

Saving Our HEATH Eight-Bit Machines!

SEBHC JOURNAL

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Special to the SEBHC JOURNAL by Al Bjorling

Sig/M Report

by

Bob Todd, Sig/M Coordinator

We are beginning to get more enquiries about CP/M software. Some of these folks are Commodore users, but many are purchasers of used S-100 or remaindered equipment. If you are getting any of these requests, refer their software enquiries to Sig/M, ~~Box 3028, Easton, PA 18043~~. Catalogue volumes are available in 8-inch and most 5-inch formats. The software costs \$7.00 a volume in the U.S. and Canada, and \$10.00 a volume overseas. Please make all cheques in U.S. funds drawn on U.S. banks.

Sig/M
%ACGNJ
P.O. Box 135
Scotch Plains
N.J. 07076

We contacted Digital Research to ascertain if we could purchase the rights to CP/M 2.2 and put it in the public domain. They demurred, stating: "Why should we? We're still selling a million copies a year!" We remarked that they meant CP/M Plus on the Commodore, but they said no, they meant CP/M 2.2.

It seems that the Z80 is still widely used for industrial applications and CP/M is used as the development system. For example, every MS missile produced has a CP/M development system included as a part of its' support equipment. Apparently, there are a number of militarised 8080s and Z80s used both in the missile and its' support equipment. There are still probably as many CP/M users as there were five years ago, but they have been swamped by the sheer numbers of MS-DOS computer users in the business arena.

So all you MS-DOS users watch out! Sic transit gloria mundi, but CP/M lives forever. (Gloria was sick on the bus Monday, but...ah, you get the rest.)

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More ZCPR Information!

A REVIEW OF HEATH'S 'PREL' UTILITY

by Ludo Van Hemelryck
16514 14th Avenue S E
Mill Creek, Washington 98012

The latest developments in ZCPR revolve around various applications of relocatable code modules. The structure of any such module consists of an object-code block assembled to a temporary origin, followed by a map which flags all the bytes that may be affected by the address at which the code is actually loaded. This structure is virtually identical to one of the Heath-provided CP/M distribution software utilities. The Heath PREL utility--which is used to generate a BIOS.SYS file--may also be able to build the newly-introduced ZCPR3.4 relocatable modules. This is no mere coincidence; the structural similarity of *.PRE, *.SPR, and now type-4 files, suggest a common ancestry.

In order to overcome the size limitations imposed on the original CP/M BIOS implementation, Heath uses a two-step procedure at Cold Boot to install an expanded BIOS. Standard CP/M loads the CCP, the BDOS, and the BIOS from the System Track(s). System-Track space availability limits the size and features which can be incorporated into the BIOS. In order to accommodate a large BIOS, Heath first installs a Bios Loader (BLDR) from the System Track(s) and reads in the actual BIOS from a special BIOS.SYS file. This BIOS.SYS file contains the final BIOS in relocatable form, together with a loader which installs it in its' desired location. Our 1982 (or older) Heath software was already using some of the most-recent ZCPR3.4 innovations!

A BIOS.SYS file is most easily generated by the Heath MAKEBIOS.SUB routine, which itself calls other utilities provided by Heath. Such a BIOS.SYS file contains a BIOS module assembled to origin zero (org 0), preceded by a relocater and followed by a bit map flagging all bytes which must be adjusted when the code module is moved to the location where it's supposed to run. The PREL utility also converts a BIOS.HEX file into a binary object-code module and generates a bit map.

The temporary origin, to which the code modules contained in relocatable modules are assembled, are at either 000 (zero) or 100h. For *.PRE and *.SPR files, the temporary origin is 000, while for *.PRL and type-four files it is 100h. In both cases, the code block is preceded by an (almost) empty page containing only the code block length. A loader routine, such as the one inserted into BIOS.SYS by MAKEBIOS, can be inserted into this empty page. The ZCPR Type-4 program files are generated by overlaying a TYP4LDR routine onto the first page of an *.PRL file.

*.PRL files can be generated directly from compatible *.REL modules by linkers, such as the Digital Research LINK

or the SLR systems SLRINK+. On the other hand, the PREL utility must be presented with two *.HEX files (to be named *.HX0 and *.HX1) resulting from assembly of the same source file with a one-page offset between both assemblies. Such files can be generated by assemblers when a single source file is involved, but also by the basic SLR Systems SLRINK when input consist consists of *.REL modules and module libraries. Using PREL, capabilities of both LINK and SRLINK+ can be duplicated. While PREL normally produces *.SPR files, assembled with a temporary zero origin, it can readily be patched to generat *.PRL files assembled for org = 100h.

When I mentioned this similarity and the extended usefulness of the PREL utility in December's SEBHC JOURNAL, Rick Swenton reminded me that PREL may not be completely reliable as a bug had been reported in connexion with generating large modules. To this end, Rick sent me a copy of a note by Peter H Haas which appeared in 'BUSS' #62 which included a patch to correct the PREL malfunction he'd discovered.

A look at the version of PREL is in order before one attempts to make Peter's patch, or uses PREL to generate large modules. At some point Heath must have updated PREL because Version 2.04--which I got with the upgrade from CP/M 2.2.03 to 2.2.04--incorporates the fixed proposed by Peter. PREL version 2.2.03, distributed with CP/M 2.2.03, is definately "buggy". NOTE: Version numbers are imbedded in a banner at the beginning of the code and can be examined with DDT, SID, or another debugger.

For those not having a copy of 'BUSS' #62, I've excerpted the assembly code and reproduced it below:

```
; THIS *.SUB FILE WILL INSERT A CORRECTIVE PATCH IN PREL.COM
; Version 2.2.03
;
; by Peter H Haas, 'BUSS' #62
;
xsub
ddt prel.com
a01d0
call 0680      ; overlay call to 'rewind'
*
a0680
push b        ; save bc
push d        ; save de
push h        ; save hl
call 0656     ; call 'rewind'
pop d         ; get back fbc address
push d
movi c,0f     ; bdos parameter for 'open'
call 0005     ; call bdos
cpi ff       ; 'open' successful?
jz 025d      ; no, goto error routine
pop h        ; restore hl
pop d        ; restore de
```

ZCPR end -- OTHER 8-BIT NEWS

```

pop b      ; restore bc
ret        ; return with fbc properly set up
.
g0
save 6 $1.com
;          ; end

```

While PREL V2.04 incorporates the above fix it still contains another coding error which carried over from the earlier version. The trouble potential of this remaining bug is minor. Only if a relocatable *.PRE module exceeds 32k will a false 'Hex Files non-monotonic' condition be diagnosed. The fix for this is to replace a conditional jump instruction from 0F2h (JP P) to 0D2h (JP NC) at 054Dh in version 2.2.04, or at 052Ch in version 2.2.03.

