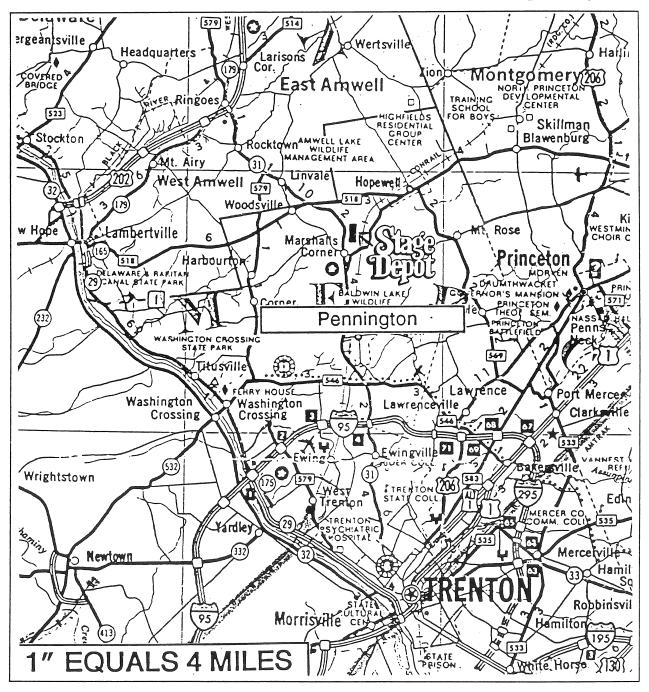# The Z-Letter

Newsletter of the CP/M and Z-System community

Number 20 April/May 1992

1" EQUALS 4 MILES

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RANDOM ACCESS

Report on the Trenton Computer Festival

The 17th Annual Trenton Computer Festival took place April 11 and 12 at Mercer Community College, New Jersey. Besides the computer flea market going on all weekend in the parking lots, many programs of talks and seminars were held at the same time in different rooms on campus. Our CP/M Conference was held in rooms 170 and 172, across a hall from each other in the Math and Science building. The original schedule was:

10:00 a.m.	CP/M Conference
11:15 a.m.	Introduction to CP/M and Z-System
12:30 p.m.	T3MASTER/T3SERVER
1:45 p.m.	ZEX
3:45 p.m.	Banked/Portable BIOS and ZSDOS update
5:00 p.m.	CP/M Conference

About the time the program was starting, I was getting off my plane in Philadelphia airport. By the time Jay Sage was starting his talk about CP/M, what it does, how it does it, and how the Z-System works, I was checking into the Stage Depot Motel. The Stage Depot is too nice to match my image of a motel, with its spacious grounds, nice rooms in large, attractive buildings, including meeting rooms and restaurant. Between 30 and 40 of us had reserved rooms as part of Z-Fest; the manager had no exact figure for me, but the Motel was completely out of rooms. I had reserved a single room, but they were out of singles, so they put me in a double. They did not charge me for a double, however, and the manager himself suggested that if any of our party did not have a room, I could let them use the other bed in the room. I appreciated their attitude.

John Anderson, who runs Z-Node 16 in Albany, New York ((518) 489-1307), showed up with a friend just in time to give me a ride to the Festival. In John's trunk I saw the first of the four YASBECs I would see that weekend, in a case with a 3½" disk drive, and a Wyse terminal.

Frequent shuttle buses ran from the outlying parking areas to the campus. Jay's talk was going on in one room, while a number of people caught up and talked shop in the other. Practically the first face I saw was Joe Wright, who gave me one of his new cards, with his P.O. Box in Virginia Beach.

Bruce Morgen was preparing for his T3MASTER/T3SERVER talk, and talking with Joe about selling the product; Joe has the rights, from Echelon. I asked Bruce about the status of the PC T3SERVER, as I had visions of putting away my 6AX's monitor and keyboard, and running 22DISK, AnaDisk, and Digi-Duit! from the TeleVideo terminal attached to my SB180FX. There has been no demand for that, Bruce says, hence he hasn't worked on it. He also hadn't thought about the problem that arises when a PC program asks you to press a non-ASCII key on the PC keyboard, such as a function key. If you want to see the PC version of T3SERVER, let Bruce know; he can be reached through the Drexel Hill (Pennsylvania) RCP/M, (215) 623-4040.

Ian Cottrell and some of his family had come. Ian gave me the April 1992 revision of the list of Z-Nodes and other bulletin boards. Bill Tishey gave me version 1.4 (March 1992) of the list he keeps and publishes of programs for CP/M and the Z-System. The list gives, for each program, the most recent version, whether it supports CP/M or the latest version of ZCPR it supports, which Z-SUS disk it's on (if any), its size in kilobytes and records, its CRC value (so you can make sure your copy is good), the name of the library in which it's found (if any) and the size of the library, the date issued, the author, a brief description, and a few other bits of information as known. It can be downloaded from any Z-Node.

I exchanged compliments with Chris McEwen, publisher of *The Computer Journal*. Chris had some bitter words about how hard he's worked to expand *TCJ*, in particular the CP/M coverage, without seeing an increase in the number of CP/M subscribers. I really recommend that everyone using a CP/M or Z-System machine subscribe to *The Computer Journal*. If we don't support those who do things for us, whether it's publishing magazines, writing programs, or keeping other people's programs available, we will have no one but ourselves to blame when they get discouraged and quit. See the address and subscription information for *TCJ* in this issue's RESOURCES section.

Paul Chidley not only had a YASBEC up and running, but had brought the new memory boards, video boards, and backplanes. I bought a memory board and a video board, and I'll publish the materials list and schematics when I have the space to do so. Paul was using these boards in his YASBEC, with an attached color monitor, to display GIF files (a kind of graphics file popular in the PC world). He was also displaying (in black and white) the output from a

video camera, freezing selected frames such as the lion on the sweater I was wearing, the memory board, etc. The program to store such images as files is not quite finished, he says. Paul says he has about 15 YASBEC boards left.

Jay's talks were interesting, and so was Bruce's. It's a shame we don't videotape such talks for the benefit of those who can't attend these things. There was standing room only for Hal Bower's talk about the banked BIOS he has developed, with the rest of the ZSDOS crew, for the YASBEC and other Z180 computers. No doubt there will be an article in *TCJ*, but here's what my notes say:

The name of the new product is B/PBios, for Banked Portable BIOS. The initial version was unbanked, but the banked version is now in final beta testing, and should be available soon, with a manual similar to the one for ZSDOS.

A little background for beginners: An unbanked CP/M or Z-System consists of 64K of memory, from 0000H to FFFFH in addresses. The first 100H consists of buffers and reserved space; the BIOS, DOS (BDOS in CP/M, ZRDOS, ZDDOS, or ZSDOS in Z-System), and command processor (CCP in CP/M, ZCPR in Z-System) are tucked at the top of memory, with a resident system extension, if any, just below them. The space between 100H and the beginning of the command processor is the TPA, or transient program area, where programs like Spellbinder or SuperCalc run while they're being used. Normally, these programs can replace the command processor while running, which gives them a little bit more space; but if there is an RSX being used, it locks the command processor in place and does away with this option. All this has to fit in 64K, leaving not a lot for a program you want to run. A full-up Z-System with its various additional segments can cut that space down even further.

Under B/PBios, the memory in use at any one time is divided into two banks, or segments of memory. The lower 32K, 0H to 7FFFH, is the transient bank, which the operating system will swap out as it needs to. The upper 32K, 8000H to FFFFH, is the resident bank, which is never swapped. The top of the resident bank has a reserved space for doing things like keeping track of what banks have been swapped, etc. Below that resides only the absolutely necessary parts of the BIOS, DOS, and command processor.

Another 32K, called the system bank, contains the same first 100H as the transient bank, plus the rest of

the BIOS, the rest of the DOS, the rest of the command processor, and the hard-disk allocation vector. Putting all this in the system bank, which is swapped in as needed, gives two big advantages. First, the actual TPA can be very large, such as 62K; impossible on an unbanked system. Second, the allocation vector can take up all the system bank not used by the other components, which means truly enormous hard disks, such as 700 and 800 Mb, can be installed just by increasing the size of the allocation blocks slightly.

There can be as many other banks of memory, for use by programs or as RAM disks, as there is memory in the machine. Presumably there is some limit to how much memory can be installed, but I forgot to ask. I'm sure the manual will clear this up.

