

# The Z-Letter

Newsletter of the CP/M and Z-System community

Number 14

August 1991

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## ABOUT THIS NEWSLETTER

Welcome to *The Z-Letter*, a newsletter for the community of CP/M and Z-system users. Everything in this issue is copyright © 1991 by the editor: David A.J. McGlone, Lambda Software Publishing, 720 S. Second Street, San Jose, California 95112-5820, phone (408) 293-5176.

The purpose of this magazine is to spread the news about new developments in the community, and to help newcomers get the most out of their machines. So send us the news about your new software or hardware, your opinion of someone else's product, that article you've been meaning to write, your praise, gripes, or just plain questions! This is the place.

### Submitting material for publication

Material may be submitted on 5¼" diskette in almost any format, on 8" diskette, or printed or typewritten on clean white unlined paper. The deadline for submission of material is the end of the month. We cannot pay for articles, but for every article we publish, the author will receive that issue of *The Z-Letter* free. If the author has a subscription, the subscription will be extended for one issue.

### Letter policy

*The Z-Letter* reserves the right to edit letters received to conform to standards of taste, decency, and language. We will NOT distort the meaning of any letter; we'll simply not print it first. If you are not willing to have any letter you send printed, or edited before printing, please say so in the letter. All other letters will be assumed to be for publication and become the property of Lambda Software Publishing upon receipt.

### Subscriptions

*The Z-Letter* is a monthly publication, and subscriptions will be accepted for 1 or 2 years. A subscription starts with the first issue after the subscription payment is received. The cost is \$15 per year for subscriptions mailed to U.S., FPO, or APO addresses. Canadian and Mexican

subscriptions cost \$18 per year. Other foreign subscriptions cost \$45 per year. Subscriptions should be paid by check or international money order in U.S. dollars, mailed to Lambda Software Publishing. Back issues cost \$2 apiece; every back issue is kept in print.

### How to read your mailing label

If you are a subscriber, your address label lists when your subscription expires, for example, *Your last issue: 20*. If we have sent you a single issue in hopes that you will subscribe, it will be marked *Sample copy*. *Complimentary* copies go to people we expect to spread the word of the newsletter's existence, and perhaps contribute information or articles.

### Advertisements

There is no charge for either business or personal ads. Business ads are carried as a public service to the community. If you sell a product or provide a service to the community, please send us ad copy, either camera-ready or on disk. If you stop doing business in our community, please let us know so that we can drop your ad. Readers who find a product or service unsatisfactory, or discover that a vendor has gone out of business, are requested to inform us.

Subscribers may place personal ads at any time. Each ad will be run three times automatically. If the ad doesn't achieve its end in that time, it can be reinstated after a lapse of one issue. If the ad succeeds before it has run three times, please inform us so we can drop it at once.

### Trademarks

All trademarks used herein are acknowledged to be the property of their owners.

### Index available

*The Z-Letter* is indexed annually. The index for issues 1-5 appeared in issue 5. The index for issues 6-8 appears soon! Honest!

## HOW SOON THEY FORGET!

The keyboard pictured on our cover is that of a Zentec Zephyr terminal. I consider it the best keyboard I've ever seen. I use a Tandem 6520 terminal at work, despite the many newer terminals available for me. A Tandem 6520 is a Zephyr with Tandem ROMs installed, so I can testify to the pitch, spacing, and travel of the keys, and how good the keyboard is for typing. In addition, the keyboard has a list of features rarely found in a single keyboard; (1) a full typewriter keyboard, (2) sixteen function keys, in a row across the top rather than bunched on one side, and all programmable, (3) a full numeric keypad, (4) a cursor keypad, with the up arrow at the top, the right arrow at the right, the left arrow at the left, and the down arrow at the bottom, and (4) these last two keypads are arranged on top of each other, not side by side, so you don't have to reach way over for either of them.

In fact, about the only desirable feature missing from the Zentec keyboard is having it separate from the terminal, in a box of its own. And in the later Zentecs, such as the model 1051, you even get that.

So why is it you've never heard of Zentec, as you probably have not? Because it is not quality that determines a product's popularity, but the quality of the product's sales force. This goes against the ideology of those who would have you believe that free enterprise always brings about the best result, but in fact, due to the bandwagon effect, everybody buys what everybody buys. Often superior products lose out to inferior but more popular competitors (remember Beta VCRs?), and in time the general public may completely forget that alternatives ever existed.

### Things that make you go GRRR

A case in point in the nauseating hype we're currently experiencing about "the tenth anniversary of the PC". You would think, from all the brouhaha, that there were no personal computers before IBM introduced the PC (when in fact, no one would have cared had the PC never been invented). The most recent

*Computer Currents* as much as says so, to the detriment of my blood pressure. On page 21 of the August 13 issue, one Lawrence J. Magid acknowledges "IBM wasn't the first company to introduce a personal computer. Apple, Radio Shack, Commodore and several smaller companies were already in the market."

This kind of revisionist history always makes me see red. In the first place, try several score companies as the correct figure for the number of companies making personal computers in those days. Mr. Magid forgets, apparently, just how diverse this market was before IBM landed on it like a nuclear winter, leaving a few severely mutated survivors to crawl away from the holocaust. Fire up your PC, Magid, and run 22DISK. Now look at that list of CP/M formats. You will find about 112 companies listed (at roughly eight companies per menu page, because of multiple formats and models per company). While some of those represent companies that did not introduce CP/M or Z-System computers until after the introduction of the PC (such as Micromint), far more companies are omitted, such as the many companies that sold S-100 computers that all used the same 8" disk format. Several, indeed!

In the second place, Apple, Radio Shack, and Commodore may be the largest manufacturers of non-PCs today, but they weren't necessarily the largest then. In ignoring the sales of Kaypro, Osborne, Morrow, Televideo, and Eagle, Magid is projecting the relative sizes of today's fruit of a severely pruned bush onto the healthy tree of yesteryear.

### Why do they do that, anyway?

So why do supposedly professional computer salesmen, computer-store managers, and computer-column writers indulge in what I call the NIY (Not Invented Yesterday, therefore I never heard of it) Syndrome? There are several reasons, some more forgivable than others.

Partly it's the human desire for stability. By projecting the present upon the past, they lose sight of the diversity and potential of the past,



# Socrates

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## CP/M Support

You have been told that CP/M is dead. Don't you believe it. To paraphrase a famous quote, reports of our demise are premature. We haven't died; we have transformed!

Since the earliest days, CP/M has attracted the best in programming talent. Some sold their work commercially but many more donated their efforts to the public domain. Today, most commercial programmers have moved on. But the others remain, as active as ever. This presents you with an interesting dilemma: Most of the new programs are free or nearly so, but stores won't carry them! How can you get support?

There are four avenues of support for today's CP/M user:

- Remote Access Systems (BBS's)
- User Groups
- Mail Order Companies
- Magazines and Newsletters

## REMOTE ACCESS SYSTEMS

Remote Access Systems (RAS or sometimes called Bulletin Boards), are computers set to automatically answer the telephone. You can send and receive messages, programs and files on a RAS. You need a modem and a communications program.

There are literally hundreds of systems that support CP/M. Most are free to the caller. *Socrates Z-Node 32* is such a system. Some of the most active are listed at the end of this paper. Find one that appeals to you and call. You should be able to find the North American listing of remote CP/M systems on any of these. Ask the sysop if you need help.

One problem with getting support by modem is the cost of the calls. Galaxy Starlink offers an "after hours" service through Tymnet that allows you to make modem calls to some 200 cities for as little as \$1.50 per hour plus \$10.00 per month. Call 1-505-881-6988 for more information.

## USER GROUPS

User groups are excellent sources of help. A comprehensive list of groups is printed in the back of *The Computer Shopper* each month. Groups vary considerably based on their size and the relative experience of their members, so check out the group before you join. Since a group is only as good as its members, you should plan to take on some responsibilities. You will find your efforts amply repaid.

## MAIL ORDER COMPANIES

There are many companies that continue to specialize in CP/M. *Chicago's First Osborne Group* publishes a file named CPMSRC-I.LZT which lists most such firms. You can get this list from your user group or on a RAS. Or write to CFUG at Box 1678, Chicago IL 60690. Enclose a couple dollars to pay expenses.

