$50.

Now for CP/M. Normally, the lower 32K is all ROM, and the upper 32K all RAM. The ExtRAM (\$69) puts RAM in the first 32K, so you have a 64K all-RAM memory map as CP/M would expect. The ExtRAM is software switchable, so you can switch back to the ROM for BIOS calls (like Kaypro, etc.).

First problem: no disk. Radio Shack's Model 100 disk (\$200) is run via the serial port, and is far too slow for a disk-based system like CP/M. There are third-party disks that use the parallel port, but they are expensive (\$350 and up) and not portable.

Second problem: a 40-column by 8-line display. Many programs can't be configured for such a small screen. I use Ultrascreen (\$5), a display driver program which uses smaller characters to get 60 columns by 10 lines, but even that might not be enough.

I want to bring up CP/M on the Model 100 not because it will run applications, but because CP/M is a good environment for writing software and drivers. To interface an 80x24 LCD screen off a surplus laptop, I can write a new BIOS for CP/M and

try it.

If you want to run Spellbinder and the Z-System on a portable, I'll bet it *has* to have a hard disk and an 80x24 screen. Do you care about size? How big can it be? How heavy? How long do the batteries have to last? Why not pick the computer that comes closest to meeting your requirements, and we'll "modernize" it. Let's say a Kaypro 4 would be fine if it were smaller and lighter. To modernize it, we would

1. Replace the 5¼" drives with 3½" drives (about \$50 each).
2. Replace TTL chips with CMOS (cuts power drain).
3. Replace video monitor with LCD (\$50 surplus from a laptop PC).
4. Replace power supply with one suited to new power consumption.
5. Hack down the case to suit the new size.

Voila! You have a mini-Kaypro. It'll cost maybe \$200, be ugly, and still weigh 10 pounds, but functionally it's the same as any other Kaypro.

Calendar

Your calendar idea is great (TZL #24). Here are my candidates for "heroes of the revolution":

January: Ted Nelson

Visionary author of *Computer Lib: Dream Machines*. The Jules Verne of the microcomputer age, he gave us the dream of what the micro computer would become, leading the way for all that followed.

February: Federico Faggin

Designed the Intel 8008 and 8080 (Dec. 1975); Zilog founder and designer of the Z80, still the world's leading 8-bit micro computer.

March: Gary Kildall

Founder of Digital Research and author of CP/M (1976), the first standard operating system for micros, making them "real" computers.

April: H. Edward Roberts

Founder of MITS, creator of the Altair 8800 computer and "standard" S-100 bus. No more manufacturer's monopoly; users could buy discount boards from any vendor.

May: Bill Gates

Author of Microsoft BASIC, inventor of the shrink-wrap warranty, copy protection, and proof that P.T. Barnum was right.

June: Lee Felsenstein

Zen master of minimalist hardware design; creator of the SOL, IMSAI, and Osborne 1. Proof that engineering excellence can't overcome befuddled marketing.

July: Micropro (don't know founder's name)
Creator of WordStar, the first "killer" application. Word processing showed micros to be truly useful to everyone, not just computer nerds.

August: Adam Osborne

Microcomputer publisher, promoter, and inventor of portable computing (the Osborne 1). His excellent books and inclusion of top-notch software with the Osborne 1 made computers accessible to anyone, anywhere.

September: Phillippe Kahn

Introduced Turbo Pascal, proof that high-quality software could be sold at low prices by mass marketing. Software becomes a commodity, like books and records.

October: Joe Wright, Echelon

The Z-System (sorry, I don't have any reference books here to look up more data).

November: Jay Sage

Tireless supporter/promoter of 8-bit systems.

December: Bill Kibler

Publisher of *The Computer Journal*. Keeping the lines of communication open.

Well, that's it for now. I'll try to write more later, as things here settle down.

