FOUR YEARS OLD THIS MONTH

Whoopie!

The Readers' MAILBOX

Dear Lenny,

Just received your July issue today. Gee, even a hand-written notice attached--golly, there IS a person there!

Enough! This is to bring you up to date on what is going on here--equipment wise--that is.

You know I got my drives back, and they are working OK. Well, about a week later, the computer was humming along--well, at least it hums--when the screen started to go screwy. The characters looked like they were trying out for a 'skeleton' part. After a couple of RESETS, no video A-tall--the CRT's [filament] wasn't even glowing. After a call to Heath, who agreed that there was a problem and which resolved nothing, I took the machine down to bare bones, found that there was power, both video boards were working, but that the trouble was in the TLB. Oh, boy! Took the machine down, minus the CPU, et al, to the local trouble-makers (oops, shooters). Two and a half weeks and upteen dollars later discovered that the Z80 on the TLB went bad--ugh!

So the machine came home and was humming along, when *-ZAP-* the H25 printer wouldn't print. This time I know what the trouble is, it's that big monster chip on the I/O board. It's gone out twice before. So I call Heath parts (trying to get a part locally is like getting a seat on Amtrak) and some ten days later it finally shows up. This is the same department that I've received parts from in two days via regular parcel post--so I've got a backlog seemingly into the next century for printouts! Speaking of things totally beyond this, do you have a copy of the H89A's schematics? I have part 1/3 and 2/3, but 3/3 is missing. Now to the part you're really interested in. I'll take just one [of your] spare drive[s] as a backup--not the whole kit 'n' kaboodle of a case and such--just the one (gasp) nekked drive. Ship whenever convenient, no need to rush (famous last words). Like the check for my renewel will be in the mail Monday! There is no real need to hurry...barring earthquakes, I'll still be here.

SPRING S SMITH, San Luis Obispo, CA 93401-8228

[Hey, Spring! Glad to find that you're back up'n'running! I got your renewal cheque and you won't miss an edition after all. Since receiving your letter The Missus and I went on * her * vacation (I'm not now earning a salary because of my last employer's <unprintable> anti-old folks predjudices), so we left the JOURNAL in our oldest daughter's hands. She's working full time these days so her taking care of things did foul up her spare time! But you'll be getting that drive by UPS the week of 19 - 26 Aug. And a copy of schematic #3/3.

Use all in good health! -- ed]

Dear Lenny,

"If you have trouble with a hard disk or floppy drive, who do you call?" MIKE MORSE!

Recently I had a problem with a PC and from the checks I made, it seemed that the problem was with the hard drive. But where to have it checked that the cost would not be equal to the National debt? The answer was in the Journal: Michigan Computer Repair Services.

I called them, then shipped the drive to them. They checked it promptly and informed me that it was OK, but the controller was questionable. The best part was their LOW charge to do the work.

I highly recommend MCRS for drive repair.

ALLIE C LINGO, P O Box 118, Dierks, AR 71833-0118

[Yeah, man! I called Mike at MCRS and told him I'd received your postcard. He was delighted that you thought enough of the service to give it a plug here! I too think he is a pretty good man. Hey, Allie--is there any more good HDOS 3.0 stuff in the mill? The natives are getting restless! -- ed]

Dear Mr. Geisler,

Comment on III:11 p9, text of Fred Rose's NZ-COM.DOC: "Will some subscriber translate this for him PLEASE?", the translation code is on p11. (If I could only decipher those poor small printer symbols!) Take the CHR$ value of the printed symbol, subtract 128, =CHR$ value it should be, =228;228-128=100;CHR$(100)=d, etc. But I can't "explain" how it happens.

Front covers don't do much for me. [WHY?? -- ed] Would like more HDOS MBASIC code programs (e.g., "CRYPTO.BAS" in III:10, p7) or [some more] software discs.

HAROLD BRETZ, Indianapolis, IN

[Thanks for the translation. Other readers have also sent us "how-2" instructions about the "invisible printer control codes syndrome". If Fred Rose hasn't figured out how to get that NZ-COM .DOC file printed out correctly by now, it won't be OUR fault! -- ed]

Dear Friends,

We have been traveling a great deal this year, and we have missed many of our magazines and lots of phone calls and wonderful people. Please note the future addresses and dates:

More Reader's MAILBOX

Beginning July 1, 1989:
    Alfred & Dorothy Dale
    741 Chuckanut Drive
    Bellingham, WA 98226
Beginning August 20, 1989 (for one year, then return to above):
    Alfred & Dorothy Dale
    344 Tenafly Road
    Englewood, NJ 07631
    Note: I have an H1000 mounted in my H89 but the thing does not turn on--fuse OK. Any H1000 owners out there?