Special mention should be made of the *Z-System Software Update Service*. Users of ZCPR can subscribe for regular updates of the best Z-System programs. Special editions are also available. For example, there is a collection of some 360 command files in a set of six disks for just \$36, or over a full megabyte of help files for \$20. Send \$2 to *Sage Microsystems East*, 1435 Centre Street, Newton Centre MA 02159-2469 to receive a catalog disk. Be sure to tell them what format you have!

## MAGAZINES AND NEWSLETTERS

If you want 300 slick pages of full page advertising and press releases disguised as product reviews, you will be disappointed. Our publications reflect the tradition of user involvement in CP/M. You may even find yourself asked to write an article on something you've learned! Some publications to look at:

*THE COMPUTER JOURNAL* is the top-of-the-line in CP/M periodicals. Topics range from tutorials to advanced work in the operating system. Heavy emphasis on Z-System. Published six times a year. Subscriptions are \$18 per year. *The Computer Journal*, 190 Sullivan Crossroads, Columbia Falls MT 59912.

*PIECES OF EIGHT* is published by the *Connecticut CP/M Users Group*. Great degree of user involvement reflects the diverse interests of the members. Recent articles include making Basic 'Z-Smart', and installing a RAM disk. Membership including newsletter is \$15 per year. *CCP/M*, c/o Tom Veile, 26 Slater Avenue, Norwich CT 06360.

*SLKUG NEWS* is the newsletter of the *St. Louis Kaypro Users Group*. Don't let their name fool you — they support all kinds of CP/M machines. Articles include reviews of new products, offers for group purchases and tips on using applications. Membership including newsletter is \$18 per year. *SLKUG News*, 5095 Waterman Avenue, St. Louis MO 63108.

By the way, we are compiling a listing of all CP/M newsletters and periodicals. If you know of one that you feel is of value, let us know! A sample copy would be most appreciated.

## CAN WE HELP?

One last avenue of support is *Socrates Z-Node 32*. We will copy any files you want from our system or extensive off-line archives for \$6 per disk (\$10 for foreign orders). Send \$2 for a listing of available files. Please make checks out to Chris McEwen, Sysop, and tell us what format you need. Proceeds go to the support of Z-Node 32.

Chris McEwen

### Try one of these Remote Access Systems for support via modem:

Z-Node Central, Los Angeles	CA 213-670-9465	Z-Node 36, Pasadena	CA 818-799-1632
Z-Node 3, Newton Centre	MA 617-965-7259	Z-Node 45, Houston	TX 713-937-8886
Z-Node 4, Salem	OR 503-370-7655	Z-Node 50, Alice Springs, N.T.	AUSTRALIA 5750 61-089-528-852
Z-Node 5, Montreal QC	CANADA 514-324-9031	Z-Node 58, Oklahoma City	OK 405-943-8638
Z-Node 6, Drexel Hill	PA 215-623-4040	Z-Node 62, Perth,	Western AUSTRALIA 61-9-450-0200
Z-Node 9, San Diego	CA 619-270-3148	Z-Node 65, Cheyenne	WY 307-638-1917
Z-Node 10, Mill Creek	WA 206-481-1371	Z-Node 66, Costa Mesa	CA 714-546-5407
Z-Node 11, Chicago	IL 312-764-5162	Z-Node 73, Ballwin	MO 314-821-1078
Z-Node 12, Newington	CT 203-665-1100	Z-Node 77, Austin	TX 512-444-8691
Z-Node 15, Manhattan	NY 212-489-7370	Z-Node 78, Olympia	WA 206-943-4842
Z-Node 20, Burnaby, BC	CANADA 604-299-0935	Z-Node 81, Lancaster	CA 805/949-6404
Z-Node 21, S Plainfield	NJ 201-757-1491		
Z-Node 32, S Plainfield	NJ 201-754-9067		
Z-Node 33, Enid	OK 405-237-9282		

and how little of that diversity remains and how feebly that potential was realized. If yesterday was just like today, then we can be confident that we understand yesterday as well as we understand today, and the world's mysteries and uncertainties are reduced by that much. This also means we don't have to do any real thinking, which most people avoid as they avoid prolonged physical torture. This is bad, but understandable.

Partly it's because many of these computer "professionals" really don't know better. Back in the CP/M days, when every computer's hardware was different and every field of software had several strong and very different contenders, you had to know a lot about computers to sell them, repair them, or write about them. In today's world of compatible computers, the stores are staffed by former car salesmen and the computer columns are written by former newspapermen who get their material by paraphrasing the sales brochures sent them by the computer companies.

But mostly, I think, the motive is pure greed. As Johnny Carson said on *The Tonight Show* on May 30, 1991, "In the kingdom of the blind you can sell a lot of bad-looking suits." If people think IBM invented the personal computer, they won't expect it to have the features found in the best CP/M machines. They won't expect the I/O on those lousy Intel chips to be up to the standards of the Z80, because they won't know about Zilog. If they don't know about Selector or FMS-80, they won't complain that only dBase is available for their PCs. If they think all previous computers ran WordStar, they won't be bothered by the fact that Spellbinder and MagicIndex outperform Word Perfect and MicroSoft Word.

Above all, referring to MS-DOS and PC-DOS as "DOS" serves two purposes; it keeps them from investigating modern products like ZSDOS and ZDDOS, which outperform not only the CP/M BDOS that inspired them, but the PC DOSes; and by referring to the entire operating system as a DOS, it draws attention away from the BIOS and command processor. The PC BIOS is so slow and inefficient that most PC programs ignore it, and replacement command processors

like the MS-DOS 5.0 shell and NDOS are only just now getting features that ZCPR (itself a replacement for the CP/M CCP) has had since 1985.

### Unfortunately, it works

The results of this campaign of ignorance are everywhere. Some awful examples:

1. When I called Digital Research recently, and told a receptionist there that I wanted to talk to somebody about CP/M, she said, "CP/M? What's that?"
2. People's Computer Company, founded in 1972 and the original publishers of *Dr. Dobb's*, had until recently a display of the history of computers in the San Jose public library, main branch. The display consisted of computers, each with a little card telling something about it. CP/M machines, and pre-PC non-CP/M machines, were well represented. Near the end of the display was a card about the Eagle PC-2, a compatible introduced in September 1984, etc. All well and good, but the computer with the card was *not* an Eagle PC-2. It was an Eagle II, a CP/M machine which first shipped three years earlier.
3. That the problem can have national repercussions is evidenced by an article that the Associated Press distributed on January 2, 1991. Published in the *San Jose Mercury News* under the title *History disappearing in computerized maze*, it details how billions of bytes of information on public health, military records, census data, space-probe data and more have been destroyed because no one knew how to interpret it, or is in danger of decomposing because no one has preserved it, or simply cannot be read other than manually because the machines and programs for which it was designed have not been kept, and conversion to newer systems was not performed while the older systems still existed. Total cost of retrieving this data is in the millions of dollars and scores of man-years.

### What to do about it

Given all this, I trust you now understand why I'm collecting CP/M computers, software, books, manuals, magazines, and newsletters. The only answer to ignorance is education. If I can intercept enough of this stuff on the trip from the storage closet to the dump, I can set up a museum to display the diversity that IBM squeezed out of the computer market. Ideally, I'd like to have two of every model, one set up just as it came from the manufacturer, the other maxed out with the latest and greatest hardware and software. This will display just how much potential these old machines have.

In keeping with this, I am also talking to DRI about becoming an authorized distributor of new CP/M licenses, instead of just a reseller of old licenses as I have been doing. Next I'll be looking to collect boot disks, not just of the computers I have, but of every brand and model of CP/M computer, so that I can sell CP/M in the form of the actual boot disk for a given person's computer. I will let you know in this magazine when this is all arranged, and I will also start publishing lists of what I've collected, so you can donate, or sell to me, what you have that I don't.

For far too long, we have listened to, and worse, believed the hype that the PC and its clones are somehow better than CP/M or Z-System machines. In reality, 99% of the work done on personal computers could be done just as well, or better, on a simple CP/M machine than on the newest, fastest PC, both because of the Z80's superior I/O, and because of all the unnecessary new features that hardly work, but nevertheless get in the way, found on all PCs. Add to that the 9MHz or 12MHz speed of the newest Z180s, and the powerful features found in ZCPR and ZSDOS, and a rational person would use 8-bit machines for all but the most specialized tasks. We have been quiet too long, and need to speak out whenever some idiocy like the ones I have quoted is uttered. To that end, I will be sending a copy of this issue to *Computer Currents* and the *San Jose Mercury News*.