Lee A. Hart

4209 France Avenue North
Robbinsdale MN 55422

Thanks for the information on the Model 100, Lee. I got a Bondwell 2 from Chuck Stafford, which is a perfect CP/M laptop, as you will see from this issue's article on it. Its LCD screen needs looking at, so I will be sending it to you for replacement. On portables (as opposed to laptops), I was just given the boot disk for a Bondwell 16, which apparently is like a Bondwell 14 with a hard disk. Now that might well be the perfect portable. I'll have to see whether I can upgrade my Bondwell 12 to a 16. I've already added the extra memory. Replacing the drives is easy, but I'll have to see what kinds of hard disks the hard-disk formatting software will accept. Another great portable, if anyone's willing to do the BIOS work, would be a Zorba or Otrona Attache with a hard disk.

Just for your information, Spellbinder is very adaptable on number of lines and columns. 40 columns by 6 lines is no problem at all to Spellbinder. I'm not sure that I'm that adaptable, but that's another matter.

Your list of calendar nominations is interesting. I was hoping to get lots of letters like this when I announced my contest, but yours was the only one I got, and way too late.

If we had done a calendar, Bill Gates would have been included, if at all, in April. On Lee Felsenstein, if the Osborne 1 is engineering excellence, I'd hate to see bad engineering! For July, no one at Micropro should get

kudos for WordStar. For one thing, it wasn't the first great application, or even the first great word processor; it was a marketing success. Secondly, I know the guy who wrote WordStar. He wrote it on a consultant's contract, was never hired by Micropro, and had to sue to get a fraction of what WordStar was worth to Micropro.

Instead of Phillipe Kahn, I would lean towards featuring Frank Borland. Again, you have listed the person who did the marketing, instead of the creator. Joe Wright certainly deserves inclusion for Z-COM and NZCOM, for the Ampro, Micromint, and On! BIOSes, for the IOPs, and for many utilities. However, he isn't the creator of the Z-System. Richard Conn and others of the ZCPR group deserve that title.

While Bill Kibler certainly deserves credit for publishing TCJ, it was founded and published for many years by Art Carlson, and by Chris McEwen after him.
- DAJM

Manuals wanted

March 29, 1994

Dear David:

Further to our phone conversation of last night, I am looking for two items.

1. I have two Volker-Craig 5220 terminals hooked up to my Adam computers. We use these computers in our business along with Super Size SuperCalc. They work very well with a 1-Mb expander. I can get 746K of work space on one screen. I would like to use BackGrounder ii, but I need an operator's manual for the Volker-Craig terminals so I can get BackGrounder ii installed.
2. I purchased a Smart Key program, and it turns out that there is no install program with it. Is there someone out there who has a Smart Key that will work on a Volker-Craig? The Volker-Craig seems to emulate the ANSI standard, and/or the DEC VT-100.

If you or someone else could provide one or both of these items I would be forever grateful.

Yours truly,
George Ekman
E-Kay Enterprises
Box 517
Sedgewick, Alberta T0B 4C0
Canada
(403) 384-3944 (voice)
(403) 384-3552 (fax)

I don't have manuals for your terminals or your program, George, but I will print your letter so someone else who does can help you. Good luck. - DAJM

IMS manuals needed

February 25, 1994

Dear David:

I contacted you by telephone on January 15 regarding a boot disk and manual for my "new to me" IMS International model 518-W12-10H/60 computer. The boot disk problem went away, but I still have a manual problem. I requested Bill Kibler to run the following "support needed ad" in TCJ. Perhaps you have a similar service.

Needed: Manuals for the IMS International, Model 518-W12-10H/60. This thing has one 5¼" 620K floppy-disk drive and one 5¼" 10-Mb hard disk. The boot message reads "IMS International CP/M 2.24J"

I think that I have a hardware problem with the two serial ports. The COM port will run the printer with no handshake. All that is good for is to make hard copy of a disk directory. The printer port tries to run the printer, but outputs the same one character all over the page. I have not found a combination of parity, baud rate, etc., that will work on the printer port. The breakout box lights look OK for the printer port and are NG on the COM port. Actually I am isolated on this thing. I can't get in or out on the RS-232C serial ports. I am still looking for someone with the equipment that can read or write this floppy-disk IMS format.