A relocatable module larger than 32k will need special handling if it is ever encountered because more than 63k of TPA would be required to accommodate both 'raw' and relocated versions of such a module. Only a purist may feel compelled to insert the above-suggested correction. But there are some other implications: The coding error occurs within a PREL subroutine, and there's a definite possibility that the subroutine--which reads an *.HEX file and generates an object file--is also called by other utilities.

```

=====
NEWS...  RBBS NEWS...  RBBS NEWS...  RBBS NEWS...  RBBS
=====

```

The Detroit Kaypro User's Group (DKUG) has a local RBBS up and running. Gus Bakalis, publisher of D:KUG.DOC--their local newsletter--kindly introduced it to your editor with a brief demonstration of how it runs. It looked so good that the SEBHC JOURNAL may very soon set up its' own PBBS! We believe there's an available low-capacity hard drive which might be used with our "spare" Super-H89A for this purpose, but are still "exploring our options". (Read: "We're looking for an angel to bankroll the venture!")

If the JOURNAL is able to proceed with this project, we'll need a third telephone line into our "Computer Shack" and enough available cash to pay for setting up and running the board. Obviously, it will have to be a subscription-type board (that's the way DKUG does it) as our publication income wouldn't even begin to pay for a week of operation! Kindly send us your own views on the desirability and practicality of the JOURNAL establishing a Private Bulletin Board Service (members & subscribers only). Send letter or post card to: "The PBBS QUESTION", 895 Starwick Drive, Ann Arbor, MI 48105 and indicate if you are willing to help pay for establishing and operating a SEBHC JOURNAL Subscriber's-only PBBS. And please limit your comments to 125 words or less because we want to publish everyone's input about this proposal.

Thank you.

COMPUERVE (ZENITH SIG) CONFERENCING QUICK TIPS

Submitted by Darrell C Pelan

Make sure your CAPS LOCK key is off! Typing in caps is like shouting!

Commands in the Conference Room must begin with a NEW line and start with a slash (/). Here are three commands you need to know:

- /HELP gives you a list of other commands
- /EXIT gets you out of the conference
- /NAM lets you abbreviate your name to make things easier for us to read (We use first name and last initial: "Joe K.")
- /UST shows you who else is in the room--and outside it

Type short lines--about halfway across the screen. If you need more than one line, put three periods ("...") at end of each line to show there will be more to come. When you've finished, end the last line with "ga" (for "Go Ahead").

We have two kinds of Conferences: Informal, and formal.

INFORMAL CONFERENCES (Saturday Night Live--and Eight Bit Users)

Informal conferences tend to be chatty until there is serious business. If you have serious business, such as a problem which needs solving, call attention to yourself by using capital letters for a while: "CAN SOMEONE HELP ME?"

Someone who can help might suggest that you both go to another conference room to work on the problem. You have to leave the present conference room, then type the command to enter the other conference room:

- /EXIT (gets you out of the present conference room)
- CO 3 (gets you into Conference Room 3--the Back Room)

FORMAL CONFERENCES

Formal conferences have a guest speaker and a moderator. There is a formal structure so we can make best use of the speaker's time (and the time of other participants). This structure also avoids the chaos that would result if everyone typed at once. The moderator directs the conference.

Questions go by turns. Type one question mark ("?",) at the beginning of a line to request a turn. Then please wait until the moderator calls on you.

Ask one question during each turn.

Make your questions short (3-6 lines), polite, and direct: please don't be argumentative. The point of a formal conference is to get information of wide interest from the guest speaker about the announced topic. When you've finished typing your questions, end it with "ga" ("Go Ahead").

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MORE BBS STUFF

If you arrive late, be aware that your question might already have been asked and answered. If you duck out and return, be aware that you might have lost your turn. Be gracious in either case.

[Please use the /NAM command to abbreviate your name: no "handles", please.]

COMPRESSED & EDITED SAMPLE OF TYPICAL ZENITH.SIG CONFERENCE

25 Feb 89

(1,Bill E.) Hello, my name is Bill Elkins.

Hi Bill. It was getting lonely here!

(1,Bill E.) I was sort of wondering how the 8-bit conferencing system would be going.

What kind of programs and operating systems do you use on your 89?..

Last week, it was busy with 6-8 people..

for 2.5 hours. This week is a little slow. ga

(1,Bill E.) I am not into those newfangled machines like the 89 Mine is an H-8.

(1,Jeff H.) Who said H8?!

(1,Jeff H.) (grin)

That's okay, we're equal opportunity here.

Hi Jeff!

(1,Jeff H.) good evening, by the way

/ust [Editor's Note: Typed by someone to find out who's in this CO(nference Room)]

User	User ID	Nod	Rm	Name/Forum	Area
------	---------	-----	----	------------	------

12	70003,4205	CSD	1	Steve L.	
19	74155,41	MGA	1	Darrell	
36	71555,1144	SVG	1	Bill E.	
65	72676,534	SLM	1	Jeff H.	

[Editor's Note: A different User ID is assigned to everyone by CompuServe upon receipt of an application and payment. Nod(e) indicates where the subscriber is tied onto CompuServe at the closest Tymenet or other telephone connection point. For example, Darrell Pelan is on through Macon, Georgia, Bill Elkins is on through Savannah, Jeff H is on via St Louis, MO, etc.]

(1,Steve L.) Hi all!

(1,Steve L.) PK will be in CO 2 right?

Hi Steve. I'm not sure but think you're right.

(1,Steve L.) Inx.

Joe is on the system getting ready now for the 8:30 CO. ga

(1,Jeff H.) What's new Darrell?

Not much yet. Still working on some new projects and...

trying to finish some old ones.

[Darrell] Are you using an H-8 too, Jeff?

(1,Jeff H.) not right now--running the XT clone to get 1200bps You're probably better off at 300 for a CO since the rates are

cheaper and most people don't type at even 300 baud. ga
(1,Jeff H.) True...I started at 1200 earlier doing something else.

Did you say you had an H-8 as well? ga

/ust

User	User ID	Nod	Rm	Name/Forum	Area
------	---------	-----	----	------------	------

19	74155,41	MGA	1	Darrell	
36	71555,1144	SVG	1	Bill E.	
65	72676,534	SLM	1	Jeff H.	

(1,Jeff H.) rr..5 drives

Ah, I remember from last week. ga

(1,Jeff H.) right!

[Darrell] Been a slow week, or at least one without much forward progress. Been thinking about a modem program for the H19 terminal...I've got 80% of the code in C/80 already and will probably finish it up and try a shareware concept.

(1,Bill E.) Will your modem program be CP/M or HDOS?

[Darrell] Both. That is reason for C/80 since I have versions for both HDOS and CP/M...

(1,Jeff H.) Thatotta work r u using a split-screen setup?

[Editor's Note: We're using brackets for clarity where identity of who's speaking is otherwise quite obscure!]