It may be unreasonable to expect people to quit hiding their heads in the sand of their comfortable illusions and face the world as it really is, with all its complexity and diversity. It is so much easier to deal with illusions like "All computers are the same". The best reply to this comes from the great Irish playwright, George Bernard Shaw:

The reasonable person adapts himself to the world.  
The unreasonable person persists in trying to adapt the world to himself.  
Therefore, all progress depends on the unreasonable person.

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### SOUND POTENTIALS CP/M PUBLIC-DOMAIN SOFTWARE CATALOG

We publish a catalog that lists the titles of 720 CP/M library files from which you can pick and choose. The titles are current up to 1990. The catalog lists each title, author, date, size of library, and a description. We charge you a copying fee of only five cents per 1K of library file copied. We can format for over 180 5¼" disk formats, both 48- and 96-tpi, and we charge you no extra for your format. We offer discounts for large orders if your disk format holds over 300K. You receive your selections plus our catalog on disk and a library utility to remove the files.

We also offer a data-copying service to copy data between any of the formats we support. Full details included with the catalog.

As a special introduction to the public domain of CP/M, we have put together a Sampler of some of the best utilities and word processing programs. This large collection is available on your disk format for \$10.00 plus \$4.00 shipping and handling. We throw in the printed catalog for \$1.00 more (\$15.00 total). If you just want the printed catalog and other info, send \$2.00.

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## THE STATE OF THE ART

### More on YASBEC

I have now talked to Paul Chidley, co-inventor of Yet Another Single-Board Eight-bit Computer, the Z180, single-board Z-System computer called YASBEC. Paul and his accomplice, Wayne Hortensius, have an article in issue 51 of *The Computer Journal* that tells everything except how much, and who to send the money to. I tracked him down to get the answers to those questions.

Long-term arrangements are still being negotiated, but more YASBECs have been ordered from the board fabricators, and a "kit" can be ordered for \$110 Canadian (which is about \$95 U.S.). I'm not clear what will still need to be done on this kit, but I've ordered one, and I'll tell you more when it arrives. With luck, I'll be printing an article on how to assemble one! Send your money to Paul Chidley, 162 Hunterhorn Drive NE, Calgary, Alberta, Canada T2K 6H5. You can also leave a message for Paul by calling (403) 274-8891.

### July SVCS meeting

The July 24 meeting of the Silicon Valley Computer Society had several speakers, with a common theme of mass storage. First was a speaker from SyQuest, who talked about their removable Winchester cartridges. These demountable hard disks have a SCSI interface, which means CP/M and Z-System computers with SCSI interfaces can use them. Being true Winchester technology, they can be booted from (depending on your computer's setup for hard disks). They can archive 40 megabytes in 4 minutes.

Next, the author of Spinrite, a hard-disk utility for PCs, spoke on several topics. He has a column in one of the PC magazines, and read next issue's column on the joint venture Apple and IBM are proposing. It was a most amusing rant. He also talked about Visual Basic, a PC product to which he devoted several columns. At one point he was complaining about how the language would take a misspelled variable name and set up a new variable, initialized to

zero, rather than giving an error message. As I called out to him, "That's called FORTRAN!" This behavior has long driven FORTRAN users nuts. He finished up with a description of how he came to write Spinrite. This was also funny, but included an uncalled-for sneer about how we CP/M users were out of luck. This made me so mad I didn't get to say that CP/M computers can't use his Spinrite, and Z-System computers don't need it. I sure am tired of people arrogant about the "superiority" of PCs.

Representatives from IOMEGA were there to announce their new 90 Mb Bernoulli cartridges. All Bernoullis are SCSI, bootable, and tested to withstand 100-g shocks. The new cartridge is said to have 19-ms access time, and 5 Mb of spare sectors for automatic reallocation of bad sectors. Disk-to-disk copies take 4 minutes, and a single-disk copy utility is provided. The 90-Mb units, at 1605 tpi, can read the data from a 44-Mb unit (1096 tpi) but not write to it. IOMEGA also claims that the 90-Mb units are SCSI-II compatible; of course, the SCSI-II standard isn't finished yet. For computers without SCSI, Bernoulli units can be hooked to a parallel port, but that slows down the transfer rate.

IOMEGA is also offering an upgrade program to encourage people to trade in their old units for new ones. They haven't decided what to do with the old units they get in this program; perhaps we can get them to offer them at a discount to our community. An article on adding a Bernoulli drive to a CP/M computer appeared in issue 48 of *The Computer Journal*. IOMEGA is located at 901 Mariner Island Blvd., Suite 255, San Mateo CA 94404, phone (415) 571-6545.

The last speaker of the evening was from a company called Liberty. Liberty sells standard Winchester hard disks, but they package them in extremely tiny cases. The resulting units are hand-sized, portable, and attached either to a SCSI port or a parallel port. Liberty can be reached at 160 Saratoga Ave., Suite 38, Santa Clara CA 95051, phone (408) 983-1127.

**Lambda Software Publishing**  
720 South Second Street, San Jose, CA 95112-5820, phone (408) 293-5176

**Regular products – quantities not limited**

1. **Spellbinder** Version 53H \$60  
The Rolls Royce of word processors. This includes the software, the User's Guide which always came with the software, the Technical Manual and Macro Manual (which always cost extra), and a new Introduction. All four manuals come a 2" binder in 8½ X 11" format. Both generic and Eagle versions are available. (Ltek)
2. **CP/M** Version 2.2 \$15  
Bought the hardware, and don't have the operating system? I can sell you the license and the manuals, making the copy you get from your user group legal. For many brands of computers, I can even send you the actual operating system with the BIOS for your machine. (DRI)
3. **MagicIndex** Version 3.00 \$100  
Extends even Spellbinder's control of printers, and what it does to WordStar has to be seen, and then you still won't believe it! Used by us to produce this newsletter. Versions available are: SL (for Spellbinder or other ASCII word processor plus HP LaserJet or laser with HP emulation), SD (for standard word processors, Diablo 630 and similar daisy-wheel printers), WL (WordStar or WordStar clone plus laser), and WD (WordStar and Diablo). Please specify your word processor and printer when ordering. (CES)
4. **Various computer manuals** Each \$15  
Complete manuals now available for: Eagle CP/M, Eagle 1600, Eagle PC Plus and Spirit, Otrona Attache, and Pied Piper. (Various companies)
5. **Eagle Computer Users Group newsletter** July 87 to October 90 \$15  
All the issues done by the present editor of the only Eagle user group left. (Lambda)
6. **The Z-Letter (back issues)** \$3/issue (US, Canada, Mexico), \$5/issue (elsewhere)  
Past issues of our newsletter for the CP/M and Z-System world. Issues 1-6 are available both in the original 5½ X 8½" format, and enlarged to the 8½ X 11" format of issues 7-present, until copies of the older format run out. (Lambda)
7. **The Z-Letter (subscription)** \$15/year (US), \$18/year (Canada & Mexico), \$45/year (all other)  
Published monthly. (Lambda)
8. **Z-Fonts catalog** \$3 (US, Canada, Mexico), \$5 (elsewhere)  
Shows samples of all the fonts available from Lambda for HP LaserJet printers, with instructions on how to choose what size, orientation, etc. you wish. (Lambda)
9. **Z-Fonts** \$2 per font plus \$2 per disk  
Once you've perused our catalog, you can order the fonts you want very cheaply. (Digi-Fonts)

**Opportunity products – limited to quantity in stock**

- A. CBASIC Reference Manual** **\$15**  
 CBASIC comes with CP/M as CBAS2.COM, CRUN2.COM, and XREF.COM. However, the manual for the language was rarely included and is hard to find. Get your copy while you can. (DRI)
- B. The CP/M Handbook with MP/M** **\$15**  
 A good introduction to CP/M by Dr. Rodney Zaks. It assumes no prior knowledge of computers. This or another book like it is a must for a novice handed a CP/M computer and told "You're on your own." (SYBEX)
- C. Nevada COBOL** **\$15**  
 This is an excellent COBOL which I've used myself for years. It's the only one I know of that ever sold for less than \$700. Packaged for the Commodore 64, but will run on any CP/M computer. (Ellis)
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 These sturdy little carriers hold up to three 5¼" diskettes safe from harm. Ideal to carry diskettes in a briefcase and protect them from your lunch, heavy books, etc. Front and back covers are clear pockets that will hold covers of your design, allowing you to customize these diskettes as you would a binder.