The banked BIOS itself has a standard header which identifies itself as B/PBios. At least some of the functions of the environment buffer are usurped, which probably explains some of the software difficulties CCP/M had with their YASBEC, but I'll let Hal clear that up. The banked DOS, ZSDOS 2.0, does all the parsing of file names, and has functions to return the free space on a disk, and the environment address. For the banked command processor (ZCPR 3.5?) no RCP segment is needed; since the old limits of how big the command processor can be are abolished, anything you like can be put into the command processor itself. The one on Hal's YASBEC had *lots* of commands resident.

B/PBios is portable in that, once certain hardware features of a given machine have software routines written to handle them (what the PC and Mac people call drivers, I presume), the rest of the operating system, with its utilities, are independent of any machine. These utilities include BPBUILD or INSTAL12, to select features of a given system image; BPCNFG, to configure the system; LDSYS or MOVSYS, to install a given system image as the current operating system; BPSWAP, to force swapping of the banks; INIRAMD, to initiate a RAM disk in a bank; ZSCFG2, to configure the DOS; and IOPINIT, to initialize the IOP segment.

One exciting utility is HDIAG, which queries a SCSI hard disk to get from it the information about itself. Plugging this information into some of the utilities already mentioned, and then loading the system image thus created, means that it becomes very easy to add or change the hard disk in the system!

Just as exciting (and these should work even in a

system without extra memory) are EMULATE and BPFORMAT. EMULATE is a program to make your disk drives emulate the format of another machine, similar to Uniform, 22DISK, XBIOS' MAP, and other such programs. Such utilities, by their very nature, work only with one BIOS, and have to be rewritten for every BIOS. Since this BIOS is portable, adapting it for all our machines could give us, at long last, something like a universal Uniform. Currently EMULATE's syntax is **EMULATE A:4** to set, for instance, drive A to format 4 in a list of formats. Hal's current list of formats is still relatively short, and in no particular order. I have suggested that he get in touch with Sydex, and cut some deal with them whereby he gets the format information they have, and use their names for the formats. Then setting drive B to Eagle III format could be as simple as **EMULATE B:EAG2**. The other utility, BPFORMAT, initializes a floppy disk in a specified format.

Currently B/PBios is available for the YASBEC, the SB180 (but not the SB180FX), the Ampro Little Board, the CompuTime S-100 system, and the Teletek. Hal and I are talking about him sending me one of his SB180 boards and a SCSI board, so that I can use them in place of my SB180FX while lending it to him, so that B/PBios can be ported to the SB180FX. It would be interesting to see whether B/PBios can be ported to a Z80 machine that has extra memory, or whether it truly is Z180/HD64180 specific. I have some extra PMC Micromates with CP/M 3.0 and 128K memory, that could be borrowed. Or maybe someone with a Kaypro or Morrow with the Westwind RAM disk installed could try porting B/PBios to it?

Future enhancements planned include adding multiple buffers and driver protocols to the BIOS; enabling the DOS to work with Backgrounder (or perhaps adding BGii-like task switching to the DOS; I wasn't clear on this); adding Joe's time-and-date NZTIME routines; directory hashing, to speed up directory searching and the space taken up by directories, in connection with really large drives; possibly a file loader, and possibly hierarchical directories.

Lee and Linda Bradley, besides arranging for the Z-Fest booking at the Stage Depot, and many other important details, took names and money for pizza that evening. Accordingly, after Hal's talk, most of us headed back to the Motel, where an evening session had been scheduled. Several computers were set up on a side table, including CCP/M's YASBEC, complete and now sporting a brand-new hard disk which

Stephen Griswold had purchased "as is" from a PC person at the flea market that day. It turned out there was nothing wrong with the hard disk except for drive selection; this led the PC zombie to think it was broken. Stephen had it formatted and running that evening. He agreed to get the chips and do the soldering on my YASBEC, if I sent him the board and some money to get started. Lee and I have both urged him to keep careful track of where he gets the parts and how much they cost, not only so I can print this information here, but so he can know what to charge other people for this service. Once he tells me he's prepared to do this, I will print his address and phone number, probably in RESOURCES.

In the corner, Bob Dean had a PC set up with Micro Solutions controllers inside, copying public-domain software for people in whatever format they requested, as he had been doing all day.

Ian Cottrell had made a little trophy for the occasion, a round marble pedestal with a Canadian coin corresponding to eight bits standing up on top, and a plaque around the side that said *Eight-Bit Hobbyist of the Year*. To suitable applause, he awarded it to Jay Sage. Jay accepted it and made some nice remarks about our whole community, and then either he or Lee Bradley suggested that each person in the room stand up and introduce ourselves. It was a great idea, and I can only plead the total failure of my journalistic instincts in not having paper and pen there to take down everyone's names and remarks. Tape recorder from now on!

I do recall that the people present were largely divided into Z-System Names, CCP/M members, and people from the local area (not that those categories are mutually exclusive). Besides those I've already mentioned, Terry Hazen from San Jose was there, and Al Hawley, sysop of Ladera Z-Node Central and author of ZMAC. Howard Goldstein was present, and was praised as being the best guy in the community at breaking other people's code and otherwise finding bugs in programs. Some people described themselves as "only a user" or "I'm just his wife," but we weren't having any of that, and they got their share of applause.

In what is fast becoming a tradition, the food was a bit of a problem at our little get-together. This time it was not the quality of the food, but the fact that the pizzas had been ordered from some place that kept delivering them two at a time. Naturally, every time they arrived, there was a stampede, and in a few seconds we were out of food again. Places that

cannot fill a large order should be honest and say so.

Having flown out on an all-night flight, I was operating on 40 hours with no sleep, so I left while the party was still going strong. The next morning, after an excellent breakfast in the motel's restaurant, I went back to the scene of the crime, er, site of last night's festivities, where many of us were gathered again for donuts and breakfast rolls. There I made sure that everyone present who wanted one got a sample copy of *The Z-Letter*, and talked to Jay Siegel about his recently-acquired Eagle (a rarity on the East coast). Then Sigurd Kimpel gave Howard Goldstein and myself a ride to Trenton, where Jay, two friends of his whose names I missed, Howard, and I went up and down the aisles of the flea market, mixing talk about Eagles with descriptions, for Howard, of what we were seeing.

I have to say that the flea market at Trenton, at least this year, is no bigger than the Foothill Flea Market, and there's more CP/M stuff at Foothill. The Z Fest is still worth going to Trenton for; besides, some things common here are rare there, and vice versa. I picked up a Royal Alphatronic computer, which I've never seen at home, for $10. Of course, I had to pay Jay back for shipping it home for me, which brought the price to about $70, but the point is that I couldn't get one at home at all.

Saturday I got a Commodore 128 for $100. Sunday, besides the Royal, I picked up a couple of vinyl records, some Macintosh public-domain games for Deborah, 100 color 5¼" diskettes for $35 (Disk & Labels To Go, Inc., Rt. 206 Eastampton Business Park, Mt. Holly NJ 08060, phone (800) 426-3303), a book of cartoons of awful things to do to computers (*The Unofficial I Hate Computers Book*, by Rich Tennant and John Barry), and an Applied Engineering Z-80 Plus card for running CP/M in an Apple II, II+, IIe, IIgs, or Franklin Ace. I bought two T-shirts with the logo of Elephant Memory Systems on them, for nostalgia's sake. And I met someone who has a warehouse full of Esprit terminals, at prices from $50 for the older model, $125 for a color model, etc.; Michael E. Connor, YMS MicroSystems, 73 Richmond Blvd. Suite 2A, Ronkonkoma NY 11777, phone (516) 737-6678.

I'm very bad with names, and I wasn't taking notes the way I should have. Everyone whom I haven't mentioned, please forgive me. I would name everyone who was there, with the city and state they came from, and a little about them, if I could. I hope everyone else had as good a time as I did, and I hope I'll see even more people next year.

New prices, format for *The Z-Letter*

In a nutshell: *The Z-Letter* will continue. However, it will be half the size, it will cost a little bit more for most subscribers, and for a least a while it will come out bi-monthly. Most ads will be replaced with a new section called RESOURCES. Please read on.