Now for the better things. The hard disk is loaded with all kinds of software. There are two modem programs, one tries to work, but can't, and the other crashes the system. There is ZCPR3 and its INSTL files, and the early self-installing Z-COM. I use NZ-COM on my other three rigs, and almost know how to use Z-COM. They use one command DIR which is not DRI's DIR, because under Z-COM the CCP is gone. DIR is similar to my SDZ. Next, there is VFILER which is the predecessor to my ZFILER. It's a file mover similar to FILE BUSTER. While not thinking clearly, I hit DIR only to see a file vanish from the directory display. That was D, the Delete command. My ZFILER asks you whether you really mean it, but this earlier VFILER is dangerously defective. Just press the D key and the file name at the cursor vanishes. Fortunately I got it back that time with UNERASE.

I must first know what the manufacturer says it will do before concluding whether the serial-port problem is software or hardware. Therefore it is imperative that I find the manuals. Then I think that I can look forward to having a good time with this rig.

I am sending a copy of the boot disk to you, (1)

to see whether you can read and copy the format, and (2) to determine whether you want it for your collection.

Sincerely yours,
Robert L. Edgcombe
9546 Los Palos Road
Atascadero CA 93422
(805) 466-1619

Robert, thank you for the boot disk. I didn't have one of these in my collection, so I'm glad to get it. Now if another owner of this machine needs to buy CP/M for it, I can oblige him.

The present version of 22DISK can't read your IMS format. Like some other disk formats, it can only be read by the version that Chuck Guzis is working on right now, but hasn't released yet. If you need software copied from or to that format, right now I can do it by special arrangement with Sydex, and I guess no one else can do it at all. When Chuck releases the version of 22DISK he's currently working on, anyone with a PC and high-density drives will be able to do it.

I don't have manuals for this computer. Here's hoping some reader has them, and can supply you with copies.
- 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. Hal Bower, 7914 Redglobe Court, Severn MD 21144-1048, phone (410) 551-5922. [4/94]

The *Computer Journal* is the foremost magazine in today's CP/M community. 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 (800) 424-8825. [4/94]

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. They also sell Keytronic keyboards in QWERTY or Dvorak; the KB5150 is \$112, KB5151 is \$164; shipping and handling extra. Corvatek, 561 N.W. Van Buren St., Corvallis OR 97330, phone (503) 752-4833. [4/94]

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). 8020 San Miguel Canyon Road, Salinas CA 93907, (408) 663-6966. [4/94]

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 \$2.00 shipping and

handling to Elliam Associates, P.O. Box 2664, Atascadero CA 93423, or phone (805) 466-8440. [4/94]

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, or phone (609) 771-1503. [4/94]

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. Send the deposit plus enough for postage, and the requested items will be sent you by first class priority mail. When you return them, the deposit and any left-over postage, minus the handling fee, will be refunded. For periodicals, the deposit is \$1 per issue, \$0.25 handling; books and hardware manuals are \$5 deposit, \$2 handling fee; software manuals are \$10 deposit, \$5 handling fee. 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! To obtain a list of available items, or to borrow material, write to Library c/o Hart, 4209 France Avenue North, Robbinsdale MN 55422, phone (612) 533-3226 [4/94]

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. [4/94]

MicroSolutions makes several products of interest to our community. Uniform format-translation software costs more and knows fewer formats than 22DISK (see Sydex, below), but 22DISK only runs on PCs. Versions of Uniform are available for CP/M machines: Actrix, Bondwell (12 and 14), Epson QX-10, Kaypro (all models except Robie), Micromint SB180, Morrow Micro Decision (2, 3, 5, 11, 16, and 34), NEC PC-8801, Osborne 1 (double density), TeleVideo (801, 802, 803, and TPC-1), Toshiba T100, Xerox 820-II, and Zenith Z-100. All versions of Uniform, including Uniform-PC, cost \$69.95. MicroSolutions also sells UniDOS, a Z80 card for PCs, for \$175; and their CompatiCard IV 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. [6/93]

Morgan, Thielmann & Associates sells and services computers, not only the latest 386 and 486 systems with Novell DOS and Personal Netware, but also Eagle computers, all models, and other CP/M computers. Call Jerry Davis at (408) 972-1965 for prices and information. [4/94]