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I can copy most soft-sector double-density 5¼" CP/M formats, including Apple II CP/M. Sorry, no hard-sector formats except Northstar, no single-density formats, no 3½" or 8" formats, and no Commodore CP/M formats yet; some of this will change in the future. Copies can be CP/M to CP/M, CP/M to MS-DOS, or MS-DOS to CP/M; specify the format of the disks you send, and the format in which you want the copies. Both originals and copies will be returned.

Please note that this is a service provided to the CP/M and Z-System community. I assume that you are honest, and that you are the legal owner of material you ask me to copy. I refuse to accept any responsibility should this turn out not to be the case.

Note also that the price quoted above is for software you purchase elsewhere, or data diskettes you own. **There is no charge for copying software you buy from me in the format of your choice!** Software bought from Lambda will be sent to you in the disk format you request at no cost but the price listed for the software, so don't order Spellbinder and send me extra money for disk copying.

---

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## SCRIPT OF THE MONTH CLUB

Displaying parts of the operating system  
by Jay Sage

This is going to be another big bonus month. You are not going to get just one script, or even two or three. You are going to get a whole slew of them, 14 to be exact (go ahead, count them to be sure). They all perform a similar function, and they illustrate a particular class of ARUNZ parameter.

Anyone who does much development work on a Z-System computer frequently needs to view the various system components. For example, yesterday I was experimenting with loading a

new DOS into the running system. To make sure it was really getting in there as I intended, I ran the alias PDOS (for "Peek DOS") after using JETLDR to load the module file. (It was a good thing, too, because I was making a mistake, and PDOS showed me that the same old DOS was still there.)

Here is a list of the alias scripts. They use the resident (or transient) peek command P to display all the modules accessible from ARUNZ.

1. PBIOS = BIOS	p \$ab
2. PCCP = PCPR = CCP = CPR	p \$ac
3. PDOS = DOS	p \$ad
4. PENV = ENV	p \$ae \$+e007f
5. PFCP = FCP	p \$af
6. PIOP = IOP	p \$ai
7. PMCL = MCL	p \$al
8. PMSG = MSG	p \$am \$+m004f
9. PNDR = NDR	p \$an
10. PPATH	p \$ap \$+p000f
11. PRCP = RCP	p \$ar
12. PSHL = PSHELL = SHL = SHELL	p \$as \$+s007f
13. PTC,AP	p \$+e0080 \$+e00ff
14. PXFCB = PFCB = XFCB = FCB	p \$ax \$+x0023

Scripts 1, 2, and 3 show the first page of each of the main operating system modules: BIOS, CCP, and DOS. These use the \$a parameter, which returns the address of the module designated by the letter that follows the a.

In the old days of ZCPR 3.0, one did not need such a parameter. Since the system addresses were fixed, one could just use explicit peek commands in the scripts, such as

```
PBIOS= BIOS    p e300
```

for the BIOS in a system whose BIOS started at E300 hex. In the modern dynamic NZCOM and Z3PLUS systems, the operating system can be reconfigured easily and dynamically (that is, from the command line, without rebooting). The use of the ARUNZ module parameters

allows the scripts to adapt to whatever system configuration is currently running.

Script 4 is the first one that has a different feature. It shows the non-TCAP part of the environment descriptor, which is only half a page (one record) long. The script uses the long-form syntax of the peek command, in which there are two parameters, a starting address and an ending address. The ending address uses the \$+ parameter, which is the same as \$a except that it takes a four-hex-digit offset value, which it adds to the address that would have been returned by \$a. In this case we add 7F hex. Scripts 8, 11, 12, and 14 follow the same pattern but use different lengths as appropriate for the module being displayed. Script 13 is similar except that both the starting and ending addresses are offset.

You can see that most of the scripts allow alternative names. I have found that I prefer to include the leading P (for peek), but in most cases forms without a leading P can be allowed. For the command search path, however, this is not possible, because there is already a PATH utility (PATH.COM) for displaying and setting the path. The MSG alternative for PMSG has been superseded on my system by the MSG

alias script that I discussed a couple of months ago. When a script name appears more than once in ALIAS.COM, the first one will be executed.

Next month we will introduce the notion of calling a script recursively. So be sure you don't let your subscription lapse!

## LETTERS

July 16, 1991

Dear Dave,

Thanks for your efforts in getting my Spellbinder up and running. I have solved the problem. In configuring the program I had chosen to start from scratch for both the terminal and the printer. In other words, I did not choose any from the listing in the config program.

A week ago I ran the config program again, this time choosing the Televideo 950 and the Epson MX-80 printer. Afterward, I installed the relevant terminal and printer tables, basically like the ones I mailed to you. Voila! It now works as it should. Problem solved!

Thanks again for your efforts. I got one response to the last Z-Letter. It was very instructive. As soon as I master the chapter on macros, I'll follow through on the suggestions.

Good luck! And, as usual, keep up the good

work. See you down the lines . . .

Brotherly,

Lloyd Hogan  
211 N. Dyer Street  
Elizabeth City NC 27909

*Lloyd's letter on the problem he was having doing some very elaborate configuring of Spellbinder for his Televideo terminal and Epson printer appeared in our June issue. He sent me the tables he had developed, and I couldn't find anything wrong with them. What he's saying here is that what he had was right, it just wasn't complete. Because he had not used the CONFIGSB program before installing his tables, the basic stuff for his terminal and printer had not been installed in Spellbinder, only the advanced stuff he was doing. There's a lesson here; do the simple stuff first before you get fancy. Glad you figured out what was wrong, Lloyd. I hope to hear more from you as you continue to explore the vast potential of Spellbinder.*

## PERSONAL ADS

### Disk drives for sale

Two Eagle IIE SSDD 96-tpi drives in working condition (machine converted to double-sided drives). \$50 each or best offer. Call (415) 455-8022; ask for Don or Jacquie.

### Geneva parts for sale

Epson PC-8 (Epson Geneva, a CP/M laptop) mother board and keyboard, \$50. Contact Lowell Schneider, P.O. Box 680693, Houston TX 77268, or phone (713) 288-5113.

### S-100 book available

Herb Johnson has *Interfacing to S-100/IEEE-696 Microcomputers*, by Sol Libes and Mark Garrett, for \$19.95 plus shipping (list price is \$24.95). Call him at (719) 578-0997.

### Otrona Attaches for sale

Two working Otrona Attache portable computers, as described in issue 5 of *The Z-Letter*, except these each have only one floppy currently installed. \$100 includes a legal boot

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**ACANAL** (By Gary Appel) \$6  
An electronic analysis program to perform AC nodal analysis on an electronic network. Element types may be: resistor; capacitor; inductor; transconductance; transmission line, open line stub, and shorted line stub; coupled inductors (transformer); quartz or ceramic resonator; two-pole monolithic resonator; and transistor (hybrid PI model). Various input/output and gain parameters permitted. Calculations are single-precision.

**dBASE II PROGRAMMER'S NOTEBOOK** (By Steven G. Meyerson) \$6  
Originally published as a booklet in '83 and '84, this is a collection of tips and routines for using dBASE II and writing applications in its command language. Included are hints for using FIND, DO CASE, QUIT TO, semicolons, justification, report column headings, the STR and TRIM functions, terminal and printer commands, sorting, debugging, displaying logical fields, linking database files, two-column printing, menus, error checking, and even a flashing display using H/Z-19/89 terminal codes. As a bonus, it also includes S-MAIL, a mailing list package for dBASE II that features menu-driven operation; adding, listing, deleting, reviewing and altering records; printing labels; and archiving deleted records.

**FILEBASE** (By Tom Markowitz, EWDP Software) \$6  
A "variable-length field" database manager which EWDP is releasing as shareware. Fields are in "comma-delimited ASCII" format, such as those created by BASIC and other higher-level languages or WordStar's MAILMERGE add-on. Defining field length or type (character or numeric) are therefore **not** required when setting up a database. Functions include adding fields, appending records, calculations, indexing, joining existing fields, restructuring the file layout, sorting, and printing reports and/or labels. Registration information for support and a printed manual is embedded in the program. But the package is menu- and prompt-driven, so you may never need the manual.