Price and format. I approached a number of printers for quotes on a *TZL* half the size that Tandem was printing, that is, 20 pages maximum. Two printers gave me a quote which allows me to print and mail the new format (of which this is the first issue) with only a slight price increase. Henceforth U.S. subscriptions are $18 for 12 issues (from $15), Canadian and Mexican subscriptions $22 per 12 issues (from $18), and other subscriptions are $36 for 12 issues (down from $45).

Business ads. I am relieved that by cutting the number of pages in half, I can hold down the price increase to so little. Nevertheless, this will have an impact on the content of *The Z-Letter*. Besides making it harder to fit in everything every month, I can no longer print full-page ads for free for the companies that still support our community. In our last issue, which was the final one in the old format, ads took up 14 pages. Obviously with the page count cut in half, the ad-page count must be cut in half, too. So what I'm going to do is this. Effective this issue, the information from the ads will be present in a much-condensed form in a new feature called RESOURCES. All actual ads, except Lambda's (hey, it's my magazine) will be eliminated. If I have an empty page or half page from time to time, I will use it to print actual ads in strict rotation. Obviously, if the companies that have been featured as ads can condense their ads down to half pages like Elliam's has been, half-pages will come up empty more often than full pages. If someone wants to come right out and *pay* for an ad each issue, I would be happy to discuss prices; but, given the modest prices and limited resources of most of the companies serving our community, I don't expect it.

Frequency of publication. Going bi-monthly is something I do with reluctance, as *The Z-Letter* is the only monthly general-purpose magazine in our community (the others are either bi-monthly, or dedicated to a particular make of computer or a particular user group, or both). Again, finances compel me. Calculation of subscription liability shows me that if I discontinued *TZL* and paid each subscriber back the unused portion of his or her subscription, it would cost about $1100. By the same

token, that is also the money remaining of what I have received in subscriptions. At the cost even in the new format of printing and postage, that will not quite cover three issues. So with the money on hand, I could either stop doing *TZL* and pay everyone back the unused subscription money, or I could do issues 20 and 21 and then go in the hole paying back all the subscribers whose subscriptions don't expire with issue 21. The problem, you see, is that the new subscription rates and the new format make *TZL* pay for itself, but I don't have the money up front. I'm still out of a job. I have some lump sums coming in from Tandem, and some credit I can use; but if I don't get the money from new subscriptions and software sales before that money runs out, *The Z-Letter* will have to fold at that point. Going bi-monthly stretches how long the money will last, and gives more time for new money to come in. It also gives me more time for programming projects, fund raising, incorporating the CP/M Museum, indexing *The Z-Letter*, and other important projects. Finally, it lets the job search go on without it affecting my publication schedule so much. A monthly publication schedule is a tight one!

If you don't like the new format of *The Z-Letter*, I will refund your remaining subscription money, either as a check, or in the equivalent amount of the products that I sell. If you are unhappy with *TZL* but still using a CP/M or Z-System computer, please consider the latter option. Since everything I sell makes some slight profit (publishing *TZL* was the sole exception), it costs me less to send you a $15 product than to send you a $15 check. Also, since I pay the authors of the various software packages I sell in advance, the royalty I pay for a given product has already been spent.

How you can help me over the hump. Lambda will continue to sell software even if *TZL* goes under, but I assume you find *TZL* worth supporting. If I'm wrong, you will show it by not giving any support, and *TZL* will fold. There are many ways you can help me get over this hump and help insure that *The Z-Letter* continues to be published:

1. Tell all your friends to subscribe. If your friends who have CP/M machines all subscribe, that will help considerably. They ought to be subscribing anyway, right? But it's important that they do so now.

2. Urge all the members of your user group to subscribe. This is an obvious corollary to the above. If you are a member of a group that all use the same machine you do, and you find *TZL* valuable, they will too.

3. Something **not** to do: don't make free copies of *TZL* issue after issue. I've been told by people I've never heard of that they have copies of *TZL* that I've never sent them. I never mind sending someone a free sample copy, and I don't mind you doing the same; I firmly believe that if I'm doing this right, the magazine is its own best advertisement. But if someone wants a copy of each issue, he should subscribe.

4. Buy something else I sell. If you've been thinking of getting back issues of *The Z-Letter*, Spellbinder, etc., this is the time to do it.

5. Renew your own subscription, especially if it will expire in the next six issues, at the new rate. If possible, renew for more than 12 issues. Remember, if I ever stop doing *The Z-Letter*, subscribers will be paid back the portions of their subscriptions corresponding to issues not published.

6. Send money. This is kind of embarassing to put in the list, but why miss a bet? Maybe you feel generous and can afford it. I wish that Lambda were incorporated as a non-profit tax-exempt organization so that I could give you a tax credit for any donation, but that's not yet the case.

7. Contribute material to the magazine. This is something any magazine always needs, whether suffering a money crunch or not. Send letters; let me know if I'm doing anything wrong, or tell me anything right I could be doing that I'm not. Write articles; remember that not everyone knows your machine as well as you do, or knows that program you like so much. Tell how you did that special BIOS modification, keyboard setup, hardware change. If you cared enough to do it, someone else is wondering how to do it, too. Send news and information about programs and machines still being sold commericially. Donations of magazines, user-group newsletters, computers, software, or anything else you have extras of, or aren't using, are always welcome for the museum and the museum's library; don't throw it out, send it to me!

Eagle V is a success!

It is with great personal satisfaction that I find myself in possession of a working Eagle V, assembled by

Jerry Davis and myself from an Eagle IV and parts from an Eagle 1630. This feat is made possible by the fact that all the CP/M Eagles have the same chassis, CRT tube, power supply main board, keyboard, and cage for containing the floppy drive(s) and/or hard disk. They differ in the following particulars:

Model	(aka)	PS	SASI	XC	HD	FDD	BIOS	Formats	TS
I	(IIE-1)	1	No	No	No	1 SSDD 96-tpi	II	II only	382K
II	(IIE-2)	1	No	No	No	2 SSDD 96-tpi	II	II only	764K
III-		1	No	No	No	1 DSDD 96-tpi	III	II & III	784K
III	(IIE-3)	1	No	No	No	2 DSDD 96-tpi	III	II & III	1. 5M
IV	(IIE-4)	2	1	1	1 10-Mb	1 DSDD 96-tpi	IV	II & III	10. 8M
IV+		2	1	1	1 10-Mb	2 DSDD 96-tpi	IV	II & III	11. 5M
IV/20		2	1	1	1 20-Mb	1 DSDD 96-tpi	IV	II & III	20. 8M
IV/20+		2	1	1	1 20-Mb	2 DSDD 96-tpi	IV	II & III	21. 5M
IVx2		2	2	2	2 10-Mb	2 DSDD 96-tpi	IV	II & III	21. 5M
V	(IIE-5)	2	1	1	1 32-Mb	1 DSDD 96-tpi	IV	II & III	32. 8M
V+		2	1	1	1 32-Mb	2 DSDD 96-tpi	IV	II & III	33. 5M

where PS stands for power supply, SASI for the Eagle SASI card, XC for the Xebec controller, HD is hard disk, and FDD is floppy-disk drive. TS stands for total storage. Note that there are only three Eagle BIOSes, and only two formats. What I call the Eagle II format is called /EAG1 by 22DISK. The Eagle III format is called /EAG2 by 22DISK.

Model names shown in **bold face** are official names actually found on Eagles and used by the original company that made them. Names in *italics* are names I've made up for configurations that are possible but not sold by Eagle itself. Note that IIE is not a model; the original models I, II, III, IV, and V were redesignated IIE-1, IIE-2, IIE-3, IIE-4, and IIE-5 later on. If you find an Eagle that says IIE on the keyboard, look at the silver sticker on the back of the machine, which will have the actual model number. Thus a machine that has a 10-Mb hard disk and a keyboard label Eagle IIE will be named as an Eagle IV or Eagle IIE-4 on the rear sticker.