Sage Microsystems East, selling and supporting the best in 8-bit software. NZCOM, Z3PLUS, XBIOS, PCED, 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 (pw=DDT) [4/94]

Chuck Stafford sells products for Kaypro computers. The Advent TurboROM allows flexible configuration of your entire system, reading and writing additional formats, and more; \$35. The hard-

disk conversion kit includes everything needed to add a hard disk except the hard disk itself; the interface, controller, TurboROM, software and manual. \$175 without clock, \$200 with clock; very few are left, so order now. Orders receive a free copy of the schematic for the Personality Decoder Board which lets you run more than two drives, and use 96-tpi drives (when combined with the TurboROM); unfortunately there are no more of the actual boards left. Write him at 4000 Norris Avenue, Sacramento CA 95821, or phone (916) 483-0312 evenings or weekends. [4/94]

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. [4/94]

The Staunch 8/89'er is a magazine for users of Heath/Zenith H-8 and H-89 computers; \$15 per year U.S. and Canada, \$19 overseas. Kirk L. Thompson, the editor, also sells CP/M and HDOS software, in all H/Z formats, including hard-sector. Write him at P.O. Box 548, West Branch IA 52358, or phone (319) 643-7136 (evenings and weekends). [4/94]

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). \$25 each plus \$2.50 shipping and handling per order. Free sampler disks with the limited shareware versions are available. Talk to Chuck or Miriam at Sydex, P.O. Box 5700, Eugene OR 97405, phone (503) 683-6033. [4/94]

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. [4/94]

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 \$12 per year to any U.S. zip code, \$16 to Canada or Mexico, and \$20 to any other country, from Steven W. Vagts, 2215 Americana Drive, Roseville CA 95747, phone (916) 773-4822 evenings and weekends. No calls after 10 PM PST, please. [4/94]

PUBLICATIONS

The following magazines and newsletters were received since last issue:

ADVISA, Jan/Feb 1994 and Mar/Apr 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. Write or call him for membership information. [Coleco ADAM]

Amstrad PCW User's SIG, Vol. 7 No. 4 (Nov. 1993-March 1994), is the newsletter of the group of the same name, 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, March 1994 and April 1994. *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]

Classic Computer Society Newsletter, April 1994. Andy Shapiro is the secretary and newsletter editor. Write Classic Computer Society, P.O. Box 2007, Santa Barbara CA 93120 for membership and subscription information, or call (805) 684-8838. [All computers]

The Computer Journal, #65 (January/February 1994). Helmut Jungkunz' new column "The European Beat" talks about the Amstrad. *Little Circuits* by Dave Baldwin covers reset circuits; next time he says he'll cover battery backup circuits for real-time clocks and RAM. J.W. Weaver's "Support Groups for the Classics" discusses a computer testing circuit and lists a bunch of support people and organizations. Herb Johnson's "Dr. S-100" column answers letters and covers some of the common questions basic to any computer with the S-100 bus. See our RESOURCES section for TC's address and subscription rates. [All computers]

Historically Brewed, #4 (March/April 1994), is published by the Historical Computer Society. This issue has *The Apple II: It's [sic] Beginnings Retold*, Part II, by Steven Weyhrich; *Kaypro Korner: How Kaypro Started*, Part I (1953-1983), by Erroll Foldes; some non-CP/M stuff, listings of organizations and newsletters, ads, letters, etc. To subscribe to *Historically Brewed* and join HCS, send \$18.00 (\$20 Canada, \$24 elsewhere) to HCS, 10928 Ted Williams Place, El Paso TX 79934. [All computers]

Metro Orlando ADAM Users Group newsletter, February 1994 and March/April 1994. A subscription to the newsletter comes with membership in MOAUG, which is \$20 per year. Write to James Poulin, 1146 Manatee Drive, Rockledge FL 32955, phone (407) 631-0958. [Coleco ADAM]