[Darrell] Yes, that is big reason for it and...adding XMODEM capability for HDOS to d/l and u/l files to CIS and other BBS. ga

(1,Jeff H.) I know the feeling...some weeks I get 0 time on the CPUs...Wasn't lack of time, just progress!

(1,Bill E.) Ok, The reason I ask is that I was considering...trying to write one.

[Darrell] It's not that hard since a lot of the code is based on a Turbo Pascal version I wrote. What were you going to write your program in? C, Pascal or some other?

(1,Bill E.) Well, my knowledge of C is limited, I spent quite a while trying to figure out how to use C80 to interface to the ports. Still haven't managed it.

[Darrell] Later Jeff.

I use assembly language for that kinda stuff.

It's easy to integrate with the C/80 code.

If you need an example I can u/l a section of code I wrote for an EPROM burner that we developed for the 89.

(1,Bill E.) I'd appreciate that Darrell.

(1,Bill E.) I am a bit more familiar with assembler, but am trying to learn C.

[Darrell] No problem. I can u/l it late tonight. With C you have to provide the I/O code yourself and there isn't any neat way to send data to an I/O port...so I wrote my one little assembly routine that takes stuff off the stack as passed by C/80. ga

(1,Bill E.) When you get the Modem program running you might let Henry Fale know. He is trying to place some HDOS software on his BBS and wonders how HDOS users can access it.....

[Editor's note: This's a sample--whole item takes 6 pages!]

The BARGAIN PAGE!

8-Bit ZENITH COMPUTERS

Z-89's

48K ram, Z-17 disk controller, 1 disk drive, 2 serial ports. Runs "H(Heath)-DOS" only, H-DOS, BASIC, and GAMES Disks included to get you started (No Documentation to speak of). At this price you get a working computer. AMAZING!..... \$99

Z-89A's

48K ram, Z-17 disk controller, 1 disk drive, 2 serial ports, green CRT. This model will run either "CPM" or "H-DOS" Software. This is a newer version of the computer offered above. CPM-80, BASIC, Spreadsheet and Wordprocessing Programs with minimal documentation are included at this price. This is a nice inexpensive hobby computer..... \$149

Z-90's

64K ram, Z-37 double density disk controller, 1 disk drive, 3 serial ports, green CRT. Runs "CPM" or "H-DOS". CPM-80, BASIC, Spreadsheet, and Wordprocessor with Xeroxed manuals included. This is a very usable computer for home, or for a small business when upgraded with 2 doublesided half height disk drives in place of the standard drive and a printer..... \$249

All the above computers are used. They have been disassembled, cleaned, checked out, repaired; and are in good working condition. The cabinets show wear and tear.

Terms: \$20 deposit, balance UPS COD.
Mention the SEBHC JOURNAL for free packaging & handling.

Tom Rittenhouse
9035 Lincoln
Whitmore Lake, MI 48189

Karl: (313) 229-6752 eves.
Tom: (313) 449-4079 days.

Answering machine on Tom's phone. He will return your call "collect" if you so request.

Reader's MAIL BOX

INTRA-SUBSCRIBER CORRESPONDENCE OF GREAT IMPORTANCE

Dear Rick,

Sorry for not writing to you sooner, but January has been a hectic month for me, complicated by a bout with the flu. I'm about [back to] normal now, and getting into to my usual routine.

As always, I enjoyed your letter and appreciated the tips you offered in the solution of my problems. To bring you up to date, here's a summary of my progress:

-I recently bought a new PC-XT which I'm setting up for my daughter's use in NYC. It's an IBM clone with an 8088-1 [CPU] chip, 640k RAM, 1-360k 5-1/4" floppy, 1-730k 3-1/2" floppy, 4.77/10MHZ clock, graphics board, etc. Also a 150Watt PS! I must admit that the world of MS-DOS is very interesting for a number of reasons... First, cost: Deals being offered at local computer shows are incredible. Drives, monitors, keyboards, add-on cards, power supplies, software, etc., are readily available at very reasonable prices. CP/M works with the 8088-1 CPU so all of [my] CP/M files could be transferred. Second: Service on these IBM clones is easy and available if necessary. Finally: Hundreds of useful programs can be downloaded from local PC Bulletin Boards. I've downloaded a spreadsheet (TURBOCALC) and word processor (GALAXY). Both are first-rate. I also installed IBM's DisplayWrite to fit my daughter's needs. It has a resident 100,000-word dictionary in addition to all kinds of special features. On a spell check, it goes through the entire document [file], highlighting misspelled words with a window of possible words to use, with automatic correction when a choice is made. [But] the program needs more than a 300k RAM to run. Fascinating stuff! Still, I prefer my CP/M TXTPRO.

- I've given up on installing the spare 80-track drive for the [CalDigital] '89. As I wrote in my last letter, I returned the Livingston BIOS disc to CalDigital to check for a bad sector. They sent me a replacement, this one clearly marked "LIVINGSTON 80 TRACK BIOS-ORIGINAL FILES COPIED TO 80 TRACK 10 SECTOR DISK" but with no explanation. Now I'm in a Catch-22 situation. I need an installed BIOS to read or copy the files to a 40-track system disc in accordance with the documentation. I wrote CalDigital about this dilemma before Christmas and am still waiting for a reply. I guess I can't blame them; after all how much support can I expect for a \$179 '89?! No problem...I have no need for an additional 80-track drive anyway. The small increase in disc-storage space isn't worth the effort. The only practical change would be to install a soft-sector [controller] board and two half-height, double-sided drives. The cost of such a change would approach the cost of a new two-drive XT-TUR80 clone (\$650), hardly worthwhile! The next super



computer-show & flea-market is scheduled for 1-Apr at the Valley Forge Convention Center (my neighborhood). I may yet pick up one for my own use at that real bargain price.

- Considering the limitations of a single-sided, 40-track disc, my 10 meg hard disc is essential. Presently it's working perfectly fine but the slightest malfunction could probably be disastrous. The whereabouts of ACT (American Computer and Telecommunications) is still a mystery to me. I've tried the Thomas Register and library references [attempting] to locate what remains of the company

without success. It has either failed, or has been taken over. Therefore I turn on the hard disc only as needed, having reset [CPU switches to boot only from the 89.

- At the moment I'm involved in making a computer desk for the limited space my daughter has in an NYC apartment. I was progressing very nicely until "the flu" laid me low!

The article "Z100 SURVIVAL KIT" in January's REMark should interest you. The writer's intent in creating the column is to prevent the Z100 from dying a premature death--presumably because of Zenith's lack of support. He stated, "The other thing I will avoid like the plague...is using CP/M on the 8-bit side of the Z100. Face it...CP/M is extinct". Good grief!! The SEBHC JOURNAL and the "Staunch 8/89er" are both growing in subscribers. [But] the column is still very interesting. His reasons for wanting to hang onto the "old" Z100 are the same as mine for the '89. Long Live The '89!