**LUCIDATA PASCAL** (By D.Gibby and L.Reeve) Version 3.8 \$25  
A substantial subset of the Pascal language, the compiler translates your ASCII source code into a file of p-code ("pseudo"-code). That file is then interpreted by a run-time system (PRUN or RUNCOM). This results in a language package that is faster executing than conventional interpreters, yet the p-code file is generally smaller than equivalent code produced by a conventional assembler. If independence from the run-time system is desired, a command-line pragmat can combine the run-time system with your p-code file. If execution speed is critical, a p-code program included with the package will translate p-code files to source code for Microsoft's M80 assembler and linker. Not as extended as Borland's **Turbo**, nor as fast during compile. Includes a 100-page hardcopy manual.

**MAGIC WAND/PEACHTEXT HELP** (By Kirk Thompson, Randall Stokes, and Hank Lotz) \$6  
This package for Magic Wand, PeachText 9, and PeachText 5000 word processors has three parts. One is menu-driven online **HELP** set up as an **include** file. This is a command reference to both EDIT and PRINT. Another is **PROCESS**, a print preprocessor. This program lets you directly support the custom features of your dot-matrix printer (such as underlining and italics). The program, as supplied, supports Gemini printers. Instructions are included for editing the ASM file and assembling a custom version for your own printer. The third part of this package is **SALVAGE**, a utility for recovering a MW/PT file from memory after an abort, BDOS error, or system reset.

**MCOLS** (By Hank Lotz) \$6  
A utility that creates multiple-column listings from a single-column input file. The user specifies the number of columns (2 to 13), space between them, effective page width and length and horizontal pitch, and the record to start at. It also lets you direct the output to a disk file as well as console or printer.

**The Staunch 8/89'er General Software Catalog** \$6  
**Staunch's** holdings are too extensive to list here. An on-disk catalog of software for CP/M and HDOS is available. Much of the software has been released to **Staunch** by various vendors or **Staunch** subscribers.

Note: Prices include first class shipping in the continental U.S. Supported disk formats are Heath/Zenith soft-sector (H-37) and 10-hard-sector (H-17); most 40-track, single- or double-sided, soft-sector CP/M (such as AMPRO, Cromemco, Kaypro, Osborne, Televideo, or Xerox); and PC-XT.

Kirk L. Thompson  
Editor, **The Staunch 8/89'er**  
P.O. Box 548, West Branch, IA 52358  
Voice: 319-643-7136 (eves and weekends)

disk and good copies of the manuals. Will consider barter for CP/M computers, books, magazines, user-group newsletters, or software that I don't have. Also seeking terminal documentation, especially Zentec Zephyr and

Onyx OT-80. Call David A.J. McGlone at (408) 293-5176, or write to Lambda Software Publishing, 720 South Second St., San Jose CA 95112-5820.

## MAGAZINE ARTICLES

The following magazines were received in approximately the last month. Articles relevant to the CP/M and Z-System community, if any, are listed for each magazine. Where a magazine is generally of interest to our community, its subscription address is listed, along with the U.S. subscription rate, whether there was a relevant article this issue or not.

*Circuit Cellar INK*, issue 21, June/July 1991. This hardware journal from the man who brought us the SB180 and SB180FX has less and less of interest to the 8-bit world all the time, unfortunately.

*COG Wheels*, Vol. 9 No. 9 (6/8/91) and vol. 9 no. 10 (7/6/91). No articles as such, but contents of interest to Osborne and Kaypro users. Cincinnati Osborne Group, c/o David Haldeman, 2063 Beechmont Avenue, Cincinnati OH 45230; \$20 per year.

*The Computer Journal*, #50, May/June 1991. *Offload a System CPU with Z181 Peripheral Control*, James J. Magill and Doug Woodburn. *Modula-2 and the Command Line*, David L. Clarke. *A Home Heating & Lighting Controller: The Electrical Interface*, Jay Sage. Part 2 of *Getting Started in Assembly Language*, by Al Hawley. *Using the ZCPR3 IOP to Add Function Keys to a Kaypro 10*, Lindsay Haisley. *PMATE Facilities and Buffer-Saving Macros*, Clif Kinne. *Z-Best Software: We're Off to the Libraries*, Bill Tishey.

In #51, July/August 1991: *Introducing the YASBEC*, Wayne Hortensius and Paul Chidley. More details on the new Z180 computer, by its authors! *High-Speed Modems on Eight-Bit Systems*, Roger Warren. *UNIX Connectivity on*

*the Cheap*, Bruce Morgen. *The Z-System Corner: The Trenton Computer Festival*, Jay Sage. A good summary of the Z-System. Both this article and the editorial in this issue praise *The Z-Letter*. *PMATE/ZMATE Macros: 4. Mother of All Macros*, by Clif Kinne. *Z-Best Software: The Z3HELP System*, Bill Tishey.

TCJ is the main Z-System magazine. You should subscribe. See the ad elsewhere in this issue for subscription information.

*Computer Monthly*, July and August 1991. The articles in this magazine on CP/M subjects normally come from FOG, who are represented in these two issues only by the user-group listings. Come back, FOG! Regular columns for Coleco Adam, Commodore 64 and 128, Apple II, TRS-80, Timex/Sinclair are still present; these machines either run CP/M or can run CP/M in addition to a proprietary operating system of their own. Bulletin-board listings and ads are also of interest. \$15.95 per year from Computer Monthly Subscriptions, P.O. 7062, Atlanta GA 30357-0062.

*Desktop Communications*, July-August 1991. *Spacing out on Type*, Robin Williams. This magazine is full of ads for laser fonts and clip art. Desktop Communications, 48 East 43rd St., New York NY 10017.

*Orange Bytes*, newsletter of the North Orange County Computer Club, Box 3616, Orange CA 92665. November and December 1990 issues received. NOCCC has a Kaypro SIG and an Osborne SIG.

*Silicon Valley Computer Society Journal*, July and August 1991.

# The Computer Journal

Applications — Programming — User Support

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They search for ever more RAM, we build custom interfaces. They add \$300 coprocessors to compensate for bad programming, we automate our homes with \$50 controllers. They write macros to add a column of numbers, we write operating systems. Their magazines carry endless reviews of computers only a corporation can afford. Our journal publishes schematics and source code.

There are whole other worlds of computing beyond Windows 3 and DOS, but they don't know about it. Maybe you do. If S100, CP/M, Forth, embedded controllers or robotics mean anything to you, then you need to know about *The Computer Journal*.

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*TCJ* is written and read by people who remember where all this started. Our articles teach the principles behind digital control. You will see real-life applications and be given the tools to do it yourself. Topics include Assembly Programming for the High Level Language Programmer, writing and using IOPs, and more. We discuss computer languages: Modula-2, C, Forth, Pascal. You will read award winning articles, such as the first place winner of the Harris RTX Design Contest.

- Embedded controller concepts, applications
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- System design, interfacing
- Plus monthly columns: Jay Sage, author of ZCPR 3.4, telling you how to get the best from Z-System; Richard Rodman on Minix and National Semiconductor cpu's; Matt Mercaldo with the F68HC11; Wayne Sung on LANs. Bill Kibler keeps an eye on the future of the industry.
- Programming the 8051, F68FC11, RTX and other specialized CPUs
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- Hardware projects ranging from interfacing a Bernoulli removable hard disk to a CP/M computer to dedicated embedded controllers
- Modifying and repairing printed circuits
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### What You Write —

*The Computer Journal* is just that—a journal. Our readers provide many of the articles. If you have a paper on a significant aspect of micro-computers or embedded controllers, algorithms or programming, submit it for consideration. The spirit of the individual made the computer industry. At *TCJ*, we have never forgotten that.

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## EAGLE COMPUTER USERS GROUP

The Eagle Computer Users Group is one of the few remaining support groups for users of Eagle computers, both the CP/M line and the later 1600 and PC models. Because Spellbinder was bundled with Eagle computers, ECUG is also a Spellbinder users group. Anyone who acquires an Eagle computer is urged to get in touch with ECUG by writing Lambda Software Publishing, 720 South Second Street, San Jose CA 95112-5820, or phone Morgan Thielmann and Associates, (408) 972-1965. Do not use the old P.O. box, which will soon expire and not be renewed.

### Meeting place

ECUG meetings are held at Tandem Computers Incorporated, 10435 North Tantau Avenue, Cupertino. To get there, take 280 to the Wolfe Road exit; turn left at Vallco Parkway; turn left at Tantau; go over the bridge; and turn in where it says "Tandem Computers" on the left. Try to arrive on time, so that I can let everyone in at once, on months when Tandem has not arranged for a guard.