Eagle manufactured and sold external hard-disk units with hard disk, power supply, SASI card, and Xebec controller contained in a unit that looked like the ones Corvus sold. Such a unit with a 10-Mb hard disk was called a File 10; with a 32-Mb hard disk, a File 40. I call it a File 20 if a 20-Mb hard disk has been installed in one of these boxes. The existence of the File 10, File 20, and File 40 means that logically identical models could be achieved in more than one way. What we might call a I/10 (TS 10.4 Mb) could be an Eagle IV with the DSDD floppy replaced by a SSDD floppy, but is more likely to be an Eagle I with a File 10 attached. An Eagle IV with two half-height SSDD floppies, or a II with a File 10 attached, might be called a II/10 (TS 10.8 Mb). A III- with a File 10 attached has all the same parts as a IV, but arranged differently. Similarly, a III with a File 10 is the same as a IV with two half-height drives (a IV+), and a IVx2 is the same whether all the parts are in one box, as Jerry and I achieved, or a File 10 is attached to a IV+. The fact that many 20-Mb hard disks are known to the Eagle hard-disk formatting software makes it easy to upgrade a 10-Mb hard disk in a IV or a File 10, or replace a broken 32-Mb hard disk in a V or File 40.

Another source of the necessary components turns out to be the Eagle 1600 series of computers. These machines were not-very-compatible PCs that Eagle made before its later Eagle PCs, Turbos, and Spirits. As Alan Wilkinson pointed out, in a letter published last issue, the 1600 series was the first PC on the market with a hard disk. Examination of the CP/M-useful parts shows both how they achieved this, and part of the reason for their incompatibility with the IBM PC. They had 96-tpi drives, known to Eagle from their CP/M series; the 1630 I dissected had a Teac 55F DSDD 96-tpi drive in prime condition. It also had a Xebec controller and full-height 40-Mb Rodime hard disk completely compatible with the hard disks used in an Eagle V!

Only two hardware modifications were necessary to replace the Xebec controller and hard disk in my Eagle IV with the ones from the 1630. Both involved power connections; the extended that enabled the Eagle IV Xebec controller to reach the cable from the lower power supply had to be moved to the new Xebec controller, and the power connector on the

cable from the upper power supply to the hard disk had to replaced, so that it could fit down into the recessed connection on the Rodime hard disk.

Once everything was hooked up, I booted the Eagle from the hard-disk formatting and testing disk, expecting to have to format the hard disk. Not so! The 1630's hard disk was even formatted the same as an Eagle V! All I had to do was erase the files on drive C and copy CP/M to the system tracks, and my

V+ is up and running!

Presumably the hard disks in the 1610 and 1620 are 10- and 20-Mb hard disks formatted and ready for use in CP/M Eagles, and the floppy-disk drives are useful as well. Unfortunately, the 1600 series is not a source for the rarest Eagle part of all, the hard-to-find SASI board necessary to hook up a hard disk under the Eagle IV BIOS. I have some ideas about that, but let me leave it at that, for now.

SCRIPT OF THE MONTH CLUB

ZEX5 scripts with GOTO
by Jay Sage

This month we will continue our discussion of scripts for ZEX5. This script is one I developed to solve a problem posed to me by Richard Swift. He uses the program BGQUICK to load BGii very fast, without having to go thorugh its normal, complicated loading process. The pitfalls of BGQUICK are beyond the scope of this column (I recommend considerable caution), but the problem is one that occurs even when BGii is loaded in the normal way using LOADBG.

Because of limited space for code, Bridger Mitchell choose to have the DATE command and the date keyboard macro function not actually read the clock, as the similar TIME command and macro do. Instead, the clock is read only at the time LOADBG is run, and the date string is stored in the BGii swap file. Consequently, if you pass midnight without reloading BGii from scratch, the date will not be today's date. I leave my computer running all the time, so I face the problem every day.

The way to fix up the date is to go into the swap file with a disk editor and patch in a corrected string. This month's ZEX script is quite a complicated one to do just that. One of the major problems it faces is that the month is available from ARUNZ only as a two-digit numerical string and not as the name of the month. Moreover, the swap file stores the date string with a byte count at the beginning, so we have to generate the appropriate value depending on the month and day. It took me quite a while, and a lot of false starts, before this script was complete. It uses some of the techniques we learned about in past columns, such as flow control, and redirection that allows program input to come from the ZEX script.

This time we introduce the GOTO utility and ZEX script labels. Labels are created by inserting a special kind of comment into the script. Remember that a single semicolon indicates a comment that is to be included in the memory image created by ZEX. A label consists of the semicolon followed by an equal sign and then a text string. When the GOTO program runs, it takes the argument passed to it on the command line, and it scans the memory image of the ZEX script from the beginning until it finds the first matching comment. Execution of the script then continues with the next line. The mechanisms that allow the Z-System to do this are beyond the scope of this column.

The GOTO command is passed the value of the month. This saves a lot of IF testing and greatly speeds up execution of the script. In the section for each month, the cases of dates from 01 to 09 and from 10 up are treated separately. For the single digit dates, the day value is written right after the name of the month, and then the 0 is later replaced by a blank space. The character count is one less than for days with two digits.

We also introduce the default parameter command of ZEX5. The directive ^$ is followed by the parameter number and then the character string to use as the value for that parameter if no value is passed on the command line.

That's all the introduction I plan to give. The very extensive commentary at the beginning of the script *(next page)* explains what's going on.

{

File:	BGDATE.ZEX
Author:	Jay Sage
Date Created:	February 9, 1992
Last Modified:	February 9, 1992

This script inserts the current date into the BG swap file, which otherwise gets updated only when BGii is reloaded. If one leaves the computer running across midnight or launches BGii using BGQUICK, then the date becomes wrong. This script will fix it, automatically converting the numerical month into a string month and taking into account day values with only a single digit.

The script should be invoked from an ARUNZ alias which passes three parameters to the ZEX script: the month number, the day number, and the year number. Here is the alias I use:

```
        commands                    comments
   if ~bg;                     IF BGii not running
     echo BG%>ii not running;    then give a message
   else;                       ELSE
     ram:                        go to drive/user with swap file
     zex b0:bgdate $dm $dd $dy;  invoke ZEX script
     $hb:                        return to original DU
   fi                          ENDIF
```

The script assumes that several system functions are available. First, the GOTO.COM program must be accessible along the path, or you must put explicit directory prefixes in the command lines where it is invoked. Second, you must have extended flow-control processing (IF.COM) available with the VALUE option and value comparisons supported.

Before this script can be used, you must customize it to your configuration, since the BGii swap file will be stored in different ways on different machines. You have to find the drive, track, and sector where the date is stored in the swap file. I will explain how to do that in a moment. Once you have those values, put them in as the default values for the 4th, 5th, and 6th parameters below. This makes it easier for you to configure the script and also opens up the alternative of passing the values instead on the command line in the ARUNZ alias.

The drive letter is included in this script for safety, just in case the script is ever invoked manually. At least it will go to the correct drive. If the BGii swap file is not present, then the script will damage any file that happens to be residing in the place where the swap file would be. This is another reason why the script should be invoked only from an alias like the one shown above, which tests to make sure BGii is running as a way of assuring that a swap file is present.

Here is how I found the track and sector values for my swap file. I ran the BGii DATE command to see the date currently stored there. Let's say it was **February 9, 1992**. Next, I logged into the drive with the swap file and invoked DU. I then entered the following sequence of commands, as explained by the comments.

command: g0,d
> Go to directory and dump first sector. This is where the swap-file entry should be. Here is what it looked like on my system:

```
DU3  A0? g0,d
Group = 00:00, Track = 0, Sector = 1, Physical Sector = 0
00   002121A1   54494D45   26C4C154   00000008   |.!!!TIME&DAT....|
10   02000000   00000000   00000000   00000000   |................|
20   002121C2   47202020   20D3D750   00000080   |.!!BG   SWP....|
30   03040506   0708090A   0B0C0D0E   0F101112   |................|
```

```
40   002121C2   47202020   20D3D750   01000080   |.!!BG       SWP....|
50   13141516   1718191A   1B1C1D1E   1F202122   |............ !"|
60   002121C2   47202020   20D3D750   02000080   |.!!BG       SWP....|
70   23242526   2728292A   2B2C2D2E   2F303132   |# $ % & ' ( ) * + , - . / 0 1 2|
```

Find the first entry for the BG swap file. In the HEX dump at the left, under the first line with the file name, is the list of disk groups assigned to the file. Note the first group value (03 in my case). We want to go there next.

command: g3,d
     Go to the first sector of the swap file and dump it to the screen.