If you ever find time, I'll be looking for more of your comments in future, either by letter or in the SEBHC JOURNAL.

ANTHONY P MUSNICK, 222 Marple Road, P O Box 136, Broomall, PA 19008

Dear Tony,

I fully understand about the PC-XT situation. As a matter of fact, I was planning on adding a PC-AT clone to my arsenal sometime this year. This--of course--doesn't mean any phase-out of my REAL 8-bit computers!

<continued>

More Reader's MAIL BOX

One thing in your letter disturbs me. You said that CP/M works with the 8088-1 CPU. You don't really mean that, do you?! CP/M will not run on the 8088; it requires an 8080 CPU or one which is "upward compatible" such as the 8085, Z80, or 64180. But CP/M programs might be run on a peesee with a software emulator, such as the public-domain program called Z80MU.EXE (stands for Z80 eMulator). There are some restrictions such as very slow speed on standard 4.77MHz peesees, but it DOES work. There is also the V20 CPU which is a replacement for the 8088. This CPU recognises the 8080 instruction set but you still can't run CP/M. Furthermore, you can't use any CP/M program which has any Z80 instructions since they are not recognised by the V20. You need some kind of software front-end to run CP/M programs on the V20. To further complicate things, the software emulator needs to emulate an H19-type terminal if the program does any full-screen operations. Z80MU quite nicely takes care of this. It can emulate the important H19 functions such as cursor positioning, reverse video, and many others.

Then there's the Other Problem: You need some kind of "foreign disc" program such as "Uniform" to enable the peesee to read a CP/M disc, just to get those files onto an MS-DOS format disc.

I didn't see the REMark "Z100 Survival Kit" article because I didn't renew my HUG membership. Why? I didn't see in REMark what I do see in the SEBHC JOURNAL and others. You could say that they [REMark] will print only what 8-bit users write, and if nobody contributes any 8-bit oriented articles, don't expect any to get printed. I get much more mail from what I send to the SEBHC JOURNAL than I ever did from my four major works [printed] in REMark. I hazard a guess that there aren't too many 8-bit-only users still reading REMark.

On the Z100, it's too bad; it was a good machine. One very bad mistake was [Heath's] selection of the 8085 as the 8-bit co-processor. This excluded Z80 8-bit CP/M software, most especially Z-System. Really, CP/M 2.2 is extinct. Many 8-bit computer users have switched at least to ZCPR1, which was a vast improvement over CP/M. Z-System (ZCPR3 and ZSDOS or NZ-COM) has facilities and features that my "messy-dos" friends just dream about! CP/M 2.2 may be dead but there are a ton of H8s, H89s, Xerox 820s, Kaypros, Osbornes, Morrorms, and even Commodore 128s out there! They're still doing the work of the oxen. They may not be fancy, but they still put in an honest day's work and ask for little in return.

If only the unlightened knew how much fun they are now missing!

RICK SWENTON, 106 Melinda Lane, Bristol, CT 06010-7176

[YEAH! But even though CP/M 2.2. "may be dead" it has yet to start smelling as bad as the early eye-bee peesees! They were long dead even before they left the factory. And for a third or usually less than eye-bee's asking for their latest model you can choose from any number of excellent "clones" which will out-perform eye-bee's unit without turning a hair!

You're quite correct in observing that REMark is losing their 8-bit user readers. Why do H-SCOOP, Sextant, The Staunch 8/-89er, and the SEBHC JOURNAL continue to thrive? It's quite simple; we *ACTIVELY* support and encourage H/Z 8-bit users! -- ed]

Dear Rick,

What an avalanche! I certainly thank you for the extensive documentation you sent me, including the disc. I am far from having assimilated all of it yet, but I have identified some very valuable items. What I had in mind, when I asked for all the changes introduced by Z3.4 to Z3.0 (which is the only one for which there is a reference standard), is more like a statement from someone who knows where there is a *complete* list of deviations. At the moment it seems that some definitions in Z3ENV have been added and some have been deleted, as Bridger explained in TCJ [The Computer Journal] #33 and as shown in NZENVADD.TXT by Phil Newman which you'd sent me. What I am afraid of is that there [are] additional re-definitions in a number of areas, and that they will crop up as I go along without ever any assurance that I addressed them *all*. Now one may have to ask Sage, Bridger, Wright, and maybe a dozen others simultaneously for their [various] interpretation[s], and then be prepared to reconcile possible discrepancies. I think there is a lack of configuration control, at least at the level to which I have access.

Thank you for the note by Haas on PREL. I'm not sure that his patch will work in my version (2.04), as there is still some code at 0680h where he installs his 'rewind' routine. PREL is not that large a program, and I will probably disassemble it and take a closer look. If the problem is related to handling extents, one can also modify the allocation block size as a workaround. I've analysed all of Heath's BIOS loaders, CONFIGUR, and MAKEBIOS. I suspect you've done your own work on that, but if you're interested I may clean them up and send them to you. I'd do it right now if it were not for the fact that they may need extensive commenting to be intelligible to anybody else!

I want to elaborate a bit on my feelings about NZ-COM: It installs Z3.4 on a generic CP/M 2.2 system and uses the relocatable-module features to do so. Whenever it must take over functions already performed by the original CBIOS, it does so by duplicating the function rather than modifying the original one. When you add NZ-COM to a system which already has a number of similar modifications applied to it, you get an unsupportable mess.

While very flexible, NZ-COM makes some [arbitrary] decisions for you which you are not allowed to question. For example, system segments are contiguous and in a prescribed sequence. The NZBIOS cannot be eliminated, and NZENV is fixed. My 'main beef' is the fact that, having provided a very good solution for a user who's not inclined to customise, less of an effort has been made to disclose the fundamentals; [apparently] it just didn't seem to be necessary anymore.

Regarding the IOP, I'm objecting the implementation where

More MAIL BOX

the Device Drivers remain in the BIOS, an (optional) Extension to the Original IOP Concept which now becomes mandatory under NZ-COM. This option really negates the original purpose of the IOP, which was to remove all device drivers for the CON:, RDR:, PUN:, and LST: logical devices from within the BIOS. To me, the IOP is a replaceable BIOS segment which contains specific device drivers I may need at the moment, but not a NUKEY or anything similar. Such an IOP doesn't cost additional TPA, except for STATUS and NAMER routines.

I did disassemble the short BIO module (also in your package as NZBIO15.Z80). Essentially this module's function is to provide a gap in protected memory where system segments can then be inserted. It substitutes its' own WBoot routine (which doesn't reload BIOS but simply resets it), and implements that obnoxious IOP initialisation.

I'd rather opt for a solution which installs most system segments between the CPR and BDOS, and tie the ZENV directly behind the CPR. Installing a jump to BDOS+6 in the initial ZENV slot and updating BDOS (0006h) to jump to ZENV would create that movable protected-memory fence.