NIAD, #96 (March/April 1994), published by the Northern Illiana ADAM User's Group, 9389 Bay Colony Drive #3E, Des Plaines IL 60016, (708) 296-0675. A single copy is \$3. Membership is \$22 in the US, \$26 in Canada, \$40 elsewhere. [Coleco ADAM]

Smaller is Better, January, February, and March 1994, is the newsletter of the Connecticut CP/M Users Group (CCP/M). The January issue has brief instructions on installing MYZ80, and *CP/M on the C128*, part 2 of 8 by Gary Stagliano. The February issue has part 3, and *Eched in Snow*, the trials and tribulations of Bob Bates using ECHED to create a Lithuanian font file. The March issue has letters and responses to that article, and part 4 of Gary Stagliano's series. For dues and/or subscription information, write Stephen Griswold, P.O. Box 74, Canton CT 06019-0074, or call the Mouse House BBS at (203) 665-1100. [All CP/M and Z-System computers]

Z-100 LifeLine, #30 (February 1994) and #31 (February 1994). Issue 31 came out before issue 30! Issue 30 is the last issue from the founder and original publisher, Paul F. Herman, who is now publishing *PC LifeLine*. Issue 31 is the first issue from the new publisher, Steven W. Vagts. Most of the magazine is MS-DOS stuff, but the Z-100 runs CP/M-85 on its 8085 co-processor, and occasionally there will be (I hope) something for CP/M users. See RESOURCES for the new address and subscription rates. [Z-100]

COMPUTER CLASSICS

The Bondwell 2

One of the afflictions of the CP/M community is laptop envy. Portables are well known and commonly available. Kaypros and Osbornes are easy to find, and sometimes you can get Zorbas, Otrona Attaches, TeleVideo TPCs, TRS-80 Model 4Ps, and others. True laptops are much harder to come by. For

one, there were only a handful of models made. Even if you get an Epson Geneva, a NEC Starlet, or a TRS-80 Model 100, none of these have built-in disk drives, and their LCD screens are only a few lines tall. LCD screens were in their infancy in the days when CP/M laptops were being made.

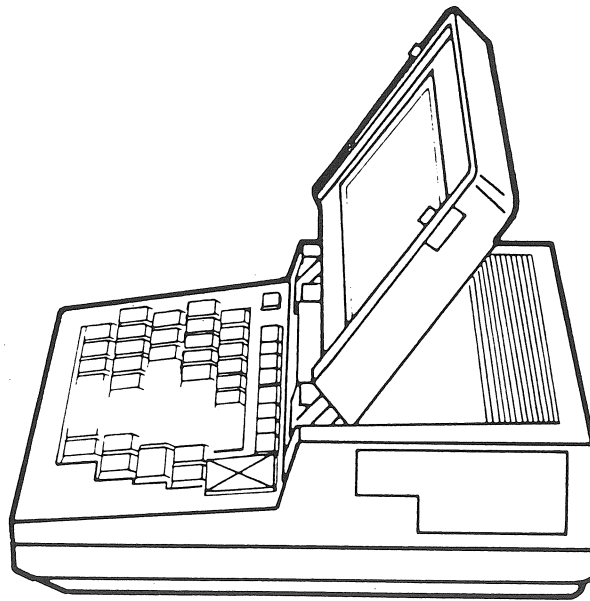


Figure 1. The Bondwell 2 open.

The Bondwell 2, shown closed on our cover and open in Figure 1, may well be the best CP/M laptop ever made. While the screen is neither supertwist nor backlit (neither had been invented yet), it is a full 80 characters wide by 25 lines tall.

The Bondwell 2 generally resembles the NEC Starlet, or many early PC laptops. The Bondwell's overall dimensions are 12" W x 3" H x 11" D, and it weighs 12 pounds, not including accessories. The screen is 9" W x 2.8" H.

Like the Starlet, the Bondwell's cursor keys are triangular, making up a square on the upper right of the keyboard (*see cover*). Otherwise, the 2's keyboard is almost the same as that of the Bondwell 12 or 14. The laptop doesn't have the numeric keypad of the portable. Like the 12 or 14, the 2 has 16 function keys. Unlike the 12/14, where there are 16 actual keys, the 2 has 8 physical keys. F1-F8 are the unshifted values, and F9-F16 are the shifted values of these keys. The

Bondwell 2 has an ESCAPE key to the left of the function keys, and a DELETE key between the function keys and the cursor keys.