/signed/ AL

[Now here is a very puzzling letter. We checked our database to "way back when", and couldn't find the writer's name and address, so he must not be a regular subscriber. But since he needs help and is asking a valid question, we're running his letter anyway. Maybe some kind SEBHCer will read it and contact the Dales Real Soon Now. -- ed]

Dear Mr Geisler,
    This is addressed to your response to William Jacob iii, III:12, p7 and his question about how to obtain the same results from CP/M's M8ASIC RANDOMIZE command in other BASICs.
    In Sextant #7, 1983, p27, Clair Doughty uses this substitution for RANDOMIZE in the programme, BASIC BATTLESHIP:
    "Line 660 is replaced by lines 642 thru 660 and line 690, thusly.
    Remove this line --
        660 RANDOMIZE PEEK(11)
    Insert these new lines --
        652 RD=PEEK(8219)
        654 FOR JK=1 TO RD
        656 GB=RND(1)
        660 NEXT JK
    Now rewrite line 690 W=INT(RND*2): T=INT(RND * 11) as
        690 W=INT(RND(1)*2):T=INT(RND(1)*11)"
    That should take care of his problem. Since I use only HDOS and don't have a copy of your CP/M ACES.BAS, I don't know if this substitute routine will help or not in converting the original game to run under HDOS.

HAROLD W BRETZ, 1215 E Castle Ave, Indianapolis, IN 46227

[Thanks for the tip Hal! When I get time I'll try your trick on the CP/M ACES.BAS file which I changed to HDOS, but which I have been delaying its' revision for HDOS. If your technique works, we'll have some more software for our HDOS users (including me; I prefer programming under HDOS to CP/M). By the way, your subscription problem's fixed! It's another one which got messed up during a very hectic "side-business week" in our computer shack. There probably will be others, so don't feel that you were singled out for special harassment! -- ed]

Dear Lenny,
    I'd like to see some support for CP/M-85 (H100 version) in the JOURNAL.

R L MEULLER phd, 11890 65th Avenue N, Maple Grove, MN 55369

[Hey, Professor--get in touch with Paul F Herman, 3620 Amazon Drive, New Port Richey, FL 34655. He publishes the Z-100 LIFELINE--a newsletter dedicated to H/Z100-type computerists. If you're quick, you can get in on his special Charter Subscription Offer of one year (6 issues) for $24! The JOURNAL exchanges subscriptions with Paul. Judging by the first two editions we've gotten, we think he's doing a VERY good job, indeed. His toll-free phone number is 800-346-2152 and he accepts both VISA and MASTERCARD plastic. We've enclosed his flyer for the Z-100 LifeLine for any subscribing H/Z100 users to order a subscription to Z-100 LifeLine by. If you phone order, please tell Paul that you found he'd been mentioned in the SEBHC JOURNAL! -- ed]

Dear Lenny,
    It's been a long time since we last communicated. It was very interesting that you sent me your latest issue with Ludo Van Hemelryck's reference to me in it. What was most interesting was that I was just preparing to write you anyway!
    I've put together some material from my previous contributions to H-SCOOP and elsewhere and edited them for your possible use [in the JOURNAL]. These items should still be of interest to H/Z89 users, and may have been missed by many of your readers. You're welcome to edit and use any of this material as you find appropriate.
    There are two text files on the enclosed disc which I hope are useful and of interest.

PETER SHKABARA, ANAPRO Corporation, 8895 Pino Solo Avenue, Atascadero, CA 93422; phone 805-466-4284

[Yo, Pete! Thanks for the disc of text! We checked it over and squoze it all into this edition! Now your subscription has grown by one year (as a toke of our gratitude)! We wanted to run a free ad for your 4 & 6Mc/S clock upgrades and other 8-bit stuff, but the copy you sent didn't reproduce properly; could you send us a set of full-size images for our next edition? -- ed]

Dear Lenny,
    I mailed you a $20 cheque on 4-Apr-89 for my subscription renewal and a copy of the CP/M TXTPRO DEMO disc. My JOURNAL subscription is ok, but where's my DEMO disc?!
    I enjoy the JOURNAL--don't give up! Also, I like the fact that you're putting the mailing date on the JOURNAL now.

ANTHONY P KASS, 10516 Texwood Avenue, El Paso, TX 79925

[Tony, we sent your disc out on 21-Aug-89. Enjoy it! -- ed]

RICK SWENTON'S ANSWERS

Hi Lenny,

Just a few comments after reading the July Journal:

Fred Rose's printer problem:

The print listing from Fred Rose on page 9 interested me because I had never had any problems printing NZ-COM documentation. After investigation with a disk editor I discovered that document (RELEASE.NOT) was probably created with Wordstar. Wordstar sets the high bit of the last letter of each word. If you have a simple printer like my DEC LA180, or other printers which ignore the eighth bit (or ignore parity) then the WordStar document prints quite normally. But if your printer has printable characters assigned to characters with the eighth bit set, then a WordStar document will appear to drive your printer crazy!

Take a look at what is supposed to be "NZ-COM" at the start of the first paragraph. The last letter of NZ and the last letter of COM are not what you'd expect. Now take a look at the very convenient Table One on page 11 and find the "Z" which is decimal 90. Covert it to hex and you get 5A. Now set the high bit by adding 80 hex and you get DA hex. Next convert DA hex into decimal and--behold--you get 218 decimal--ibm's upper right-hand corner graphic character-- exactly what was printed in the listing!