Coming back to your letter: I shared your opinion about BIOS.SYS being page-relocatable only, until I read Bridger's article in TJC #33. While only the most-significant bytes of each address which must be adjusted are flagged in the bit map, the relocating routine can add a word offset to a byte pair almost as easily as it can add an offset to single bytes. This is what Bridger's ANYWHERE routine is doing. It is only the loader--inserted into BIOS.SYS by MAKEBIOS--which treats BIOS.SYS as page-relocatable. I've not yet found any reason why there are both SPR and PRL formats. When you assemble a short source to HEX with the SLR assembler, you get a different number of bytes response when the source has a zero org than with org = 100h. There are restrictions to generating code in page zero which may have some bearing on this subject.

I did generate my .HEX files for PREL via the SLR assembler in two passes, changing the org. Thanks for pointing out that I can as well use the linker to do that, once I have a .REL version of the program.

The Seattle area is comparatively active as far as ZCPR is concerned. A number of people communicate through the local Adam's BBS running on an H89 at 206-882-3684. One guy mentioned that you're running CHUG, but he hasn't so far provide me with your phone number. If, and when he does, this is another way we could keep in touch. And thanks again for all the 'goodies'!

LUDO VAN HEMELRYCK, 16514 14th Ave SE, Mill Creek, WA 98012

Dear Ludo,

I'm glad that you enjoyed the "avalanche" of documentation. One of my finer(?) characteristics is my dedication to searching out, printing and filing the latest documentation which appears on the bulletin boards and Z-Nodes. You're right that there's no ONE source for authoritative printed

documentation on Z-System. Probably the closest you can come is to contact Jay Sage directly on his Z-Node, or by voice. Your comment about there being less of an effort to disclose the fundamentals is probably true. I don't think it was intentional. I think that the authors found the project to be quite a demanding task and quickly tired of it. In an attempt to get the product out the door and into anxiously awaiting hands the compromised on the detailed technical information and theory. This is understandable since the vast majority of users didn't need that kind of information to begin using the system. Many users will never need it, as I'm sure you're aware.

It sounds to me that your best approach is to continue using the manual installation techniques from ZCPR34's source code. One thing I have not yet tried is to use JetLDR.COM on a manual system. JetLDR is Bridger Mitchell's system loader which comes with NZ-COM (or available separately) which loads ZRL system segments. I wonder if you could use JetLDR to load ZCPR34.ZRL on top of an existing ZCPR33 or 30 in a manual-install system? If so, then you could probably also load ZSDOS.ZRL or ZRDOS.ZRL or any other system segment just as you currently do with RCP, FCP, IOP, etc. I really don't see any reason why it wouldn't work. You could then use the NZ-COM package, that is, everything except NZ-COM itself. You could use JetLDR to load NZCPR.ZRL, NZDOS.ZRL, NZFCP.ZRL, and NZRCP.ZRL and come up with a ZCPR34/ZRDOS19 system the same as mine, except that yours [would have] started with a manual install ZCPR30 or 33 system, and mine started with plain CP/M and NZ-COM.

Your application of the IOP is what Rick Conn originally intended. It was to be a BIOS "swap" area where features could be added or deleted from a running BIOS. With this method (as you said) there is no reduction in TPA because modules were removed from the BIOS and placed in IOP files. They were [then] loaded as needed. The current "Joe Wright" application intercepts BIOS calls to the CRT and printers. The "DUMMY.IOP" or a valid IOP always needs to be in place unless the IOP was written to restore all BIOS jumps before it disappears.

You're correct in [assuming] that I run a BBS here in Connecticut. It's sponsored by The Computer Club (formerly the Connecticut Heath User's Group). The old group drifted away from loyalty to Heath when peesee clone prices became much more attractive than Heath's [list] prices! The BBS is an H89 with a 20-meg hard disc and 300/1200/2400-baud modem. It's running ZCPR33/ZRDOS17 and PBBS, a Bulletin Board Service [program] written in Z80 assembly language. I plan on converting the system to NZCOM and ZSDOS very soon. Beside myself and one or two other people, the other sixty-odd club members are messy-dos oriented! Most messy-dos Boards don't allow users to drop down to the A> prompt as Remote CP/M systems do. This drives the messy-dos power users bonkers! [The BBS] is not at my house and there is not even a CRT online at the site. I remotely maintain the system, an H89 CPU board inside an old D-G Electronics "Heartbeat" cabinet.

More MAIL BOX

[In conclusion] I hope our "in-print" correspondence will encourage other Z-System users to come out of the woodwork. In the event that I may be of assistance, just [give a] holler.

RICK SWENTON, 106 Melinda Lane, Bristol, CT 06010-7176

[Correspondents Tony Musnick, Ludo Van Hemelryck and Rick Swenton are doing yeoman service in letting the SEBHC JOURNAL publish their letters for the benefit of our other subscribers. Essentially, what they're doing is conducting a vital, non-verbal seminar on how to get the most out of our favourite "grey boxes" as well as from CP/M! We're most grateful to these prolific writers. It's a fact that I've learned a great deal from this series of letters, and hope our readers have gained more knowledge of the good and bad points of "plain-vanilla" CP/M and how the various "Z-mods" you're discussing here can improve things for us all. And, before you HDOS users start screaming, please note: Allie Lingo and several other "HDOS lovers" are working on articles simplifying the use of HDOS 3.0. We expect to print (hint, HINT!!!) some of those HDOS articles Real Soon Now! -- ed]

Dear Sir:

Thank you for sending the missing issues from my subscription. But somehow my original subscriber ID number changed from 283 to 273 and my expiration date to 10.89 instead of 11.89. Please correct your files to reflect my correct expiration date and ID#. [Done! -- ed]

I appreciate your having sent my back issues in a folder, but the price tag inside the folder shows \$2.29. Together with the \$2.40 for Express Mail postage, that totals \$4.69, and just to send a few back issues!!!

Now for some [good] news: I've just recently completed a Heath SK-203 Printer Buffer and integrated it into my H8 system. It's a very useful device. It allows connecting an H8-4 serial port to parallel inputs, and parallel printer outputs to the H25 printer.

JOHN W BROUGH, P O Box 268, Hayesville, NC 28904

[John, we finally got your expiration date fixed (see label, this issue). Here's what happened: We both know that you HAD renewed, but my not-too-computer-literate daughter while "helping" me somehow de-activated your original dtb records, instead of crediting your cheque and changing your subscription expiration date. Your cheque got deposited, and there your original record #283 sat with it's classifier saying "DELETED"! So what did I do but go through the database one day, happily wiping clean the records of all over-delinquent subscribers, yours among 'em. In order to keep disc storage space to a bare minimum, we re-issue deleted ID numbers to new subscribers rather than add new records onto the database end. This is a good way of conserving disc space, but obviously ripe for all kinds of goofups, such as this one!