All 16 function keys are programmable, and the programmed values can be saved as .KEY files, which can then be loaded at need. For instance, Spellbinder commands could be programmed into the function keys and saved as SB.KEY; this file could be loaded automatically by an alias that invoked Spellbinder, and replaced with another set, such as HSH.KEY, upon exit from Spellbinder.

The default values of the function keys are:

Key	Value
F1	DIR
F2	ERASE
F3	RENAME
F4	ED
F5	PIP

F6	SUBMIT
F7	HELP
F8	SETUP
F9	STAT
F10	TYPE
F11	LINK
F12	USER
F13	ASM
F14	LOAD
F15	DUMP
F16	MOVCPM

Besides the keyboard, the Bondwell 2 has a power button and contrast wheel on the right side (*see cover*). On the back, a flip-down hatch covers and protects three female connectors, clearly labeled as a serial port, a parallel port, and a port for a second external floppy-disk drive. There's also a port for plugging in

a power adapter when not on the road, a fold-up carrying handle, and the two latches, one on each side, for the screen. The controls of the laptop are thus few and their functions obvious.

Internally the Bondwell 2 is a straightforward CP/M machine. Its Z80L CPU differs from the standard Z80A not in speed (both are 4 MHz), but in being low power, a good quality for a laptop. The Bondwell has 64K of user RAM, 16K of video RAM, a 2K monitor ROM, and a 2K character ROM.

On the bottom of the laptop a sliding plastic cover 4.4" x 5" protects the cartridge slot, which is what Bondwell calls an edge connector that extends into this bay (*see Figure 2*). Bondwell sold modem cards, ROM cards, and RAM cards for use with this I/O slot. My Bondwell 2 came with an Bondwell 110 bought by the previous owner. The BW110 is the RAM card. Installing it provides you with a 256K RAM disk.

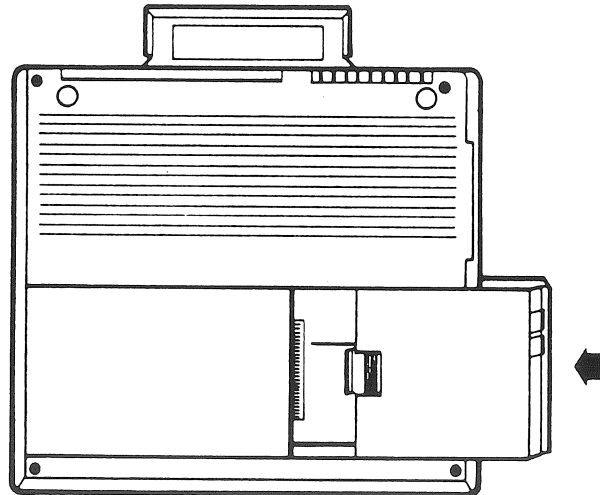


Figure 2. Installing an I/O cartridge.

With the RAM card inserted, the Bondwell 2 behaves differently on startup. It automatically formats the RAM disk, then gives you your choice of booting from the RAM disk or the internal floppy-disk drive. It also gives you two choices of drive assignments. The default setup makes the RAM disk A and the built-in drive C, but you can choose to have the built-in drive A, and the RAM disk C. An external floppy-disk drive is always drive B.

The second disk drive is the other major optional accessory. Called the Bondwell 106, it's a 3½" drive just like the one built into the laptop, in a metal box 4.1" W x 1.7" H x 7" D. It weighs just under 3 pounds and attaches to the drive port on the back of the laptop with a sturdy shielded cable permanently built into the BW106. No installation needs to be done; the laptop automatically detects the external drive on

startup. The external drive does not need a power cord; like the RAM card, it draws its power from the laptop.