command: =February,d
     Search for the string "February" (or whatever month you found when you ran the DATE command) and dump the first sector in which it is found. Here is what I get:

```
DU3  A0? =February,d
= at 09
Group = 04:00, Track = 1, Sector = 1, Physical Sector = 0
00   10466562   72756172   7920392C   20313939   |.February 9, 199|
10   32000000   002100CE   4623C92A   2ECE7CB5   |2....!.NF#I*.N|5|
20   20082169   CEAF7747   23C92163   CECD50FC   | .!iN/wG#I!cNMP||
30   2166CE7E   CB7F20EA   116ACED5   CD43CEE1   |!fN~K. j.jNUMCNa|
40   0608C9CD   51CE1323   CD50CE3E   3A121323   |..IMQN.#MPN>:..#|
50   7EF5E6F0   1F1F1F1F   CD5ECEF1   E60FC630   | ~ufp....M∧Nqf.F0|
60   1213C922   7BADCDCA   96093030   3A30303A   |..I"{-MJ..00:00:|
70   30302000   215E007E   FE4C2005   CD8ECE18   |00 .!∧.~~L .MN.|
```

The date string should begin at the beginning of a sector in the form of a length (10H = 16 here) followed by the text string followed by a terminating null (00H). Note the track (1 here) and sector (1 here) and install those values, along with the drive letter, into the first three lines of the actual ZEX script below.

command: X or ∧C
     Exit from DU.
}

```
∧$4a                    ;; Drive A set into parameter 4
∧$51                    ;; Track 1 set into parameter 5
∧$61                    ;; Sector 1 set into parameter 6

;; Branch to a section of the script for the month.  If an illegal month is
;; entered, GOTO will abort the script.

goto $1                 ;; Branch to a label for the month


;; ---------------------------------------------------------------

;=01                    ;; Label for January
if value $2 < 10                    ;; Special processing if single-digit date
| if true |
sys:du L$4,t$5,s$6,e                 ;; Log in drive, track, sector, then enter edit mode
;; A string of the form "January 2, 1992" has 15 characters (0F hex)
<a<0F>January$2, 19$3<0>   | cr |∧d ∧d ∧d ∧d ∧d ∧d ∧d ∧da | cr |∧w∧c
| end if |
else                    ;; Simpler processing for days 10 and up
```

```
| if true |
sys:du L$4,t$5,s$6,e
;; A string of the form "January 22, 1992" has 16 characters (10 hex)
<a<10>January $2, 19$3<0> | cr |\w\c
| end if |
fi
goto end
```

*Editor's note: In the interest of saving space, I am omitting the cases for the other months. They are the same as January, except that (1) the label for each case is one greater than the one before, i.e., ;=02 ;; February for February, ;=03 ;; March for March, etc. (2) the length of a string with a single- or double-digit date varies from month to month, because the names of the different months have different lengths. In the other cases, the word **January** in the example shown is replaced by the name of the month for each case, and the values 0F and 10 are changed to reflect the length of the name of each month: February (10 and 11), March (0D and 0E), April (0D and 0E), May (0B and 0C), June (0C and 0D), July (0C and 0D), August (0E and 0F), September (11 and 12), October (0F and 10), November (10 and 11), and December (10 and 11).*

```
;; -------------------------------------------------------------

;; After the swap file has been patched, show that the date has been
;; updated by running the BGii DATE command.

;=end
| " | | crlf | BGii date reset to the following: | " |
date
| " | | crlf | | | " |
```

LETTERS

The following is a copy of a letter from Paul Chidley, designer of the YASBEC, to Lee Hart, who has been expressing a healthy skepticism about all the hype concerning this new Z-System computer. It was intended to be printed before Trenton, but arrived too late for last issue.

February 26, 1992

Dear Lee,

Just got my first-ever copy of *The Z-Letter* today and saw your reply to David in LETTERS. At first I was a little ticked by your comments, but quickly realized that you don't have as much background knowledge of the YASBEC as I do (since I designed the thing). Actually, I am glad I saw your letter so that I have this opportunity to answer it and clear up any confusion. So let me answer your questions and hopefully fill in some of the Whys and What-fors of the YASBEC.

1. Who has a YASBEC that runs CP/M or the Z-System?
    I know of at least 25 people that have their YASBECs up and running one flavour or another of the Z-System. Not that many, but I only made 50 boards, and when they're gone, they're gone.

2. Where did they get the BIOS?
    Some users have a 2.2 and NovaDos system that was and is not for distribution so no need to mention it. Hal Bower and Cam Cottril were offering a non-banked BIOS and ZSDOS starter kit for $29, but by the time you read this they should have their banked version available. Hal and several beta test sites have been running the banked version with a 62K TPA for several months now. Watch *TCJ* for more details.

3. Does it run normal CP/M applications (WordStar, MBASIC, etc.) without problems or patches?
    Only if you can call CP/M applications 'normal'. WordStar, Multiplan, BDS-C, Turbo Pascal, ZMP, Infocom, etc., all run fine.

4. What disk formats does it read, write, and format?
    The software was written to support Ampro LB format. I too remember that song ... "What the World Needs Now" is another disk format or another book about Cats.

5. How does it benchmark against other CP/M machines (MBASIC Sieve of Erasthenes, WordStar search and replace, PIP read/write speed, etc.)?

If you want to send me some benchmarks I'll be glad to run them. Users of other 9MHz Z180 systems have commented that the YASBEC is much faster. This is due to the static RAM, no time wasted on the refresh cycle since the Z180 allows you to turn refresh off. My own system has also run at 12.5MHz with NO WAIT STATES and no problems but I'm waiting for something much faster due soon (I can't tell you what, but you can guess).

Hope that answers your questions. Now to explain some of the DC (Designer's Choice) on the YASBEC.

First the 9511 math chip. I agree, it runs very hot, takes lots of power, isn't really that fast, and costs lots and lots of $$$$. The reason it was added is simple, there was room and my neighbor Wayne had one. I have said to users from day one that if you don't have a 9511 don't buy one! CP/M and the Z-System do not support **any** math chip so application programs must use it directly. At least the 9511 was used a few times (as per your example) back in CP/M history so there are a few programs already written for it. And it looked better than a blank spot on the board.

As for the YASBEC not being a technological achievement, who said it was? In an earlier article published in *TCJ*, I mentioned that if state of the art was the goal I would have used a Z181 (yes that's a one-eight-one) in a PQFP package with TSOP SRAMs and such. I can assure you that I could have easily designed a screaming CP/M machine the size of a credit card since my "real" job involves trying to do that with digital cellular. Maybe even seal it in an epoxy dip case. But why? The cost of board and parts would have made the small quantity price around $400 cost, IF, and **only** if, I could find at least a dozen buyers. And no one would have learned anything about the hardware except myself. The goal was a bare board that people could build themselves yet still be the smallest and fastest CP/M machine. The small parts ended up as surface mount to save space but the major parts are nice large socketed "hackable" DIPs or PLCCs.

Z280 vs Z180: I disagree that they are almost the same price. When the YASBEC was first put to paper our local dealer had the Z280 for $52 and the Z180 for $15, quantity-one pricing. I also disagree that the

Z280 is twice as fast as the Z180. As for clock speed the Z180 was also made available in a 12.5MHz version about the same time as the Z280 and despite the history on such things I have a good rumour that a Z180 speed upgrade will come along long before one to the Z280. While the Z280 offers 16 bits, how many bits do you need to run 8 bit Z80 code? As for memory, my 64K CP/M fits just as easily in 1 Mb as it would in 16 Mb.

As for making a portable of the YASBEC, this idea too must have started elsewhere. (Maybe from David's previous letter or articles?) Power was never a consideration in the design since it was never considered a portable. A luggable maybe, but not portable. The 9511 is proof, but even without a 9511 the SCSI terminators would prohibit battery operation. How many laptops have you seen that support SCSI? None with standard terminators. Actually, I was surprised how many users wanted a portable. I don't, and therefore didn't design it to be one, and it's too late now.

I hope you didn't get the idea from the tone of this letter that I'm upset, I'm not. I like hardware discussions (arguments), that's how we all learn. I've already blown lots of $$$ for air fare to get east for Trenton, hope to see you there.