But we do keep back-up files of our records for the past year or two, and so I was able to resurrect your original database records. And then, upon scanning the entire database of subscriber's names and addresses I found that we'd given your old ID number to a new subscriber. Rather than assigning the same ID# to two different subscribers, I gave you a different number which--I assure you--had expired six months 8-4 you'd renewed. That mixup won't ever, Not NEVER happen again! You have your old number back and the new subscriber has #273. Please note: The price tag you found is for only ONE folder. We buy 'em in gross lots much cheaper! I figured you'd like to keep all your back issues in it, and hoped you would have accepted it as partial compensation for the trouble <sigh> we've caused you! By now your printer box must be doing lots of work. Let us know how useful it is for you. Can it be used for other RS232 and parallel I/O also, etc.? -- ed]

Dear Fellow Eight-bit-ers,

I am especially interested in locating the Microsoft BASIC Compiler (BASCOM.COM for MBASIC V5.21) in hard-sector format, and a soft-sector controller board for my H89.

ROBERT A SWANSON, RD#1 Box 251, Kennedy, NY 14747; 716-267-4085

[Hey subscribers! Will someone PLEASE help Bob? -- ed]

Hi Lenny!

Received the December JOURNAL on 17-Jan-89. A friend wrote me about a rebuttal to Rick Swenton's NZ-COM article a few weeks ago; he must have received his December copy long before I got mine! What's with the Postal People?

You mentioned you had a Magnolia SS controller plus et-ceteras from a Z89 you'd picked up. I may be interested if the price isn't too steep. Let me know that, and what the et-ceteras are, OK? [I shall phone you. -- ed]

The SEBHC JOURNAL is one of my most-closely read publications. Really, you and the authors do a fantastic job. And I thoroughly enjoyed Rick Swenton's articles on Z-System and NZ-COM, plus all those back-and-forth letters between him and other readers.

Do you know of any H/Z89 systems, parts, etc., for sale at bargain prices? I believe you have indicated you'd picked up one for \$50? I'm also looking for a low-cost printer of some type (NO thermal paper jobs though!). Being located in the Ann Arbor area near the University of Michigan's surplus gear disposal center must be a great benefit for you. I lived in Detroit for ten years and found it to be so for me.

Your "treasure chest" of H/Z Service Bulletins & Blue Book data sounds great. I'm quite interested in checking it over [possibly] for my library. If I were closer I'd sure pitch in to help sort it out. Let us know soon what available "treasures" you have and how we can access them.

A F BJORLING, P O Box 917, Melville, NY 11747; 516-420-3328

SEBHC JOURNAL

Volume III, Number 8, Page 10

More MAIL BOX

[Well, shucks Al, we try! I too wish we lived closer! I've four 3-inch binders crammed full of '89/90 tech notes & update bulletins (many of which are duplicated far too many times) which would take both of us working steadily, eight hours every day for 3 or more weeks to sort out and reduce to practical dimensions before attempting to compile them into one useful SEBHC JOURNAL reprint/publication! Total weight of this mess is about twenty-five pounds--give or take a ton! There also is a smaller mass of H/2100 bulletins which I can look over at some near future date, but not until returning those '89 items I now have. <Sigh!> Any local volunteer help (within a 50-mile radius of Ann Arbor) shall be most gratefully accepted! About that Magnolia item: SEBHCer Tony Venticing, of Bollingbrook, IL has an earlier (cash deposit) claim on the H47 stuff. And SEBHCer Terry Hall needs the H47 power supply from it and is making some kind of arrangement with Tony. In a week or so (about when you'll be reading this edition) I'll be tootling over to Tony's place to drop off what Magnolia stuff he's after, next I'll run up to Terry's and leave off the power supply stuff, and after that I'll press onward to Henry Fale's shop to off-load several "parts-only" 89 carcasses and a "jillion" 40trk, full-height, single-sided disc drives. He may be able to build at least one, perhaps two whole computers from all that. I'd like to do that myself, but I'm plumb out of space, money, and time! On the way back I may stop by Lee Hart's hangout, maybe even have a minute or so to see the folks at HUG. At least I'll try! -- ed]

Dear Lenny,

I've enclosed a compressed printout of our first 2 Compu-Serve 8-bit Users Conferences. We hold these conferences every Sunday at 7:30pmEST (15:30EST) on channel C01 and they run as long as people join in to chat. Here's a synopsis of what we talked about:

The first 8-bit User conference was held Sunday, 18-Feb-89 and it was interesting. The 2-1/2 hour session surely went quickly! There were a lot of interesting discussions, mostly on HDOS and getting to know each other. I noticed the need for a modem program which supports a split window for the H89. It's a little difficult typing a line when someone else is sending one at the same time. This is a project for some eager hacker! We had a problem with lines running off the screen and solved it with the trusty OFF LINE key and 'ESC v' sequence to enable word wrap. This is one of the H89's slick features. And a good time was had by all.

Business was a little slower the second week (25-Feb-89), but nonetheless interesting. Topics included languages such as C, Pascal, and Assembly; a new [proposed] modem program for our H8s and H89s; and the 64180 CPU from Hitachi which runs Z80 code and supports 512k!

My firm--Micronics Technology--will begin selling a new HDOS and CP/M modem program which supports XMODEM file transfers, text capture, and a split screen for conferencing. The split screen allows you to type your message without inter-

ruption from incoming traffic. The price is a low \$14.95, and the program will be available by mid-March.

DARRELL C PELAN, Micronics Technology, Suite 159, 54 Dalraida Road, Montgomery, AL 36109; voice 205-244-1597, bbs 205-244-0192

[Thanks Darrell! For our non-conferencing subscribers I've "untwisted" the hard-copy transcript you sent and printed it elsewhere in this edition. To be quite frank, I don't like conferencing! The idea is absolutely great, but it's rather like trying to make out one person's voice as they're saying something of great interest to you while in the middle of a crowded room of cocktail slurpers, all trying to shout out everyone else! After three disastrous sessions of that on CIS's old HUG SIG I completely swore off compu-communicating! But your program may change all that after I've had a chance to try it out. Put me down for a copy! One more thing: You didn't exactly spell out details of that Hitachi CPU; how does it support 512k of RAM? Can it be swapped into an H/2 8-bit machine (Y/N?), etc.? I have a not-so-secret desire to increase my H8 and H89A memory capacity. Give us the "real skinny" on it, please! -- ed]

Dear Mr Geisler:

I've enclosed a follow-up on my comments regarding PREL which you had printed in the December issue. I've had a fruitful exchange with Rick Swenton on this subject and feel that some of that [exchange] may interest other subscribers.

Is there a community still involved in hand-crafted custom ZCPR installations on the H89, or am I the only one left? Rick Swenton told me he had done a number of them. If you get something started along this line I would gladly contribute what I can.