Meetings are the second Saturday of every month, from 9 A.M. to Noon. The remaining 1991 meetings will occur on September 14, October 12, November 9, and December 14.

### July 13 meeting

I put my system into the car the night before the July meeting, so that Deborah and I could get up early, jump into the car, and go to the Foothill flea market before the ECUG meeting. It worked; for the first time, I got to the far end of the layout! Interesting stuff at the flea market included a Morrow computer for \$60 (I already have two of them), a Unix system for \$70, and a LaserJet II for \$700. There were also a large number of Televideo 950, Wyse 50, and Televideo 970 terminals for about \$10 apiece. I bought a working H89 for \$50 and the K&R C book and Niklaus Wirth's book on Modula-2 for \$5. I also got a bunch of old CP/M magazines, some of which I didn't have already.

When we got to the meeting, there was no

Tandem guard, though there had been last time, and I thought it settled that there would be. I let in the ECUG people and the SJSU class, and had them sign in at the desk. Since my card key didn't open the room where the San Jose State class was meeting, I called security and had them send over someone to let the members of the class into the room.

Both the room we normally use and the room we fall back on were occupied by salesmen and executive types holding meetings. We held the meeting in one of the two remaining conference rooms. Present were Bob Vinisky, Dick Dethlefsen, Dave Banoff, Bob Kowerski, Shirley Welch, David McGlone, Ken Thomson, Jack Morse, Gairiel Gandrud, Sena, and Bill Bradley.

Bob Vinisky demonstrated using a Televideo 950 as a terminal for an Eagle, via the Z-System software ZREMOTE. This works well, and allows full use of the fancy features of the Televideo terminal, such as blinking characters, underlined characters, both reverse and dim video, and graphic characters such as the corners of boxes. In fact, we joked that you could take the Eagle hardware (minus the keyboard and monitor), put it into one of the Televideo computer cases that seem to be so common around here, hook up a Televideo terminal, and set your startup alias so that CP/M brought up NZCOM, and NZCOM ran ZREMOTE. The result would look just like a Televideo 801, but would still be an Eagle.

Bob also attempted to use ZREMOTE to tie his Eagle and Ken Thomson's together; this did not work, for some reason.

There was some discussion of a format-translation program for the Eagle, and other computers running NZ-COM; Bob has been asking Joe Wright questions, and otherwise investigating the feasibility of writing such a program!

Ken Thomson's Eagle has a new CRT, which Ken installed; see the article below, which Ken gave me at the meeting.

### Potluck/picnic rescheduled

I didn't give everybody enough notice of our potluck, and everyone at the July meeting had previous commitments. So we're trying again on October 12. See you there? It's at Bill Bradley's place, 574 Belfast Court, Sunnyvale CA 94087, phone (408) 737-1171.

### Security guards at Tandem

In the week after the July meeting I called security and complained about the guard situation, also that no one ever returned my messages and we never know whether there will be a guard until we get there. We are welcome to continue meeting at Tandem, but there will be no guard unless someone pays for one. Tandem says it's OK if I let people in and sign them in, which I will do whenever there isn't a guard.

At the August meeting there was a guard, Hal who used to be the regular when we met at Building 55. Apparently SJSU has the money to pay Tandem for a guard to let them in. So if there's someone at the desk when you arrive, he will tell you what room we're in. If there's no one, you may have to wait a few minutes for someone to come let you in. Sign in either way.

### August 10 meeting

The Foothill flea market this month demonstrated how unpredictable such events can be; this time I was looking for a Televideo 970 terminal, and this time there were hardly any terminals at all. Nevertheless, I picked up a Basis 108, a Philips P2000, an assortment of full-height 48- and 96-tpi disk drives, and a whole box of CP/M software packages I didn't have already, mostly in Osborne and Kaypro formats. Fortunately, I've been organizing my computer room. I actually found room for all this when I got home, as well as the Kontron Psi 80D Rudy Stefenel didn't want to give house room any more.

Despite not being announced in advance in this magazine (I hope not because it was not announced), the meeting was well attended.

Bob Kowerski, Dave Banoff, Shirley Welch, Ken Thomson, Bill Bradley, Gene Chapin, Jack Morse, Dave Honkala, James Honkala, Gaiel Gandrud, Bob Vinisky, David McGlone, Bill Josephson, Jerry Davis, Rudy Stefenel, and Butch Slawinsky were present.

Bob Kowerski talked about the new features of MS-DOS 5.0, and who will gain by upgrading from earlier releases of that operating system. David Banoff went over the features of the new version of Norton Utilities and NDOS, its COMMAND.COM replacement. I found this particularly entertaining. Except for features designed particularly for PC hardware and PC memory management, almost every other feature is something we already have in the Z-System. In fact, most of those features go all the way back to ZCPR 3.0 (1985)!

### A correction

On Textra, which I called a desktop-publishing package last issue, Jerry Davis, who uses it and talked about it at the June meeting, says that it is not a desktop-publishing package, but a word processor that verges on being a desktop publisher. OK, Jerry?

### September 14 meeting

9:00 Meeting begins.

9:30 No program currently scheduled. Bring your problems, your questions, and anything interesting you've discovered lately.

12:00 ECUG meetings ends.

### ECUG library

The contents of the ECUG Library reside at the editor's house. Members may borrow them between one meeting and the next. Either call me evenings at (408) 293-5176 and ask me to bring them to a meeting, or phone to arrange a time to come over and borrow them.

Donated by Dave Banoff: the May, June, and July 1991 issues of *README.DOC*, newsletter of the Orange Coast IBM PC User Group.

# SAGE MICROSYSTEMS EAST

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  - Backgrounder ii: CP/M-2.2 multitasker (\$75)
  - ZSDOS/ZDDOS: date-stamping DOS (\$75, \$60 for ZRDOS owners, \$10 for Programmer's Manual)
  - DosDisk: MS-DOS disk-format emulator, supports subdirectories and date stamps (\$30 standard, \$35 XBIOS BSX, \$45 kit)
  - JetFind: super fast, extremely flexible regular-expression text file scanner (\$50)
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### ECUG software libraries

ECUG has two software librarians. Anyone seeking CP/M or Z-System software should contact Ken Thomson, 71 Rosenkranz Street, San Francisco CA 94110, phone (415) 648-7550. For PC (MS-DOS) software, our librarian is Jack Morse, 7390 Rainbow Drive, #1, Cupertino CA 95014, phone (408) 252-6103.

Please note that, as ECUG is no longer a corporation, the officers of the club do not wish to handle money (except those, like Shirley Welch and myself, who have businesses and do so as part of the business). Therefore, when you request disks from Ken or Jack, send them the floppy disks and the postage to mail them. They will copy the software you request onto your disks and mail them back to you. That way no money changes hands, as would be the case if they continued to charge a fee per disk.

CyberSoft, Inc. sent us the California edition of the shareware version of StatMaster. The shareware version contains demographic, economic, and geographic statistics for a given state. The registered version includes the latest 1990 census data (adjusted or non-adjusted? The cover letter doesn't say). If interested, contact CyberSoft, Inc., 1820 W. Drake Dr., Suite 108, Tempe AZ 85283-4312, or phone Ed Prestwood at (602) 491-0022.

Daltonware (P.O. Box 817, Mexico MO 65265) sent us their NFL Football Guide for 1991. It is available for Apple (II? GS? Mac? It didn't say), IBM PC and compatibles, Commodore 64, and Commodore 128.

Intelligent Educational Software also sent us a disk of shareware programs. No further information was included. Perhaps Jack can tell us more after examining it.

## Changing the Eagle CRT

by Ken Thomson

To paraphrase Henry Ford, Eagle said that you could have any color cathode ray tube (CRT) just so long as it was green, and that, in my opinion, is uncomfortable on the eyes. I now have CRTs installed in my Eagles with very attractive, light blue phosphor. (The phosphor is the chemical that coating the inside of the CRT, which glows when struck by electrons. Different phosphors glow in different colors.)

Rudy Stefenel, another Eagle user who has installed CRTs professionally, has told me that electrically, almost all monochrome CRTs are identical, and that the trick is to find one with the same measurements.