Examine what is supposed to be the "M". Find it in Table One listed as 77 decimal, which is 4D hex. Add 80 hex and you get CD hex (205 decimal) which is the equal sign. Amazing!

Now for the fix: Using CP/M's PIP command, print out the file with this command string:

PIP LST:=RELEASE.NOT[Z]

The [Z] switch will zero the parity bit and send only "normal" printable characters to the printer. Perhaps the Z-folks got carried away with the "Everybody uses WordStar" syndrome!

Bill Derby's Letter:

I got a chuckle reading Bill Derby's letter on page six about me coming down hard on plain CP/M. He did say something wrong which I don't think he intended that way. He said, "A standard CP/M system, expecially when the Enhanced Derby CP/M Utility Programs are used, does offer some of the ZCPR features in a simpler form without having to change anything about the system!"

Actually, a standard CP/M system offers NONE of ZCPR's features in ANY form. That's why people took on the task of creating enhanced CP/M utilities (such as Derby's Utilities) and even completely re-writing operating systems (e.g. ZCPR-34, ZSDOS, NZ-COM, etc.). This work began as soon as CP/M was released and people realized how difficult it was to use. [HDOS was written by Letwyn for this very reason! - ed] This

work has been ongoing for a long time, and Bill Derby is even a part of it. If plain CP/M is so good, and I "came down a little harder than necessary", then why did all these people (including Bill himself) spend so much time creating the enhancements?

I'm not sure what Bill means about ZCPR being overkill for most novice users. Does he really mean NZ-COM, instead of Z-CPR? A great many people who don't know the full story behind the ZCPR series often refer to ZCPR as a general term, when actualy, there are three major versions of ZCPR alone-- ZCPR, ZCPR2, and ZCPR3--as well as many version BDOS replacements (ZRDOS, ZSDOS) and combinations of complete systems (Z-System, Z-COM, NZ-COM). ZCPR (ZCPR1) which came with programs such as BIOS-80, and from the public domain also is just the tip of the iceberg compared to NZ-COM.

ZCPR (ZCPR1) is most definately NOT overkill to the novice user since it suports ALL standard CP/M's CCP commands, and it does NOT make the plain CP/M system non-standard (except that it requires a Z80 CPU), and should a novice user choose to to use them, the additional CCP commands (LIST, DFU, GET, GO, JUMP) as well as the expanded standard commands (ERA, REN, TYPE, DIR, etc.) which are a blessing and not just minor conveniences. [Right on, Rick! -- ed]

There were versions of ZCPR1 and ZCPR2 created to run on 8080 and 8085 systems, and even a few ZCPR3 8080 systems appeared, but there were simply too few of the 8080/85 systems out there to justify too much development time. Features contained in these systems were limited because the 8080 instructions took up too much memory. Current trend in the ZCPR community is to no longer support 8080 code. Unfortunately, this has an affect on the H/Z100s, but other than the ALtair and Imsai, I can't think of any other computer which would be affected.

I agree that [installing] a full-blown NZ-COM system may be too intimidating to the novice nuser. That's why I wrote the "Z-System for Novices" article (SEBHC JOURNAL, III:9 pp8-13)! Almost any novice has the ability to harness the power of Z-System. All that's needed is a desire to learn.

NZ-COM is definately not for everyone. Many CP/M users spend their time exclusively within their [favourite] application programs (WordStar, SuperCalc, etc.) and rarely leave them. In these cases it really doesn't matter what flavour CP/M your're running, because you hardly ever see it!

Bill is correct [in saying] that CP/M is still widely recognised as the standard 8-bit operating system. But that doesn't mean it's that great. MS-DOS holds that title in the 16-bit world and it has similar problems. MS-DOS [also HDOS] was derived from CP/M, but it lacks many of NZ-COM's powerful features. But NZ-COM is still not for everyone.

There are many users who could benefit from enhanced CP/M utilities such as those available from Bill Derby. If you're looking to improve your plain CP/M system performance without having to read and study a bunch of documentation, then the Derby Utilities are just the thing for you. Also, they're quite reasonably priced. We [8-bit users] have to take ad-

MORE Ricks's Answers

vantage of 8-bit software availability and support its' auth-
ors so that they can still afford to remain in business.

David Young's Letter:

David says he gets BDOS ERROR: BAD SECTOR messages. First
look for the standard things: Be sure there is ONE terminat-
ing resistor pack, that it's in the LAST drive. Test +5, +12
volt supplies at drives while running to make sure regulators
can take load. Try to isolate problem to drive. Check drive
spindle speed. Many drives have a strobe disk on the
flywheel. When you look at the strobe disk under a floures-
cent light, the 60-cycle marking will appear to slowly drift
one way or the other.

What make/model are the drives?

I remember a problem I had once with the Tandon 100-4
drives. The drive belt became stretched and glazed over
time. When a disk was inserted and the motor started, the
belt slipped. It just could not overcome the friction of the
disk inside the jacket. When I opened the latch and closed
it slowly, the already turning spindle had a running start as
it began to contact the floppy disk hub and eventually the
disk would spin--until the motor timed out and the cycle
started all over again.