If you're beginning to conclude that the Bondwell 2 is a class act, you're right. It is sturdily built, and the screen, handle, connector hatch and cartridge slot cover all fit smoothly and seamlessly when closed. At the same time, they are not hard to open; the screen has the two latches, and the other items have insets or small lips so that your fingers can get them open easily. Like its larger cousins, the BW2 is well-designed and well made.

The laptop comes with a padded black leather or leatherette carrying case marked with the Bondwell logo. The case has both a comfortable wide handle and an adjustable shoulder strap. In many such cases, the zipper runs down the middle of the sides, so that

half the time you put the case down upside down. This can be a nuisance, and there's the possibility of spilling the contents onto hard surfaces. The double-pull zipper of the Bondwell case runs along one edge above the handle, marking that side as the top. Inside the lid is a big pouch for the manuals, and a smaller pouch for the distribution disks. The body of the case is divided into three compartments. The large compartment on the right fits the laptop snugly. One of the two small compartments to the left hold the plug-in power adaptor; the other holds the parallel cable and the serial cable.

Several distribution disks came with the Bondwell 2. There's a CP/M 2.2 disk, a WordStar and MailMerge disk, a DataStar disk, a ReportStar disk, and a CalcStar disk. Each of these MicroPro programs is described

briefly in the Bondwell 2 manual, and has its own manual as well. There's also a disk for a program called Scheduler Plus, which is not mentioned in the Bondwell manual, nor did I receive a separate manual for it. It may have been lost by the previous owner, as were several other small items; no matter. The Scheduler Plus program may have been optional, or it might have been added to the standard package and the manual not updated. It's an obvious sort of utility for a laptop; many CP/M laptops and portables came with such a program.

Like the Bondwell 12/14, the Bondwell 2 comes with function-key templates for the bundled programs, and a few blanks. The laptop's templates fit into slots behind the function keys and stand up behind them (see Figure 3).

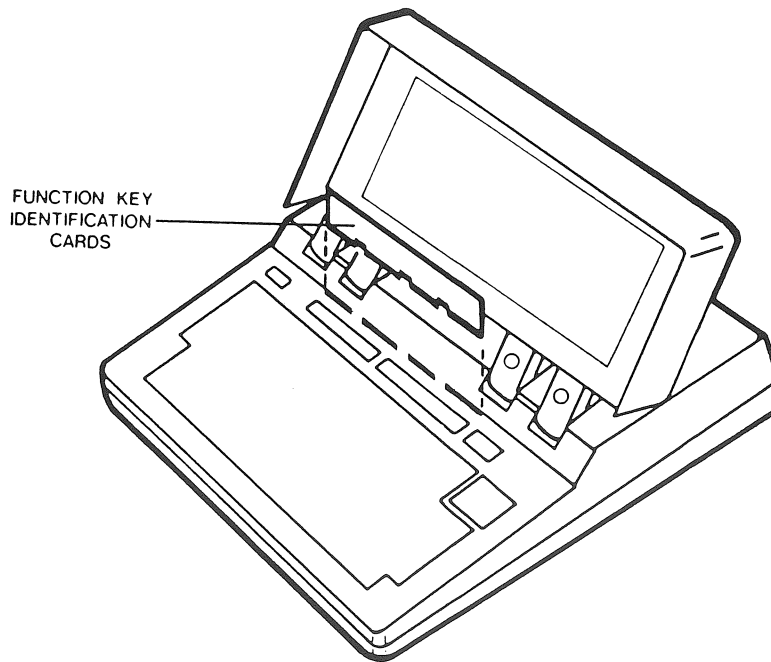


Figure 3. Bondwell 2 templates.

The Bondwell 2 boot disk contains the standard CP/M utilities ASM, DDT, DUMP (and DUMP.ASM), ED, LOAD, MOVCPM, PIP, STAT, SUBMIT, SYSGEN, and XSUB. It also contains FILECOPY, a "friendlier" program than PIP. Disks are formatted using the Bondwell program FORMAT. There are three file-transfer programs. RS232R receives files from other Bondwell computers through the serial port, and RS232T transmits files. TRANSFER is more general and sophisticated program than the other two.