LUDDO VAN HEDELRYCK, 16514 14th Ave SE, Mill Creek, WA 98012

[Hey, Ludo! No problem! The running "correspondence conversation" between you and Rick has been a great help to many of our subscribers (and me!) in understanding CP/M's convolutions. And I appreciate J G Letwyn's straight-forward unscrewing of CP/M and incorporating some of its' procedures into HDOS. Letwyn didn't like CP/M and its' "chisel-it-on-a-stone-slab" way of doing things, so he did it better! You folks working with the "Zee" stuff are treading in J G's wind-blown footprints, and all of you hard-working "hackers" deserve our most hearty thanks for making life a little bit easier for us less-educated types. You'll find your article is Up Front in this edition. Please write more, and Real Soon Now! Also, please check your mailing label... -- ed]

=====

TUFF WANTED... STUFF WANTED... STUFF WANTED... STUFF WA

*Used RANDISC for H89 or where I can buy a new one. Contact: Dave Young, 402 Houghton Street, Ontonagon, MI 49953

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More MAIL BOX

Hi, Len!

Thanks for running my Media Ministries' notice in the Jan. issue. I've already gotten a couple of great responses by mail. Unfortunately, my phone number got twisted in the copy. I called the number [you had] listed (same town as me) and unfortunately it's someone who's away on an extended trip and left an answering machine running! I left a message, but they can't re-direct any calls my way. Could you please re-run the notice in the next issue with the correct number? Or at least correct the number if space is tight? Thanks!

TERRY HALL, 516 E Wakeman, Wheaton, IL 60187; 312-665-4594

[Oops! But I checked several "overrun" copies of III:6 and didn't find anything wrong with your phone number. And to be absolutely sure, I called your place today and found it's the correct number! It's possible that some folks had trouble reading the small print because we were having problems with our copying machine's contrast adjustment and a few "light" copies got out. Anyway, here's your notice again! -- ed]

ADS... UNCLASSIFIED ADS... UNCLASSIFIED ADS... UNCLASSIFIED ADS...

TAX DEDUCTIONS FOR EXCESS EQUIPMENT

Media Ministries, a registered, not-for-profit corporation (IRS code 501-c-3), is seeking donations of computers and accessories. We pay shipping (or pick up if near Chicago) and give you a tax receipt for all donated items to which you assign a dollar value. Current needs include a portable H89 (similar to Kres's), laser printer, dot-matrix printer capable of accepting downloaded fonts, H37 controller (or entire H/290), hard disc for H/289/90 or MS-DOS-compatible machine, also software, 5-1/4" hard-sector & 8" discs. Anything considered--call or write about what you have available. Terry Hall, Media Ministries, 516 E Wakeman, Wheaton, IL 60187 (312-665-4594).

ADS... UNCLASSIFIED ADS... UNCLASSIFIED ADS... UNCLASSIFIED ADS...

Hi Len,

Just received the January issue of the JOURNAL and noticed that whoever re-typed my letter made a mistake in the INIT.ABS patch [swapped two numerals]. The second address should be 061 365, NOT 061 356! [That's why it wouldn't run correctly for me (I typed it)! -- ed]

I'd like also to say that I agree with the MAIL LADY who found the "ATTENTION POSTAL CARRIER" comment objectionable. If I were a MAILMAN I'd feel insulted by that comment. In my humble opinion, our Postal Service does a fine job, and gets way too much undeserved [destructive] criticism. (By the way, I don't work for the Post Office nor do any of my friends or relatives.)

Now that I've got that off my chest, I have couple of patches to HDOS 2.0 SYSGEN.ABS which might be of some interest.

The first is an adaption of the PIP patch (REMark, Apr '82) which displays file names as they are copied. This [patch] will cause SYSGEN to do the same.

ADDRESS	PATCH	ADDRESS	PATCH
056 214	052/315	Patch 061 131	214/043
056 215	364/117	area, 061 132	063/247
056 216	060/061	cont'd 061 133	041/302
		061 134	041/126
Patch Area 061 117	072/052	061 135	073/061
061 120	265/234	061 136	315/076
061 121	070/056	061 137	252/012
061 122	062/043	061 140	030/377
061 123	314/043	061 141	001/002
061 124	063/043	061 142	000/052
061 125	001/043	061 143	002/364
061 126	134/176	061 144	021/060
061 127	000/377	061 145	203/311
061 130	021/002		

This second patch allows selection of source drive instead of being forced to use drive SY0:

ADDRESS	PATCH	ADDRESS	PATCH
061 377	045/146	Patch 061 167	000/042
062 000	062/061	area, 061 170	002/041
		cont'd 061 171	021/234
Patch area 061 146	071/315	061 172	203/065
061 147	052/136	061 173	071/001
061 150	177/031	061 174	052/164
061 151	073/012	061 175	177/062
061 152	315/123	061 176	073/021
061 153	271/117	061 177	315/156
061 154	064/125	061 200	271/062
061 155	001/122	061 201	064/315
061 156	006/103	061 202	001/032
061 157	376/105	061 203	052/064
061 160	315/077	061 204	201/322
061 161	012/240	061 205	073/045
061 162	064/315	061 206	174/062
061 163	303/120	061 207	265/303
061 164	203/065	061 210	302/001
061 165	063/332	061 211	377/062
061 167	001/376		

Don't apply these patches if there have already been modifications to the SYSGEN patch area. The pre-patch contents of the [above] Patch Area are what I found in my SYSGEN. If yours don't match these then you probably should not try to make the patch.

Thanks to Brian Hansen for his letter about 3-1/2-inch drives. I found it very interesting and informative.

BOB OLSON, 24450 Kirby St #146, Hemet, CA 92343

Bottom of The MAIL BOX

[I was typing too fast again! Thanks for pointing out the transposed address digits. Please note that we've slightly re-worded our "Attention Postal Carrier" notice located on the back page of this very edition. We did this because we still get complaints about non-deliveries of the JOURNAL (example, see the following letter). It's obvious that we can't please EVERYBODY, but we'd rather have subscribers actually receive the JOURNALS sometime rather than see them end up in a trash can somewhere! We do hope everyone is able to understand and appreciate our end of this situation. -- ed]

Dear Leonard,

Since writing you on 16-Jan suggesting modifications to your [GAME DISC #0] README.DOC files and your "Attention Postal Carrier" notice--which might not be appreciated by my Mail Lady--I seem to be in the doghouse. I've not received any copies of the JOURNAL this year, although my expiration date is 9/89.

I know you've received the letter and must have published part of it because I received a phone call on 21-Feb taking my offer of used hard-sector discs, and I shipped off 150 of them to the caller. Surprisingly, there was only one call!

Although I'm on a rural route, my mail is only held up by the rare snowfalls we experience which prevents traffic up the mountainside. I've had no lost mailings from other sources, i.e., Staunch 8/89er, H-Scoop, Buss, REMark, etc. Could the problem be nearer the source?