The cure is to replace the worn drive belt. You could try
cleaning the belt with denatured alchohol, but the problem
will return rather soon. [Sometimes rubbing a little soft
chalk on a just-cleaned belt helps too. -- ed]

Richard Turk's letter:

I also have one of those Burroughs drive cabinets from
American Design Components. They are very nice and the one I
have shows hardly any wear. They have a switching power
supply which looks to be about 75 watts. I am running two
Miniscribe 10MB half height drives and an MPI 96 TPI full
height drive in addition to the Xebec 1410 controller off the
same power supply in that one cabinet! The cabinet also has
a 4-inch muffin fan. At $59.95 it is a very good buy.

One word of caution about American Desigh Components: They
deal in new and used equipment and sometimes it is unclear
from their ads whether the item is new or used. Some say
"new" and others say "rfe" (removed from equipment). Some
say nothing. If you expect to get a "new" a item, be sure to
check with them to verify that it is in factnew and not used.
Their delivery time is prompt and I have no reason to believe
there is anything questionable going on. Just be aware that
not all their items are brand new in a box with an original
warranty.

Finally, Ludo Van Hemelryck's letter:

Ludo gets me going! So much to do! I am worried about
this guy. Someday he may figure out that I may not be the

authority that I appear to be! He has so many good ideas and
proposes so many challenging concepts that many times are out
of my league.

I was thinking also about Pat Swayne's comments regarding
a public domain H89 CP/M clone boot disk and ran across the
same problems that Ludo described. The MAKEBIOS part may not
be a problem since this program was created by Heath.

I was talking to Lee Hart the other day and he told me
that he believed that Heath (but not necessarily Zenith) was
very cooperative with granting permission to modify and
distrubute old software or firmware as long as you don't
place any work on Heath, such as requesting source listings
and the like. It is very possible that Heath could grant us
permission to bundle MAKEBIOS and even the BIOS source code
itself with our PD boot disk. Heath still has a twinkle in
its eye for the hobbyist/experimenter. I am not quite so
sure about Heath's ability to release MOVCPM. It is very
easy to replace the Digital Research CCP and BDOS modules
within MOVCPM with a PD version of both. The cold stat
loader and BIOS loader (both written by Heath) for all of the
MOVCPM versions would remain unchanged. The problem would
come in if MOVCPM itself was copyrighted by Digital Research
and licensed to Heath for release with copies of CP/M sold by
Heath. If we can get around these few obstacles, this
project could become a reality.

MORE STUFF!

My promised article on the CP/M X-10 interface software
may be delayed a bit. As if one hobby is not enough, I also
enjoy Ham Radio. I operate a 6-meter repeater here in
Connecticut. This is a mountain top relay station which
greatly extends signal going from car to car or handheld
radios. Well, it has been awhile since the last time it
happened, but the day before I started my vacation, the
repeater was hit by lightning and was off the air. Yesterday
I went up to assess the damage and it is very bad. Most of
the other commercial two-way radio equipment in the building
was disassembled and waiting for parts. I designed the
control logic for my repeater back in 1980 using TTL ICs.
The system occupies 15 circuit boards each holding 12 ICs.
The last time the repeater got hit by lighting, almost all of
the 180 ICs had to be replaced!

Wrapup:

This was supposed to be a short letter. Time to get off
the soap box!

RICK SWENTON, SEBHC JOURNAL Associate Editor NE, Bristol, CT

[Thanks again Rick for your input. Not a month passes with-
out more words of wisdom and humour from you to our readers,
and we all do thank you very much! But don't keep us waiting
too long for your newest article...we need it sorely. -- ed]

PETER SHKABARA'S INPUT

by
Peter Shkabara
ANAPRO Corporation
8895 Pino Solo Avenue, Atascadero, CA 93422

There may be problems in using Microsoft products with ZRDOS or with H8 and H89 speed modifications. All of the reported problems had to do with Heath distributed software, but in looking at the Microsoft code, the problem may be present in versions distributed through other channels.

Microsoft has included "piracy protection code" within the products distributed through Heath. This code pokes around in the software and hardware of the host computer. If the values found do not match what is expected for a "STOCK" version of the computer, then the program either exits or even crashes the system.

The problem with ZRDOS is due to a test of the CP/M serial number which is contained in the BDOS header. For Heath in particular, the value expected is C4 hex or 196 decimal in the first byte.

For version 3.44 of M80 the patch location is at address 46F6 and should have the value C1 changed to a zero. This will bypass the serial number test, but not some other hardware tests.

Other Microsoft products such as BASCOM, COBOL and FORTRAN may have similar problems but have not been tested by me on the Z-System.