Regards, Paul Chidley

P.S. Since this is in print, I want to add a few more points on the YASBEC to readers of *The Z-Letter* in general. The board is sold semi-bare, missing the major components. I didn't want to deprive anyone of the fun of finding all the parts and assembling his own board. So much fun that Steven M. bought a second board for his 7- and 10-year-old children to build themselves. If that doesn't sound like fun, go buy a PC. I also had a few comments from people that the cost of $100 sounded a bit steep considering a 286 motherboard was also $100. Well if I had built a few million clones in an offshore shop I too would dump them on the market cheap before no one wanted one. If anyone is unhappy with their Yasbec I'll gladly give them back their money; so far, no complaints. If you don't believe that parts and boards are expensive in small quantities, go buy a PC. A backplane, memory-expansion board and a colour video board with black-and-white frame grabber are all ready to be debuted at Trenton. Hope to see everyone there.

Paul Chidley
162 Hunterhorn Dr. NE.

Calgary, Alberta
Canada T2K 6H5

I had noted it in the YASBEC documentation, which was published in **The Z-Letter,** *that the 9511 was not necessary and could be omitted. I'm sorry that I didn't mention that in my response to Lee's letter.*

The misunderstanding about the technical superiority of the YASBEC and its usefulness in a laptop indeed derives from my (ignorant) suggestions along those lines. On the first, all I said was that it was the most advanced system we've yet seen, which I believe is still the case, barring the CPU280, which I understand still has to get some bugs out. But I'll let Paul and Tilmann argue that one.

I notice a tendency to equate portable with laptop, and to dismiss machines such as Osbornes, Kaypros, and Compaqs as "luggables". I've heard this from both PC zombies and Mac freaks. The phrase "portable computer" was **invented** *to describe the Osborne/Kaypro phenomenon! They do not become "luggables" just because PC laptops have become common. A* **portable** *is a computer with a handle that shuts up for carrying; it does not run unless plugged in when you get where you're going. A* **luggable** *is a machine that can be transported, in a car for instance, but was not designed for such transportation. A small computer that can be carried around and used on the go, because it runs off batteries, is a* **laptop.** *Can we keep that straight, and resist erosion of the meaning of these terms? They are not interchangeable.*

Anyone who wants one of these $400 screaming CP/M machines Paul describes, drop him a line and let him know. If I weren't out of work at the moment, I'd send him a note myself! Will you take down payments, Paul? I'll bet there are a dozen people who'd put up $400, if the word were spread widely enough!

10 April 1992

Dear Dave:

Just received the March issue of *The Z-Letter* and thought I would respond to your editorial, "Breaking up is hard to do".

I understand your problem with printing costs for *The Z-Letter.* We have the same thing hanging over our head here at *ICC NEWS* (Ionia Computer Club newsletter). At present one of our members is able to do the printing at his job site, but with all the cutbacks and money-saving measures being instituted, this might end at any time. Like you, we would find it near impossible to continue without

raising membership dues if we had to pay for printing. It isn't an option we care to think about, but it definitely will have to be addressed in the near future.

ICC is primarily for users of IBM and compatibles, although some members do use other types of computers. For instance, although the newsletter layouts are all done on a 286 compatible, I still use my Eagle with Spellbinder regularly, and a few months ago was able to pick up a File 10 hard-disk unit from Jerry Davis. The point I'm trying to make is that we need *The Z-Letter* and the support it represents. Sure, the IBM-compatible machine is undoubtably the wave of the future, but I'm not much of a surfer and prefer a nice sunny beach to the deep dark waters of the latest Intel release.

The biggest difference I find between the Eagle and my IBM compatibles is in the productivity of the machines. Each new IBM-compatible software package I install seems to need tweaking to work properly with what is already installed. I have spent endless hours getting memory setups correct for a certain program only to find that I need a different CONFIG.SYS to run something else. This is not a problem that I have encountered on the Eagle. CP/M programs either work, or, if they don't, they were written for a specific machine other then the Eagle, so you can forget it and get down to business.

On to other things. Recently I acquired an Esprit ESP 6310 terminal that was part of a Ohio Scientific server setup. The terminal was built by Hazeltine and I have the manual, but being totally ignorant about terminals, I would like to know if this unit can be used with the Eagle, and if so, what would be needed to make the connection. The manual gives page after page of information on what the terminal can do, but nothing to speak of about connecting it to a server. It is possible that yet another manual is needed for that.

Enclosed you will find the March issue of *ICC NEWS* and a few odd sheets from previous issues. I would have sent you several back copies but it seems I gave all but the file copies away at the Home and Sport show last weekend. ICC has at present 40 members and is growing every month. The membership is as diverse a bunch of people as you could ever hope to find; teachers to irrigation contractors, ministers to used-car salesmen are all brought together by our mutual interest in computers.

As little esteem as I hold for Microsoft DOS, if it were not for the ubiquitous IBM clones that run that

miserable system, clubs like ours would not exist. Our members range in age from 16 to 72 and it is the availability of inexpensive and for the most part, compatible machines and software, that allows people with limited income to participate in computing. Ionia is a small town in a lightly populated county, yet we have 4 full time BBS's, and hundreds of computer users, all of which has occurred within the last two years.

I intend to renew my subscription to *The Z-Letter*, but will wait until you have settled on the new rate, since renewing at the lower rate might actually cause more problems in the future.

Sincerely,
Ernie Shields

See the editorial section for news on what I've decided to do with **The Z-Letter;** *the new subscription rate is reflected in the Lambda ad in this issue.*

I expect that the Esprit terminal could be used with the Eagle, but it may depend on why you want to do it. Have the video chips in your Eagle failed, or are you just drooling over the capabilities of the terminal? Bob Vinisky demonstrated a Z-System program called ZREMOTE that enabled him to hook up a TeleVideo 950 to the Eagle serial port and run the Eagle from the terminal. I have gotten the program and have to determine this week whether it will enable a customer of mine in San Pablo to run the Eagle I sold him from the TeleVideo 910 terminal he loves, or whether ZREMOTE will only run under the Z-System. I will report here what I find out. Meanwhile, you can download ZREMOTE from the nearest Z-Node and try it out.

On another subject, I'm glad to hear that your computer club is thriving, but you do wrong to attribute to MS-DOS in particular attributes of the maturing computer market in general. It is always a mistake to look back in history and assume that because a thing happened, it was inevitable that it happened. If we could rewind the tape and run it again, probably a different outcome would occur. As a case in point, if IBM had chosen CP/M for its first personal computer, instead of the pirated version of CP/M that MicroSoft had to offer, the success of the IBM PC would mean that MicroSoft would still be writing computer languages, or gone out of business, and the features in DR DOS and the Z-System would have been introduced into the mainstream of personal computing many years ago. Then people would say, as indeed they said when most personal computers ran CP/M, that "if it were not for the ubiquitous CP/M operating system, clubs like ours would not exist."

Don't forget that user groups arose before the PC came on the market; that there were more computer magazines back then than there are today, most of them devoted to CP/M machines; and that bulletin boards were invented and spread before IBM entered the personal computer market. The spread of computers to young and old that you see would have happened whether the IBM PC had ever been invented or not.

In fact, without the three-year hiatus while everything was reinvented for the incompatible 8086 and 8088 chips, things would have progressed further and faster. The introduction of the PC and its MS-DOS operating system did not help the personal-computer scene, but stifled innovation and killed off the numerous small, inventive companies that created the market. Big companies like IBM and MicroSoft are always less responsive and less creative than small, dedicated companies. They make more money, which pleases their stock holders, but they are not good for any industry which runs on brains and technical skill. They turn the industry into the static, me-too field of tiny incremental changes in a diminished range of possibilities, that is the personal-computer market of today.

April 14th, 1992

David,

First, Advanced Component Electronics (3479 Kifer Road, Santa Clara CA, (408) 730-4660, and 1534 Berger Road, San Jose CA, (408) 297-1383) list the CRT 5037 chip ($5.50) and the CRT 8002 ($10.50) in their catalog, but there are no CRT 8002s in stock at present.

Since the CRT 8002 is proving so difficult to find, does anyone out there know of the CRT 8002 being used in some other computer or TV circuit board? If so, would you please let the editor know where else it is being used? Let's hear which make and model number and type of set has them.

Wouldn't it be wonderful to learn that the CRT 8002 chip is found in the Atari 400, Atari 800XL, or the VIC 20? These sets can be picked up for two bucks at any garage sale. Unfortunately, I've already looked inside these three, and none of them has the CRT 8002.