The Eagle uses an open frame, Motorola model EIA-185 monitor with a 12ST6158P31A-2 CRT and a #24D25687B16 yoke. Usually, the P31 ending indicates a green phosphor, LA indicates an amber and a P4 indicates a paper-white phosphor.

Also, the Eagle uses a CRT with a front to back

dimension of 95" and a neck diameter of 1.125". If you find a CRT that answers both these points, then it is worthwhile to check the rest of the dimensions.

The Eagle CRT measures 11" in width, 8-7/16" vertically, and 12-15/16" diagonally. Next, hold a ruler against the center of the face of the tube to measure its curvature. Hold the ruler so that the dimension is equal at each end and it should measure 5/16" vertically, 7/16" horizontally and 3/4" diagonally.

If everything checks out so far, you're now ready to install it and see whether it works OK.

### Installing the CRT

**UNPLUG THE COMPUTER AND WEAR EYE PROTECTION!** The CRT carries a high electrical charge, so unplug the computer and leave it alone for a few minutes. Also, there is a vacuum inside the CRT, and if the CRT is cracked, it can implode violently – so wear

safety goggles.

1. Gently pry loose one corner of the front bezel and remove it and the silk glare-protection screen.
2. Using a ¼" wrench, remove the left and right front screws that were covered by the bezel. Also remove the three Phillips screws from the back of the case. On Eagles IV and V, make a map showing how the power supply in the top cover is hooked up correctly, and set it aside for now.
3. Attach one end of a 2-foot jumper wire with alligator clips to the monitor frame, and the other end to a thin-bladed, plastic-handled screw driver. Slip the blade under the rubber cup on the left and wiggle it around. This will discharge any residual voltage at the CRT's cathode.
4. Using long pointy-nose pliers, gently squeeze the metal clip inside the rubber cup and push it aside.
5. Remove the rear plug from the CRT.
6. Loosen the screw on the yoke and twist and slide the yoke as far back as it will go.
7. Remove the 4 screws at each corner of the CRT, then gently remove it and set it aside.
8. Slip the yoke over the neck of the replacement CRT, set it in place and start the four screws. Then, pressing down on the top of the CRT, tighten them.
9. Twist and slide the yoke as far forward as it will go. Do not tighten the screw yet.
10. Attach the rear plug, then re-install the cathode rubber cup. Jiggle this to make sure it is in fully and firmly.
11. Temporarily install the front bezel, boot up Spellbinder, and load a file that you have previously created under the file name SCRNFILL. This is merely one screen of 23 lines with 80 characters in each line.
12. Gently rock the yoke until the lines are perfectly level, then tighten the screw.
13. Play with the two metal tabs at the back of the yoke to center picture the way you want. Adjust horizontal width control (on left side) to suit. Adjust any other variable resistors to improve picture, and finish up with the focus control (large round drum).
14. Lastly, before packing the green CRT away as a spare, make two copies of the variable resistors and their functions as shown on the map on the top of the original CRT, keep one with your records, and using invisible tape, attach the other to the inside of the top cover where it won't interfere with cooling.
15. If everything is OK, remove the bezel, hook up the hard disk's power supply, and fasten the top with the three screws in back and the two in front.
16. Install the glare screen and bezel.

On my replacement I used the 12ST5427A CRT, with the light blue phosphor that I scrounged from two IBM dumb terminals (model numbers 4979 dating from 1977 to 1982) that I found in a dumpster. One had a Motorola EIA-185 monitor and CRT; the other was a Sylvania. DO NOT use the yoke found with IBM equipment! The number is the same as Eagle's (except it ends with a B15), but it will blow the Eagle's 2.5 amp fuse.

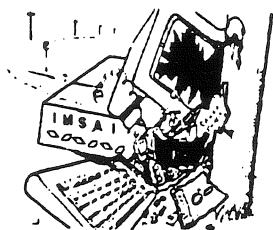
Doing things this way allows IBM equipment to do what it does best: serve as a parts car for a really great computer!

A little humor . . .

Book found at Stacey's: *Unix curses explained*

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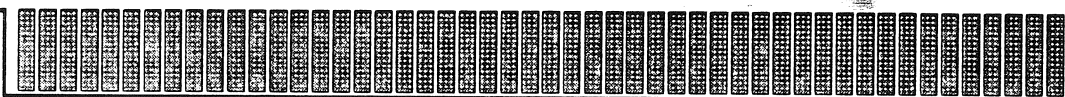
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## EAGLE HARDWARE BULLETIN

### MEMORY ERROR LOCATION DESCRIPTION

for Eagle Spirits, PCs Plus and Turbos  
Eagle Service Bulletin 103 – July 9, 1985

*Editor's note: Back when Eagle Computer was still in business, they maintained a tech support bulletin board, on which were posted a number of Eagle hardware bulletins such as this one. I print them here as a service to ECUG members with Eagle 1600s and Eagle PCs. We will print the others in months to come, thanks to David Banoff, who gave them to me on disk.*

*The phone numbers which begin this month's bulletin have long since been discontinued, so don't call them.*

**Eagle technical support phone**  
(714) 895-1759

**Eagle technical support bulletin board**  
(714) 891-3037

#### Overview

This description applies to RAM errors reported by BIOS version 2.4. Note that the T-Test EPROM (U1103) should be removed from the PC Plus and Spirit when BIOS version 2.4 is installed.

RAM diagnostics are entered by striking T immediately upon powering up or resetting. This diagnostic will test banks of RAM found by the BIOS memory sizing algorithm. If less RAM is reported than is known to be installed, reset the system and strike M to isolate errors in all possible banks of RAM up to 704K.

The RAM diagnostics are entered automatically if less than 64K of RAM is detected by the BIOS memory sizing algorithm.

#### Typical error message

The following error message will be used in the discussion that follows:

RAM FAIL  
BANK 2 BYTE L BIT 80

Bank refers to 64K bytes of memory, where the lowest bank is BANK 1. Byte L or Byte H is useful information only for Turbo or 1600 units. Bit XX indicates particular RAM chips which may be involved in the error.

#### General discussion

The RAM diagnostic will isolate bad RAM chips and also catch errors due to open address and data lines. A RAM error involving certain bits in a bank may require address and/or data logic repair rather than only RAM chip replacement. Rarely, the diagnostic will report certain RAM chip failures incorrectly due to the nature of the failure.

Decode the Bit XX information by interpreting XX as a hexadecimal number and converting it to binary. The 1s in the binary version of the XX number indicate which memory cells in the bank had errors.

In the example above, 80 of Bit 80 is translated to binary as 1000 0000 and indicates that data bit 7 (most significant bit) failed.

#### Memory-error locations for PC Plus and Spirit computers

Mainboard RAM can be installed in positions U301 to U308, U401 to 408, U501-U508, U601-U608. U301-U308 is Bank 1. U401-U408 is Bank 2. When 256K of RAM is on the mainboard, U501-U508 is Bank 3 and U601-U608 is Bank 4.

Sockets U501-U508 and U601-U608 can accept 64Kx1 or 256Kx1 chips, depending on whether J13 is installed and how positions 1-4 of SW801 are set. When 256Kx1 chips are used in these sockets, U501-U508 are Banks 3-6 and U601-U608 are Banks 7-10.

Therefore in the above example, the memory cell which experienced an error was in position

# Ampro Z80 Little Board/PLUS

## by Davidge

### FEATURES

Little Board/PLUS is a complete 8-bit, Z80-based single board microcomputer. It includes all the circuitry, software, and firmware necessary to construct a functional CP/M-based computer system. Some of the main features are:

- 4MHz Z80A 8-bit microprocessor
- 64K bytes dynamic RAM, 4K-32K EPROM
- Two spare counter/timer channels
- Floppy controller capable of controlling from one to four single- or double-sided, single- or double-density, 40- or 80-track mini or micro floppy drives.
- Two RS232C serial ports
- One Centronics printer port
- SCSI/PLUS multi-master I/O expansion bus:
  - SASI Disk/Tape controller compatible
  - ANSC X3T9.2 (SCSI) compatible
  - Multiple Little Board networking
  - Simple bi-directional I/O (17 lines)
- Mounts directly to a 5¼" disk drive
- Minimum external components
- Power connector and voltages compatible with 5¼" disk drive.

### FUNCTIONAL DESCRIPTION

#### **CPU, Memory and Timing**

The heart of the Little Board/PLUS is a Z80A 8-bit microprocessor operating at 4 MHz. All system functions are based on a single 16 MHz master clock. System RESET is provided in two ways: upon power-up and via an external RESET switch.