CPU speed modifications give Microsoft product problems due to hardware poking. The offending code turns off the zero-origin RAM to allow testing of Monitor ROM contents. If the ROM has been changed to a non-Heath type, or if it is slower than can be handled by the new CPU speed, there will be a problem. One solution is to get a fast ROM, but the Microsoft code can also be patched. Here's a list of addresses where the ROM switching code is located or around which it can be found:

Product	Address	Code to look for
BASCOM vers 5.23	4138	\ ANI DF ;turn off zero org
MBASIC vers 5.21	4793-47BB	¦ OUT F2 ; bit and send it
F80 vers 3.4	2669-2C8F	¦ the bytes of code are:
M80 vers 3.44	47A4-47C4	/ E6,DF,D3,F2

HARDWARE NOTES

Here's how my own setup looked as of June 1, 1988: My main computer was an H89 with my 6MHz mod, an amber screen, the Super19 ROM, my REP3 circuit, a CDR 1-Megabyte board and a 20-Meg hard disk. The operating environment was the Z-System with RAM disk, DateStamper and patches for EMULATE and 6MHz.

All this was fine, and even though I owned a PC clone, I had no inclination to switch. Then ANAPRO acquired a Radio Shack dealership and along came a Tandy 4000 computer. This computer has an EGA (high resolution) color display, a decent keyboard and an 80386 microprocessor running at 16MHz! This is not the fastest computer on the market today, but it is faster than my old H89. MS-DOS has advanced and now offers many of the same features found in the Z-System (both have tried to copy UNIX).

I've found that the MS-DOS world has many public domain DOS utilities which provide functions similar to those we have come to know under CP/M and Z-System. But there still remained a problem. I had developed a good number of my own utilities (as well as having many favorites from the public domain) which would run only under CP/M.

Then came help: MicroSolutions, the company which brought Uniform to the Kaypro way back when, now has a Z80 co-processor board for the PC environment. The board runs at 8MHz and includes software called UNIDOS which allows running of CP/M programs.

A product from The Software Toolworks called ZPEM also allows CP/M emulation on a PC, but UNIDOS makes the job so much easier. With UNIDOS you can run MS-DOS and CP/M programs interchangeably. I now can run my old set of utilities on the Tandy 4000. Both, ZPEM and UNIDOS allow emulation of an H19 terminal. But these utilities don't support function keys nor H19-type graphics display. So those programs requiring function-key inputs just will not work.

To read CP/M formats on a PC machine, the UNIDOS package comes with UNIFORM-PC which works in a manner similar to my own EMULATE. A drive can be set to be a particular CP/M format and the system does all of the interfacing. You can read, write and log onto the disk! The only problem is that support for Heath's various formats is poor. I've approached MicroSolutions about a solution for this, but so far, no response.

To get the Heath (and many other) CP/M formats onto the PC, I use MediaMaster. This is not as convenient to use as UNIFORM because it is a file transfer program and does not even include a SWEEP-type function. But it does support all of Heath's soft-sector formats. I did find a bug in the Extended density format and have a fix for it.

With all this on my Tandy 4000, I now have color display, high speed operation, access to MS-DOS programs and I did not have to give up my CP/M utilities!

Tutorial Pointers on Floppy Drives:

Many seem confused by soft sector vs hard sector, 40 track and 80 track vs 48tpi & 96tpi. To all this we can add a 3.5-inch drive or a high density 5-1/4 and many of you seem ready to leave. But floppy phobia is not a necessary thing and I hope to clear up some of the confusion.

First of, let's look at the floppy disk itself. Information written to a disk is separated into pie shaped wedges called sectors, and concentric circles called tracks. [Eyebem has to be different--they call tracks "cylinders"! -- ed] The hard sector vs soft sector refers to the way the sectors are identified. In hard sector, there is a circle of holes

MORE of Peter's INPUT

on the disk with one hole making the beginning of each sector. Soft sector relies on magnetic markings on the disk for the sector information. These marks are placed on the disk during the formatting process. This is why you need to format a disk before using it. Both types of disk also have a hole to identify a reference point on the disk (often called the "tach mark"). This is the "starting" point for all recorded information. Although there are some unusual exceptions, any disk drive can handle soft-, or hard-sector floppies.

Single and double density refers to how tightly the data bits are recorded on each track. In double density, there will be about twice as many bits per length of recorded media as there is in single density. A disk controller capable of handling the higher data rate is required to do this. All of the current floppy drives can handle the tighter density.

The H17 controller is not capable of the higher data rate and cannot record in double density. To carry the density bit still further, there are drives which really put the squeeze on the data. This requires a still more special controller but can put up to 1.4 Meg of data on a single 5 1/4 or 3 1/2 inch disk. These are known a Ultra High Density drives and are found on the PC AT. CDR sells a package which will work on the H89 using these drives but it requires a CDR or Magnolia soft sector controller. Actually, any 8 inch controller would work, since the drives look to the system as if they were in fact 8-inch. [A 34-to-40 conductor cable adaptor may be needed to make 8-inch controllers work with most small drive's 34-conductor cables. -- ed]

Another way to increase disk capacity is to squeeze in twice as many concentric tracks. This is known as double tracking and is usually seen in an 80-track as compared with the 40-track drive. In a 5 1/4 inch drive, the disk recording window is a bit over 3/4 inch wide. If forty tracks are placed in that space, we get a density of 48 tracks an inch.

If 80 tracks are placed in the same width, we get 96 tracks an inch. In order to fit twice as many tracks into the space, each track is cut to half normal width. This is why we cannot use a 40 track drive to read or write an 80 track disk, nor can an 80 track drive write to a 40 track disk. Some will say that this is possible, but remember that each track of an 80 track drive will write a half wide track.