Secondly, I liked your piece in *The Z-Letter* about the 40-Mb hard disk and card you recently picked up, and I'm looking forward to your forthcoming Eagle V. If you will be using drives A, B, C, and D for your hard disk, drives E and F for your double-sided floppy-disk drives, and I and J for your single-sided drives, then what are G and H, not to mention K, L, and M, reserved for?

Cordially,
Kenneth D. Thomson
71 Rosenkranz Street
San Francisco CA 94110

Correct, ACE has no 8002s right now, but Jerry Davis has some; check with him if you need them. Have you checked the Commodore Plus Four for the 8002? This model Commodore computer is completely incompatible with any other Commodore model, including the 64 and 128, and no one wants them. That would be a great source for 8002s, if we got lucky.

The drive assignments on the Eagle V are dictated by the BIOS used by both the IV and the V. While this BIOS could be modified, I have not done so; this experiment, and past experiments such as the Eagle IVx2, are explorations of the feasibility of finding and installing the hardware the BIOS will accept. Only with my new Eagle V+ have we finally maxed out the BIOS, which includes provisions for up to four hard-disk partitions of up to 8 Mb each, and up to two 96-tpi floppy-disk drives, which can be either SSDD or DSDD.

An Eagle IV or V normally boots from the hard disk. When it does so, drives A, B, C, and D are partitions of the hard disk. Which ones are in force depends on the actual hard disk formatted and installed. In a standard IV, A is 8 Mb, B is 2 Mb, and C and D are present in the BIOS, but

the hard disk is completely used up; the same applies for a I, II, or III with a File 10 attached. In the IVx2, or a IV with a File 10 attached, A and B split one hard disk into 8 and 2 Mb; C and D split the other hard disk into 8 and 2 Mb, also. In a V, or a I, II, or III with a File 40 attached, A, B, C, and D are each about 8 Mb. Not having tried it myself, I can't say whether a 20-Mb hard disk installed in an Eagle or a File box sets up A, B, C, and D as 8, 2, 8, and 2, or whether you end up with A = 8 Mb, B = 8 Mb, C = 4 Mb, and no drive D. It probably depends on the characteristics of the hard disk as much as the formatting software.

As for the floppy-disk drives, E and F are reserved for two DSDD 96-tpi drives, of which there can be 0, 1, or 2, depending on what's actually installed. Likewise, I and J are reserved for two SSDD 96-tpi drives. G and H are reserved for what the BIOS listing calls "Brand X"; as far as I know, this format has never been identified. Drive letters K through P (CP/M permits no more than 16 drives per system, i.e., A through P) are not used by any Eagle BIOS.

Eagles IV and V can also be booted from floppy disk, if you hold down the F key while turning it on. This allows you to format hard disks after installing them, and to replace the operating system on the system tracks, if, for example, someone used SYSGEN to copy the system tracks of a blank disk to the hard disk, a mistake I've seen three times now.

PERSONAL ADS

SB180 computer for sale
9-MHz Micromint SB180 board, 256K ram, SCSI card, cable, manuals, some disks of Z-System software. BEST OFFER. Contact Lloyd Hogan at (919) 335-1089.

Terminals for sale
VT-100 and VT-101 terminals, $45 each. TeleVideo TVI 910 terminals, $35 each. All verified in working condition. Shipping extra. Call Herb Johnson, (719) 578-0997.

Boot disks wanted!
I am a licensed CP/M distributor who will pay $5 for a copy of the boot disk for *your* computer. I wish to build a library of such disks so that I can supply working CP/M disks for all makes of machines. The disk should contain the CP/M utilities, the formatting

and other utilities that are specific to the machine, and have the operating system on the boot tracks. Send me a post card listing which makes and models of CP/M machines you have the system disks for, and I will send you $5 for each one I don't have already. David A.J. McGlone, (408) 293-5176, 720 South Second Street, San Jose CA 95112-5820.

Xerox 820-II for sale
Working Xerox 820-II in good condition, 2 DSDD 8" drives, all manuals and some internal documentation (I used to work at Xerox). CP/M, WordStar 4.0, Tutsim simulation software included. Newer keyboard, lower profile than older model. $50. Also selling Turbo Pascal, Waltz Lisp, MuMath, $30 each. Steve Trapp, 24768 Mango Street, Hayward CA 94545, phone (510) 785-0171.

MAGAZINE ARTICLES

The following magazines were received since last issue. Articles relevant to the CP/M and Z-System community, if any, are listed for each magazine. Where the address and subscription rate is not listed, see the listing for the magazine in the RESOURCES section.

Computer Monthly, February 1992: Last month's column had a typo. The contents described there for January are actually what was in the February issue; January was covered in issue 18 of this magazine. My apologies for this error.

March 1992: Nancy Blacks's "Fearless Computing" covers choosing a monitor, more on WordStar 4 for CP/M on the Commodore 128, making backup copies of your distribution software, setting a 3½" Commodore 1581 drive as drive A, and a little bit about CP/M sources; more is promised on the latter when she sorts out all her mail. Faye Deere's "ADAM News" discusses an ADAM word processor called Showoff II, and its bugs. Gary A. Edwards' "Commodore Corps" describes features to look for in Commodore word processors, but mentions none in particular. Dr. Michael W. Ecker's TRS-80 column talks about Loan, a TRS-80 amortization program. FOG contributes an article on CP/M BDOS calls, which originally appeared as a series in *TOGGLE,* the newsletter of the Tacoma Open Group for Microcomputers, a FOG Affiliated Member Organization. Also from FOG, W.H. Friedman recommends a spelling checker, VSPELL, available both for CP/M and for MS-DOS from Greenview (formerly Compuview), the makers of VEDIT, for $30. He gives no address for Greenview, but lists his own: W.H. Friedman, 11404 Norris Drive, Silver Spring MD 20902.

April 1992: "Low Cost Lasers" covers the features of the H-P LaserJet IIIP ($1595 list), IIP+ ($1249 list), and other laser printers. "Fearless Computing" skips over laser printers, with which Nancy Black is not familiar, talks a little bit about 9-pin dot-matrix printers, continues with material about WordStar headers, and finishes by hyping Sound Potentials. Sound Potentials is going out of business in June, but I don't know what the lead time is between the composing and the printing of her columns. Faye Deere's "ADAM News" gives the name and address of an ADAM ombudsman, lists the 800 numbers that three ADAM businesses have acquired, and solicits nominations for this year's ADAMCON 04 Gallery of Honor. Gary A. Edwards' "Commodore Corps" talks

about Speedscript, Superscript, and GeoWrite. Dr. Michael W. Ecker's TRS-80 column describes a database manager and a graphics program, neither of which sound like they run under CP/M. Jay Siegel's name and address are given in connection with the *FDD Newsletter* he publishes, about a disk-drive subsystem that allows some Timex/Sinclair computers to run CP/M, in this issue's "T/S News" by Bill Ferrebee.

Bulletin-board listings, user-group listings, and ads of interest appear in both issues. *CM* is $15.95 per year from Computer Monthly Subscriptions, P.O. 7062, Atlanta GA 30357-0062.

Eight Bits and Change! Volume 2, Number 4, April/May 1992. This issue features a BASIC program for calculating pi to 100 places or less, and reports on MANDELPLOT 2.3 for doing Mandelbrot calculations and displays in CP/M, running CP/M MEX on a PC under 22NICE, the construction of CCP/M's YASBEC, a review of 4DOS (a Z-System-like command processor for PCs), Z80MU Professional (a Z80 emulator for PCs), a humor column, and another article which was completely about PCs. See Small Computer Support, under RESOURCES.

Smaller is Better! April 1992. This is the monthly newsletter of the Connecticut CP/M User's Group. This issue had notes from the March CCP/M meeting, information on the club's progress in getting their YASBEC up and running, a discourse on the RAID concept by Tom Veile, and information about Thiefbug, a theft alarm. Membership in CCP/M is $15 a year through Tom Mannion, Treasurer, P.O. Box 102, Winsted CT 06098.

The Staunch 8/89'er #29, Mar-Apr 1992. Kirk L. Thompson instructs us in *Extending Zenith's CP/M BIOS Beyond Its Three Soft-Sector Drive Limitation.* The second, concluding part of *Troubleshooting the '89: The H-89 Keyboard Module* by Dan Jerome and Kirk Thompson also appears in this issue. A new section called R/O MEDIA is modeled after my own MAGAZINES section; the first one overlaps this installment and last issue's, but includes some magazines I don't subscribe to yet, *H-SCOOP* and *SEBHC Journal,* as well as covering *TZL* itself. Another section called THE BOOKSHELF reviews a couple of C books and one on assembly language, briefly.