The program SETUP has a whole chapter to itself in the manual, and rightly so. SETUP is the program used to edit the function keys and configure the serial

port as synchronous or asynchronous, set baud rate, number of bits per character, parity, and number of stop bits. The ESCAPE key aborts these options at any point, and there are help screens.

From SETUP you can save the function-key definitions as KEY files, or save the entire setup as a COM file. You can also load either kind of file from SETUP (of course, you don't need SETUP to load a COM file).

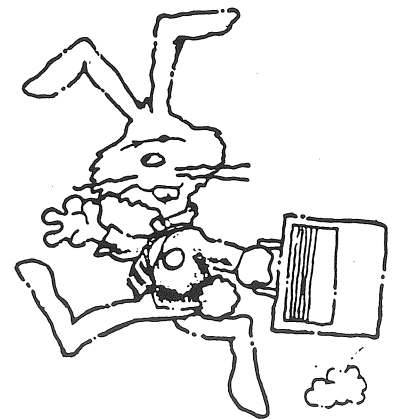
Just as Bondwell computers are excellent examples of how computers should be built, Bondwell manuals show how manuals should be written. They are clear, concise, complete, and illustrated with good line

drawings (the source of the figures in this article and the one on the 12/14 in issue 28).

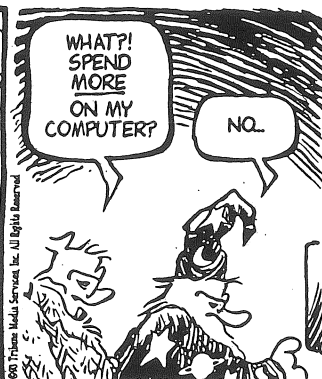
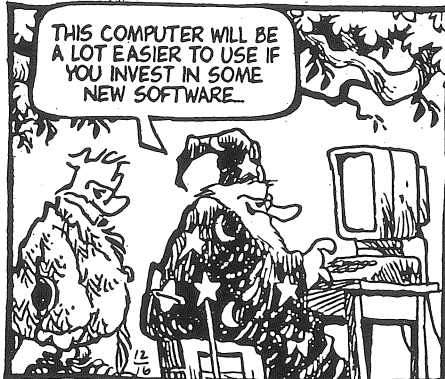
Since I have most of a page left, I will close by reproducing the chart of graphic characters for the Bondwell 2. Appendix C, which lists the screen

control codes, says that ESCAPE G starts interpretation of characters as graphics, and NULL (ASCII 00) ends it. Direct cursor positioning is also supported. The little businessrabbit at the end comes from the sales brochure for the Bondwell 2.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
20	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
30	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
40	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
50	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
60	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
70	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
80	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
90	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
A0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
B0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
C0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
D0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
E0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
F0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐



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CP/M (version 2.2) or CP/M Plus (version 3.0), \$25. A lot of my customers have picked up a computer without a disk to operate it. I can sell you the disk to run your computer. Manuals not included. (DRI)

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Manuals and newsletters

Computer manuals, software manuals, and books, \$15 each. I have manuals for many different makes and models of CP/M computers, for many different software packages, and copies of many books on CP/M subjects. Far too many to list here; please inquire. (Various companies)

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Z-Fonts, \$8 per font. (Digi-Fonts)

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NZ-COM (version 1.2H), \$20. Upgrades your CP/M 2.2 system with no hardware change, yet you can still run your CP/M programs like Spellbinder and SuperCalc. Includes a manual and a large set of Z-System utilities. (Z-System Associates)

Z3PLUS (version 1.02F), \$20. Upgrades a CP/M Plus or CP/M 3.0 system, just as NZ-COM does for a CP/M 2.2 system. With manual and utilities (Z-System Associates)

ZCPR 3.4 source code, \$15, \$10 if purchased with NZ-COM. (Z-System Associates)

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Catalog disk, \$10. Lists the public-domain and shareware software for CP/M systems in this collection, and includes NULU, CRUNCH, and UNCRUNCH, along with their documentation files. If you have a earlier printed catalog, from when Sound Potentials was a separate company instead of a Lambda trademark, you may use it to order software from me.

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