The 40 track drive will also read whatever was in the other half of the track. It would not be very reliable and would require that a bulk-erased disk was used to start with.

Now that we know about the drives, note that a 3-1/2-inch drive appears to the system as if it were a 5-1/4, 80-track, double-sided drive. There's no reason you can't use one in an H8 or H89 with soft sector or hard sector controller. For hard sector you'd need Livingston Logic Labs' BIOS80 software modification set to use them. H37 users, have at it!

Other Notes of Interest

We haven't been advertising for nearly a year. Yet every

day we get requests for CP/M stuff! As I have been saying, CP/M is NOT dead. But because many owners of older machines are reluctant to spend money, accessories and software ARE hard to find now.

The answer to this is: FORM GROUPS!!! There is a tremendous amount of good public-domain software out there for all to find an use. Also, if hardware orders come in sufficient quantity to make it profitable for him, almost any vendor CAN supply your needs.

Example: The CDR RAM board is no longer available. There was another limited production made due to customer demand, but that's now gone. Our own REP3 keyboard repeater is also gone. We can't justify another run of PCBs. But, if a group order for 50 or so was to come in, then it could be worthwhile.

There IS strength in numbers. Support your local group if you have one. If you do not have a local group, try keeping in touch with The Staunch 89'r, SEBHC Journal or H-Scoop. Let your views be known. Sitting quietly lamenting will get you nowhere fast!

A few days ago (mid April) I talked with Bridger Mitchell of Plu*Perfect Systems. They are the Date Stamper people. The address in Idylwild, CA is no longer in effect and should not be used. Correct address and phone: Plu*Perfect, 410 23rd St, Santa Monica, CA 90402, (213) 393-6105.

***** comments on PC machines *****

EUREKA! The answer to why the PC computer is winning over previous CP/M users. If you have a different view, let me know. We would all like to know the answer. For me, the answer came in analyzing why I switched most of my work over to a 386 DOS machine. And the reason is: A HARD DISK!

When I had a 20 meg hard disk system on my H89, computing life was fairly convenient. But there were serious compatibility problems. My system used the CDR hard disk package which was great for the BIOS, but it suffered from BDOS bugs. Other options would require a change in BIOS which would make use of EMULATE, CPC (our own products) as well as Z-System and other software difficult or impossible.

On a PC-, or AT-compatible machine, the hard disk uses a standard software driver. As a result, all PCs could have one installed without suffering compatibility problems.

Now, I did have my own personal reasons for wanting to work on a 386 machine (has to do with my school work). But the main reason I prefer to do my work on the AT instead of the H89 IS the hard disk. This is my view. If you have an opposing view, let us hear from you.

***** notes on UNIX *****

UNIX seems to be gaining ground. The 80386 processor is making possible a low cost machine capable of running the system. A "standard" for UNIX seems to be evolving. Actually, there are two standards--one from American Tele-

PETER'S INPUT Continued

phone and Telegraph Corp., and another from an industry group which does not want to be bound by the giant ATT.

For those not familiar with it, UNIX is an operating system which has been used on many different computers. Most of these would not allow object code portability even though they were all running the same operating system. This may seem strange to users of CP/M or MS-DOS, but it must be realized that UNIX was written in the C language and can be recompiled for different CPUs. CP/M and MS-DOS were written in assembly language for use with specific microprocessors.

Software portability under UNIX is evaluated in source code form. This assumes that the source is in C or some other compiler language. Compare this to many Microsoft BASIC programs which were written under CP/M but will run on a PC with GW BASIC. If you haven't tried this yet, you may want to do so. The problem with UNIX has been that there had been many different versions created. This meant that even if you did recompile a program, it still might not run. An extreme example: you might have three 80386 AT-style computers running different versions of UNIX and even though they share the same hardware and operating system, programs might run on only one of them! [Virtual non-portability! -- ed]

The progress that has been achieved is that sometime this year, a standard will be implemented which would force compatibility between systems. But because there are two standards evolving, you would still have to recompile the source code to make it work. Object code (e.g. COM files) portability even on 80386 systems is still restricted to each version of UNIX with the same hardware.

A second development which will help UNIX expansion is the recent drop in RAM prices. I have just put together a 20MHz 80386 machine with 4Meg of RAM with UNIX in mind for the near future. In the process of putting it together, I learned a lot about potential pitfalls in the 386 market. Not all of these clones are bugless. Based on my technical knowledge and of reasonably priced sources, I am now prepared to offer clone machines. If any of you are interested, just call or write with a general or specific list of requirements. I will be happy to quote you a system.

**** Notes on the C language ****

Today's theme item is the C programming language. Most of my programming has been done in assembly language. I have done 8085, 8085, Z80, 6800 and 68000 programming. Although assembly language does not have the power of high level functions, use of libraries make the job fairly easy. The main problem with assembly language is portability. If a program is written for a Z80 computer, it cannot be assembled for use on an 8088 IBM PC. This is where the C language comes in. By having a C compiler on both an H89 and a PC, you should be able to compile the same program to run on each machine with only minor changes in source code.