Other information includes the release of software by

David Powers of GCPI; see Kirk's ad in our last issue. Lee Hart announces formation of a Heath/Zenith mail-order library and catalog; yes, he's offering to lend Heath/Zenith periodicals, books, hardware manuals, and software manuals through the mail. Since he will inevitably lose some, send him your duplicates. An index to every article on the Z-100 is available on disk from Paul Herman.

As always, this issue of *Staunch* is full of news and contacts for owners of Heath/Zenith CP/M machines, though the regular contributions by others have been bumped by Kirk's long article this time. See RESOURCES for information on *Staunch*.

RESOURCES

The Computer Journal is the foremost magazine in today's CP/M community. Published 6 times a year. Free sample issue available. Subscription is $18/year, $32/2 years (US); Foreign, Surface is $24/year, $44/2 years; Foreign, Air Mail is $38/year, $72/2 years. Contact Socrates Press, P.O. Box 12, South Plainfield NJ 07080-0012, phone (908) 755-6186.

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.

Davidge Corporation makes and sells the Ampro Z80 Little Board, one of the CP/M computers still made. This is a 4-Mhz Z80 single-board computer with 64K RAM. The Little Board without SCSI is $240, the Series 1B Little Board Plus is $250. Software, BIOS source, manuals, and repair service are also available. Volume discounts available. Write to Davidge Corporation, 94 Commerce Drive, P.O. Box 1869, Buellton CA 93427, phone (805) 688-9598.

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.

Lambda Software Publishing publishes this magazine and sells CP/M and Z-System software, manuals, laser fonts, books. See the ad in this magazine.

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 $400 ($320 each 100 quantity), or $490 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, 1 (800) 635-3355.

Morgan, Thielmann & Associates sells and services computers, not only the latest 386 and 486 systems with DR DOS or Unix, but also Eagle computers, all models, and other CP/M computers. Call them at (408) 972-1965 for prices and information.

Sage Microsystems East, selling and supporting the best in 8-bit software. NZCOM, Z3PLUS, XBIOS, PCED, DSD, Z-System Software Update Service, Backgrounder ii, ZSDOS/ZDDOS, DosDisk, JetFind, ZMATE, BDS C, Turbo Pascal, ZMAC, SLR Systems assembly-language tools, 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 exact disk formats acceptable. Sage Microsystems East, 1435 Centre St., Newton Centre MA 02159-2469, Voice (617) 965-3552 (9:00 AM - 11:30 PM), Modem (617) 965-7529 (pw=DDT) (MABOS on PC-Pursuit)

Small Computer Support publishes *Eight Bits and Change,* a bi-monthly computer and humor 'zine, cost $15/year (US), $18/year Canada, $21/year foreign. Back issues $5 each. SCS also sells public-domain CP/M packages, $15 each for the game disk, word-processing disk, dot-matrix printer disk, time-manager disk, SIL compiler disk, NPS COBOL compiler disk, mailing-list disk, spreadsheet disk. NZCOM, Z3PLUS, ZSDOS, BDS C, ZMAC also available. CP/M computer training, $15/hour. Contract programming service available. Computers, printers for sale. Write Small Computer Support, 24

East Cedar Street, Newington CT 06111, or call (voice) (203) 666-3139 or (data) (203) 665-1100.

Sound Potentials sells disks of CP/M public-domain software. Send $2.00 for a printed catalog and other information to Sound Potentials, Box 46, Brackney PA 18812.

The Staunch 8/89'er is a magazine for users of Heath/Zenith H-8 and H-89 computers; $15 per year. 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).

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.

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

Meetings are the second Saturday of every month, from 9 A.M. to Noon. The remaining 1992 meetings are May 9, June 13, July 11, August 8, September 12, October 10, November 14, and December 12.

ECUG no longer meets at Tandem Computers! If you need to find out where a meeting will be held, call David McGlone at (408) 293-5176, Jerry Davis at (408) 972-1965, or one of the software librarians listed below, no later than the evening before the meeting.

April 11 meeting

Our April meeting was the first one at Bill Josephson's home. Present were Bob Kowerski, Jerry Davis, Jack Morse, Dave Banoff, and Ken Thomson, as well as Bill himself. Dave Banoff, who reported this meeting for *The Z-Letter*, was part of a group that tried to figure out the problems Bill was having with the PC version of Spellbinder on his clone. He might have a bad copy of Spellbinder. On the other hand, he's running the version of MS-DOS for a Compaq portable. No answer is known yet. The subject of the discussion being held by the other members is unknown also.

May 9 and June 13 meetings

Our May and June meetings will be at the home of Bill Josephson, 1681 Samedra Street, Sunnyvale, California, from 9 A.M. to Noon.

How to get there: Going west on Homestead Road, you come to Mary Avenue, which dead ends at the High School. One short block farther on is Samedra Street (parallel to Mary). Turn right on Samedra. Bill's house is white; it's the third house on the left. If you get lost, you can call Bill at (408) 245-0318.

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.

When you request software from Ken or Jack, send them floppy disks, not money, and the postage to mail the disks. 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.

Lambda Software Publishing

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

Spellbinder (version 5.3H), $60. The best CP/M word processor. Includes all four manuals. (Ltek)

CP/M (version 2.2), $25 (DRI)

MagicIndex (version 3.00), $100. Text formatter used to produce this newsletter. Versions available for standard word processor or WordStar, LaserJet or Diablo 630. Please specify your word processor and printer when ordering. (CES)

Computer manuals, $15 each. Eagle CP/M, Eagle 1600, Eagle PC Plus and Spirit, Otrona Attache, and Pied Piper. Inquire about others. (Various companies)

Eagle Computer Users Group newsletter, $15. Entire run July 87 to October 90; now merged with *The Z-Letter*.

The Z-Letter, **back issues:** $3/issue (US, Canada, Mexico), $5/issue (elsewhere).

The Z-Letter, **subscription:** $18/12 issues (US), $22/12 issues (Canada & Mexico), $36/12 issues (all other). Now published bi-monthly.

Z-Fonts catalog, $3 (US, Canada, Mexico), $5 (elsewhere). Samples of all the fonts available from Lambda for HP LaserJet printers, with instructions on how to choose what size, orientation, etc. you wish.

Z-Fonts, $2 per font plus $2 per disk. (Digi-Fonts)

NZ-COM (version 1.2d), $50. Turns your CP/M 2.2 system into a dynamic Z-System machine. (Alpha)

ZCPR 3.4 source code, $35. (Alpha)

I/OR, $25. Saves the screen in a file, saves printer text in another file. 1.5K IOP segment, ZRDOS required. (Alpha)

B/Printer, $25. Deluxe background single-file printing. 1.5K IOP segment, ZRDOS required. (Alpha)

NuKey (version 2.03), $25. Advanced function-key generator. 1.5K IOP segment, ZRDOS required. (Alpha)

I/OR, B/Printer, NuKey combined IOP package, $60. (Alpha)

CBASIC Reference Manual, $15. (DRI)

The CP/M Handbook with MP/M, by Dr. Rodnay Zaks, $15. (SYBEX)

Nevada COBOL, $15. (Ellis)

Customizable diskette carriers, $3. Each protects up to three 5¼″ diskettes from harm in briefcase, etc.

SuperCalc (version 2.0), $30. (Sorcim)

Disk copying – $10 per disk

I can copy most soft-sector (both single- and double-density) 5¼″ CP/M formats, including Apple II CP/M and Commodore CP/M. I can also copy 8″ disks. (Sorry, no hard-sector formats except Northstar and Heath/Zenith, and no 3½″ formats yet.) 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. *The responsibility is yours to ensure that you are the legal owner of material you ask me to copy.* This does not apply to software you buy from Lambda, which will be sent to you in the disk format you request at no extra cost.

Ordering

Make sure you tell me your name, company name if any, address, home and business phone, and the computer format in which software should be supplied. For back issues, list which issues you want. For fonts, use the order form from a copy of the catalogue. Your check for the total should be in U.S. funds in an international money order, or the equivalent in your country's currency.