Please check [this out] and advise [me]. Thanks.

FRED A ROSE md, 4206 Ruby Place, Bellingham, WA 98226; phone 206-671-5495 (Voice or TDD)

[Hey Fred, I LIKE dogs (likewise Siamese-upholstered cats)! I'm sending you >DUPLICATE< January & February JOURNALS by 1st-class mail! If you don't get those before you read this, the problem surely isn't here at this end. And please check our revised "Postal Carrier" notice; if your female Postal Carrier is offended by THAT, she's Beyond Help! You might also note that I am contacting our local Post Office's bulk mail people regarding your two missing editions. Last time I did that for another subscriber he and his postmaster actually found the former renter of that PO box was taking our subscriber's mail from it and throwing it the trash! Now, in connexion with your ACES.BAS remarks; please note the program tells you as it begins that instructions are available. Try reading them. Use MBASIC's LLIST and make a hardcopy. A Redundant README.DOC File Really Isn't Necessary. -- ed]

Dear Len:

I'm happy to report that I finally received all my missing issues (Aug-88 thru Dec-88). Thank you. But you didn't have to send them in an expensive jacket which I've returned with the enclosed disc that has my HDOS MBASIC program, CRYP.BAS, on it. Also there's a hardcopy listing of the program and

README.DOC file, and a sample run printout. If you think any of your subscribers have any interest, include it with your other HDOS programs presently available. I'd be very pleased to think someone else is using something I wrote.

Now I have to catch up on my JOURNAL reading...

JACK WERT, 21 High Road, Levittown, PQ 19056

[Hey, Jack! The report binder was Yours To KEEP! But thanks for using it to protect your program submission; it got here just fine! Because of space limitations we'll have to print your listing in the April edition. In accord with your wishes, we shall include CRYP.BAS on our next HDOS Game Disc (to be announced Real Soon Now). We'll try converting it to run under MBASIC V5.2 (CP/M) also; It's About Time we expanded our CP/M disc offering, and your program can help there. Just for the fun of it I'll be trying CRYP on a 'gram I found in the weekly "GRIT". As a young boy in the early 1930s I'd occasionally complete a "cross" word-puzzle, but I was completely intimidated by those terribly complex cryptograms and never even touched one. Your program is appreciated! -- ed]

Hi Len,

Must apologise for a mistake made a while back when I sent you the HDOS.SYS 2.0 source code and said it would work ok if assembled with HDOS's assembler. I forgot all about a patch I'd made to my version of the assembler to get around a problem. Because of an .ASM shortcoming you must incorporate the following change to this line very close to the beginning and right after the XTEXT files:

CHANGE		
CODE	P,SB.ORG	Position independant code
to		
CODE	P,SB.ORG+PIC.COD	Position independant code

Sorry for any inconvenience this may have caused!

By the way, if you are inconvenienced by HDOS's limit of seven device drivers it is very easy to change. The following line is the one which sets the maximum (located near the end of the code):

DEVICNT EQU 7 * Initially seven devices

I currently have this set for ten and haven't had any problems.

BOB OLSON, 24450 Kirby St, #146, Hemet, CA 92343

[Thanks for the update. I haven't yet done anything with the HDOS.SYS listing so no harm's been done. Expect you shortly will be reading something about my luck with HDOS 2.0 assembly... And thanks for that DVD limit fix; I'll try it and make a report Real Soon Now. -- ed]

OOPS! ANOTHER "BARGAIN PAGE"!H/Z89 PARTS CLEARANCE!

Quantities are Limited

Loyal H/Z89 owners are finding it very difficult these days to get their faithful machines serviced, and it's probably going to get worse. Most Heathkit (Apple) Stores don't even know what an H/Z89 is anymore!

Well, SigmaSoft offers a solution to this problem, spare organs! We made a special purchase of homeless H/Z89's and want to pass the savings on to the people who use them the most.

These boards are in very good condition. All of them have been thoroughly tested by our experienced H/Z89 technician and are guaranteed by our standard 6 month warranty (except the D-G Super-89 boards). We do not sell surplus store rejects!

The 96 TPI (80 track) floppy drives are in new condition and most have never been used. They seek at a blazing 4 ms per track. The perfect replacement for the troublesome Tandon drives originally sold by Heath.

A copy of the H/Z89 Configuration Guide is included with all orders. Specific manuals for each board are not included. Most cables are sold separately. Free technical assistance is provided by phone. Many of these items will go quickly so don't wait!

Clearance Prices

5.25 Inch Full Height 96 TPI Double Sided Floppy Drive (4ms)	\$35
H/Z89A CPU Logic Board with 48k RAM and MTR-90 ROM	\$35
H/Z89A Terminal Logic Board	\$35
16k Memory Expansion Board for CPU Logic Board	\$15
H17 Hard Sector Disk Controller Board	\$35
3 Port Serial I/O Board	\$45
Heath Z37 Double Density Floppy Disk Controller (2 Left!)	\$95
MTR-90 and Secondary Decoder PROM Set for Older CPU Boards	\$10
Replacement H/Z89 Keyboard with Keypad (Fixes Key Bounce!)	\$35
Complete H/Z89 Video Assembly (2 Boards, Flyback, and Yoke)	\$35
Complete H/Z89 Power Supply (Board, Transformer, etc.)	\$35
Green Phosphor CRT (Some are Slightly Burned)	\$15
Box of 10 Hard Sectored 5.25 Inch Disks for H17 (Maxell)	\$10

Domestic Shipping Charges

Ground Shipping and Insurance in Most Cases	\$5
Air Shipping and Insurance in Most Cases	\$10
COD Charge (Must be Approved in Advance)	\$3

Texas residents please add 8% sales tax. Please include either a check, money order, or Visa/Mastercard charge authorization with your order.

Call the H/Z89 Hotline for More Information!

SigmaSoft and Systems

17000 Dallas Parkway #207, Dallas, TX 75248, (214) 380-6187

FILENAME : SMILES



LETTERS POLICY

Our "MAIL BOX" feature has been provided as an open forum for the free exchange of H/Z 8-bit computer information between all subscribers and readers of the SEBHC JOURNAL. We ask all correspondants to keep their letters reasonably concise and preferably around 250 words maximum length (about six screens, 24 lines/screen of ASCII text). The JOURNAL shall exercise its' right to condense letters exceeding this recommended maximum unless that might destroy their intent or meaning. In such cases we shall contact the writer.

The SEBHC JOURNAL RESERVES THE RIGHT TO REFUSE TO PRINT any letter containing profanity, derogatory racist, or sexist remarks, specific political or libelous statements of any nature directed toward any individual or organisation. The JOURNAL will not knowingly publish malicious fabrications, lies, or distortions of fact, but will take appropriate legal action against any individual(s) uttering them.

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