C/80 from the Software Toolworks is an example of a low-cost C language which is available for CP/M and MSDOS. I had

been selling C/80 for some time before I began using it to any degree. This particular C compiler produces very efficient code but I found that some of the functions implementations don't behave as I'd have liked them to. Enter Grant Gustafson of Viking C Systems. Grant is a professor at the Utah State University and has been working with C for some time. He has developed a large set of functions to be used with C/80 and sells them in various packages.

During development of my CPC program for reading and writing PCDOS disks on an H89, I became aware that a similar program was available from Grant Gustafson. I contacted him and we became collaborators. I had the hardware interface code, and he had the user SWEEP-like shell. I sent him my source code, he sent me his and we began the joint effort.

A slight problem came up for me. Seems that Grant likes to do everything in C and claims that it is every bit as efficient in size as assembly language. When Grant returned the program code to me, I did not even recognize my own portions of the code. Now it was all in C!

To compile the program, Grant had sent me his C libraries and the substantial manual which comes with them. At first all this overwhelmed me and I put his material aside. Later, as I began digging through the CPC program's C source code, it slowly began to make some sense. All sorts of useful functions are included in the library package! My conclusion now is that C does produce code which is ALMOST as good as assembly language and it is often easier to write. But I still revert to writing some routines in assembly language. A nice feature of C is that you can do this easily. If you have any interest in C, I recommend that you give Grant a call. Grant Gustafson, Viking C Systems, 2243 South Belaire Drive, Salt Lake City, Utah 84109, 801-484-9573.

**** Notes on parallel ports ****

On numerous occasions I have been asked by customers for a parallel port for the H89. The whole issue seems rather silly to me. Why would anyone want to buy rather expensive hardware and modify the operating system just to tie a Centronics port printer to the H89? Perhaps some do not know of serial to parallel adaptors. Quikdata sells a print buffer (also a good item to have) which includes conversion capability. However, a cheaper way to go is a simple RS232 to Centronics adaptor. These are made by Tigertrionics, Practical Peripherals and a number of other manufacturers. Look in an issue of Byte for adds on these devices. They sell for $69 to $110. I have been using one for years and have never had the slightest desire for adding a parallel port to my H89.

In H-SCOOP issue #91, Dave Brockman (FBE Research) expressed displeasure regarding my comments about parallel ports. I did not wish to deprive his company of any sales of his parallel board for the H89. At $74 the board may be a good value for many 8-bit'ers. I readily agree having a parallel

STILL MORE Peter's INPUT

interface to a printer has merit. In my opinion, a parallel I/O card would be better if it were originally designed into the system as a standard part of it. Heath's H88-11 is the only STANDARD parallel interface for the H89. It was rather expensive and may no longer be found.

All modifications, including FBE's require a BIOS change. BIOS changes are highly undesirable. My own products, such as the 4MHz mod and EMULATE, do require BIOS modification, and are a source of trouble for some installers and their machines. I don't know, for example, if the FBE mods will work with my Z-System. How about it Dave? Keep in mind that my Z-System BIOS includes modifications to the I/O drivers.

I don't want to discredit FBE in any way because they make and sell excellent stuff at reasonable prices, but I still stand by my original view that to solve a printer interface problem with low-cost external hardware is much preferred to messing around with the BIOS.

**** Notes on DateStamper ****

Earlier I mentioned the DateStamper program. The more I use it, the more I appreciate it. But there is a penalty for using it: you lose a kilobyte of TPA space. What you get is a record of the time and date of file creation and modification. I produce a fair volume of small programs and have a difficult time remembering which files are the latest. One look at the date and all is clear. MS-DOS has a version for your H/Z100s, but CP/M 2.2 doesn't. [HDOS does have the date feature but not a time stamp. -- ed]

Some care has to be used when installing the DateStamper to have it run properly. Although it may work with other configurations, I strongly recommend that it be installed ABOVE BIOS and that it be installed last AFTER any RAM89, hard-disk or ZCPR software.

**** DERBY Utilities ****

Most of the Derby utilities are based on exploiting CP/M's SUBMIT facility. Bill Derby's mastered the art of using SUBMIT, and has written a program he calls SUB--a very useful program which provides batch-processing capabilities found under ZCPR3 and MS-DOS. I use ZCPR3 on my system--don't need SUB--but for others using CP/M it's an easy way to get versatility without operating system revision! And Bill's other utilities may be useful to you non-ZCPR3 users. Worth investigating if you'd like CP/M batch-processing capability. Contact: William Derby, P O Box 2041, Livermore, CA 94550.

**** More CP/M Points ****

In connexion with the subject of a CP/M replacement, I'd like to add some comments. There seems to be quite a bit of confusion of what exactly CP/M is and where Digital Research and Zenith (Heathkit) fit into the picture. Since I've done so much work in the CP/M environment, I feel competent to do

a little explaining and demistify it somewhat.

First, CP/M is a disc operating system. This means that it provides a standardized software environment for other programs to run in. There are three basic elements to this environment. The heart of it is the Basic Disc Operating System (BDOS). This module provides all of the "system calls" by which application programs can access the disc drives, printer, console and what have you in a standard format regardless of what CP/M hardware it is on.