Two types of memory are present: EPROM and RAM. A 28-pin EPROM socket provides from 4K to 32K bytes of firmware space. Jumpers are used to program the socket for a 2732, 2764, 27128, or 27256 type EPROM. The EPROM can be enabled and disabled by software.

System RAM consists of eight 64K x 1 bit dynamic RAM devices. Control circuitry for the RAM is entirely digital (no one-shots or R-C components) and provides a high degree of reliability.

A Z80 Counter Timer Circuit (CTC) provides four programmable counter or timer channels. Two of the CTC channels provide the baud rate used by the two serial I/O ports. The other two CTC channels are available for use as programmable timers in applications programs, for real-time clock functions, etc.

#### **Serial Ports**

A Z80 Serial Input/Output Controller (SIO/O) provides two fully programmable, asynchronous serial ports. Each channel has four of the standard RS-232C signals: TxD, RxD, RTS, and CTS. These signals are sufficient for interfacing most serial printers, modems and terminals.

In those cases where other signals are required for one of the serial ports, handshaking signals can be borrowed from the second port (if not needed by that port). Polarity and use of the handshaking signals is defined by the software.

Programmable baud rate clocks are supplied by the CTC for baud rates up to 9600 baud. Additional circuitry provides baud rates of 19.2K and 38.4K baud, for Port A only. Since the two serial ports are otherwise identical, either can be programmed as a terminal, modem, serial printer, or other RS-232C interface.

#### **Parallel Printer Port**

The parallel port provides the 10 essential signals of a Centronics-type printer interface: Data Bits 1-8, Data Strobe, and Busy. Both the Data Strobe (output) and Busy (input) handshake protocols are defined by software.

#### **Floppy Disk Controller**

A Western Digital 1772 floppy disk controller device provides all the functions required to interface with standard 5¼" "mini" - and most 3½" "micro" - floppy disk drives. The 1772 includes the following capabilities within a single LSI device:

- Digital phase locked loop
- Digital write precompensation
- Motor on start/stop delay
- Software controlled step rates

Timing for the floppy disk interface is derived directly from the 8 MHz system clock, without delay lines, R-C time constants, or one-shots. This again results in a very high degree of system reliability.

#### **SCSI/PLUS Multi-Master Bus**

A 50-pin "ribbon cable bus" interface which meets the specifications for the popular Small Computer System Interface (SCSI) - formerly called "SASI" - provides a general purpose multi-master I/O expansion bus. All SCSI Initiator and Target functions are fully supported, including bus arbitration and disconnect/reselect.

In addition, Little Board/PLUS supports the initiator function of AMPRO's innovative SCSI/PLUS extension to SCSI. This allows connection to up to 64 SCSI/PLUS Target devices, rather than the usual eight device limit of SCSI.

Applications include both direct and shared use of a wide variety of controllers and devices, as well as tightly coupled Little Board networks. For example, one or more Little Boards, a SCSI Winchester controller, and modules providing calendar/clock, serial port expansion, RAM disk, etc. might all coexist on the same SCSI/PLUS bus.

The 17 bidirectional I/O signals of the SCSI/PLUS interface may also be used as general purpose, software controlled digital I/O lines, without SCSI compatibility. In this case, the boards's 8-bit SCSI bus ID input register can serve as an additional 8 bit input port.

# OEM PRICE LIST

## AMPRO Z80 LITTLE BOARD

Manufactured under license by Davidge

### HARDWARE

A60060-2	Ampro Series 1B Little Board Plus Computer	250.00
A60060-3	Ampro Little Board without SCSI	240.00
A60156	Project Board/80	75.00

### SOFTWARE

A60101-1	CP/M and ZCPR3 (5¼", 40 track disks)	65.00
A60101-2	CP/M and ZCPR3 (5¼", 80 track disk)	65.00
A60101-3	CP/M and ZCPR3 (3½" disk)	75.00
A60103-1	CP/M, ZCPR3, BIOS Source (40 track disks)	100.00
A60103-2	CP/M, ZCPR3, BIOS Source (80 track disks)	100.00
A60103-3	CP/M, ZCPR3, BIOS Source (3½" disk)	110.00

### LITERATURE

A74010	Little Board/Plus Technical Manual	15.00
A74025	Project Board/80 Technical Manual	10.00
A74006	Z80 System Software User's Manual	15.00
A74015	Z80 Hard Disk Software User's Manual	15.00
A74022	Z80 Hard Disk Backup Software Technical Manual	10.00
A74011	CP/M 2.2 Manual	15.00

### REPAIR SERVICE

Flat rate repair for any serviceable Little Board	75.00
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### VOLUME DISCOUNTS

10-24 units - 5%; 25-49 - 10%; 50-99 - 15%; 100+ - 20%

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D7 (as marked on the PCB), or in other words, socket U408.

#### Memory Error Locations for Turbo Computers

The Turbo mainboard can accomodate either 256K or 512K of RAM on the mainboard. Because the Turbo utilizes an 8086, mainboard RAM is laid out in 16-bit wide words. Each column (16 chips) of RAM is 64K of 16-bit words or 128K of 8-bit bytes. Thus column A rows 0-15 are Bank 1 and 2, column B rows 0-15 are

Bank 3 and 4, column C rows 0-15 are Bank 5 and 6, and column D rows 0-15 are Bank 7 and 8.

Each column consists of a Low and a High byte. The Low bytes in a column are in rows 0-7, and High bytes are in rows 8-15. The diagnostic indicates the failed byte (Low or High) by BYTE L or BYTE H.

In the example above, the failed byte is in column A row 7.

## ALL I EVER NEEDED

I had a little Timex with 64 K memory,  
An 80-column printer and some software, don't you see.  
It was all I ever needed, though it loaded awful slow,  
But the company up and died before the disk drive made a show.

So then I bought an Eagle with dual drives and CP/M;  
It was all I ever needed, but the company died again.  
Either one was all I needed, but then maybe I'm a jinx.  
Each company I've picked so far does well . . . and then it sinks.

Now the next one that I buy will have compatibility,  
So I'm giving a fair warning to the whole darn industry,  
That if my batting average is a thing that one can trust,  
Then poor old IBM may be the next to bite the dust!

Ernest Shields  
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Ionia MI 48846  
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### Art Credits

The picture of the Zentec Zephyr keyboard on the cover was executed by Deborah Snavelly on her Macintosh IIsi (a great machine to play Reach for the Stars on).

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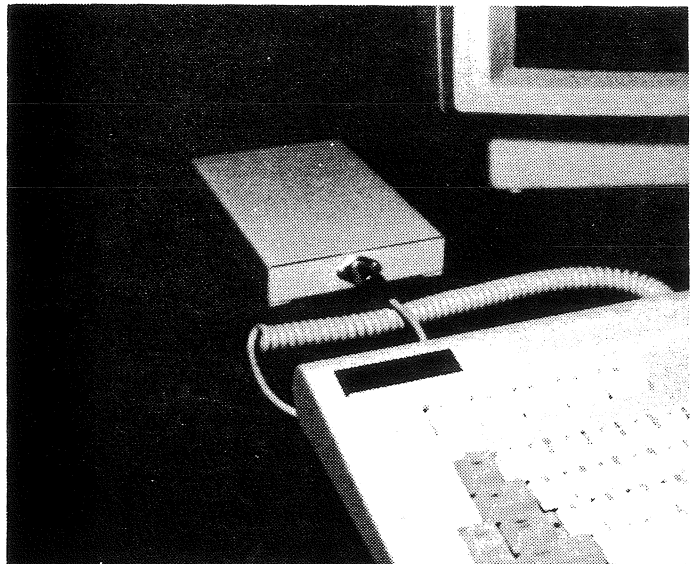
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- **Reset-out** KEYUP reset of host computer using (Alt-Cnt Del).
- **Bell** KEYUP bell driven by host computer.
- **Type Ahead Buffer** Requires ACK signal from host computer.
- **Serial Data** KEYUP can transfer serial data to host computer at 300, 1200, 4800, and 9600 baud. TTL signal level.

The above functions are activated in neg. or pos. TTL logic on the DB-25P connector.

#### DM-6 FOR APPLE II

- Cable ready to plug directly into Apple II Keyboard connector.
- Reset-out.
- Type Ahead Buffer options available with hardware jumperson Apple II PC board.