In general, the BDOS is always the same. There have been modified versions of BDOS produced by Magnolia (they used Z80 codes) and CDR's SasiSoft hard disc package. Other sources such as ZSDOS and ZRDOS are "clones" or rather "improved" versions of BDOS produced by other vendors to perform an equivalent or "better" task. The "better" part is of dubious value since any programs making use of the extended/improved features wouldn't run under standard CP/M, hence these DOSes have a very limited market.

The CP/M system's second module is the Basic Input Output System (BIOS). This portion of the software is written by the hardware manufacturer. Heath wrote it for the H89. The BIOS [module] has a standard jump table at its' beginning. It consists of a set of routines, each of which perform a defined task and return a specified value when any routine is called. The specifications are part of CP/M's definitions. Every BIOS, regardless of the hardware, is supposed to operate in the same way. The actual code differs greatly from computer to computer due to hardware and programmer's style variations.

The last module is the Console Command Processor (CCP). This is simply a "default" program which is run at any time a warm boot is executed and no other program is running. The CCP is what provides the A> prompt. ZCPR and NZCPR were simply replacements for the CCP and provided some features beyond the DIR, ERA, and other commands. When ZCPR3 came along, modifications to the BIOS were also needed to accommodate the added features. No change to the BDOS took place until ZRDOS was produced.

Because the BIOS size could vary as well as the system's total memory (remember the 32K machines?), provision was included to change the operating address for the BDOS and CCP. This is done by the MOVCPM program. Because MOVCPM also needs to provide for disc cold-boot code, there is a separate version of MOVCPM for each bootable disc type. Namely, these are MOVCPM17, MOVCPM37, MOVCPM47 and MOVCPM67. [If you have Livingston Logics' BIOS-80 modification package there is also MOVCPM80. -- ed] Each of these contains the codes for BDOS, CCP, the cold boot loader and the bit maps to make the BDOS and CCP relocatable. The subject of bit maps and relocatable code is best left for another installment--if SEBHC JOURNAL readers express an interest in more on this.

Before I close, I wish to thank Kirk Thompson for the press he's given me on my CPC and EMULATE programs. A number of my customers have given The Staunch 8/89er as the directing source. [Now the SEBHC JOURNAL's on your list! -- ed]

PETER SHKABARA'S INPUT Concluded
CLASSIFIED ADS SECTION

You might also mention the updated prices and status of our products. EMULATE is now $39 for any version (H37, Magnolia or CDR controllers). CPC is still $35, the 4MHz mod is only $29. Z-System has been selling VERY slowly so it may not be available much longer, but it is being offered at $69 for those who still want it. No more REP3 key-repeat circuits are available and the TIM2 clock is also gone. Only instructions and some limited parts can be supplied for the last two items.

Here's a list of items we still have for sale...

A limited selection of software at $10 each:

- Sunflower Software -

HDOS: SEARCH & PRINT, NAMELIST, DISKSORT, DUALPORT.

CP/M: EASY; ZDOS: ZDUMP.

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HDOS: SPOOL-N-GO.

HUG's CP/M WATZMAN ROM source code for H19.

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Please add $5 to order total for shipping and handling. CAlifornia residents please add 6% tax.

Order from: ANAPRO, 8895 Pino Solo Ave, Atascadero, CA 93422; phone 805-466-4284.

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CDR RAMdrive89 board, preferrably 2-board set for 1Mbyte capacity (with or w/o memory chips). Contact: Terry Hall, 516 East Wakeman, Wheaton, IL 60187; phone 312-665-4594.

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H-11 w/double 8-inch drives, lots of documentation and software. System has a problem but I've not had time to fix it. Best offer over $75 (shipping extra). Contact: Charles Liss 9607 Columbia, Redford, MI 48239; phone 313-937-0377.

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Have an H89 w/2 internal floppies. Use HDOS 3.0 exclusively. Planning on adding a hard drive. Do any SEBHCers have experience w/Micronis Technology ST-225/125 internal setups? Contact: Kim Walch, 1100 Maderia SE #310, Albuquerque, NM 87108.

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BRAND-NEW HDOS 3.02 System and 350pp Manual, ONLY $60! Manual has eight chapters and covers System Configuration, General Operations (includes SYSCMD/PLUS and PIP/PLUS Ver 3.02), Console Debugger (DEBUG), Line Editor (EDIT), Assembly Language (ASM), Extended Benton Harbor BASIC, System Programmer's Guide (with a section for programming device drivers). Also includes Micellaneous Items. Written by Dan Jerome, software developed by Richard Musgrave. Will be shipping very soon so make your reservations NOW! Contact: Kirk L Thompson, c/o The Staunch 8/89er, #6 West-Branch Mobile Home Village, West Branch, IA 52358; phone 319-643-7136.

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3	1	Z89-37	Z37 ctrlr w/ROMs, cables ($250)	$125
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5	1	Z19-Z88	Upgrade Z19 to Z88 Kit w/CPU orig list price $500	$75
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