

THE ADDRESS BUS

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PORT TO PORTAL -- EDITORIAL

I have just a few remarks before I release you to dig into the bulk of this issue. You **won't** find the regular software listing on p. 2. I **do** have some material to list, including a pair of **Staunch** software catalog disks prepared for me by Ralph Money. But correspondence has been lengthy since the last issue and I think you'll find it, as I did, extremely interesting.

Kirk L Thompson

THE EIGHT-BIT R/W -- LETTERS

Extended TLB ROM. [From Hank Lotz, 2024 Sampson St., Pittsburgh, PA 15221] "...I found Lee [Hart]'s quest for a 32K-terminal-ROM application ([#18,] p. 8) interesting. One idea that occurred to me is a thorough built-in diagnostic for the terminal **and disk drives**. Could one not also implement things like disk DUP and FORMAT utilities w/o boot-up? It might be argued what advantage there is to having the latter utilities duplicated outside the OS, but for the diagnostic applications the answer is rather obvious."

A Potpourri from Lee Hart. (TMSI, 323 W. 19th St., Holland, MI 49423) "Thanks for crowding my ad in [to issue #18] at the last minute. I've gotten two calls on it, and issue #18 just arrived Saturday!

"ON DISTRIBUTING DISKS. Thanks for the mailing list disk. I had no trouble reading it into dBASE-II with Heath CP/M. But, there was a problem reading your disk with C.D.R.'s CP/M. It points out a problem I frequently have with disks people send me.

"Heath CP/M is very good about checking disk formats and adjusting itself accordingly. That means it can read almost any permutation (or perversion) of disk produced on a stock H89. You don't appreciate how good it is until you use something else. One of my H89's has a C.D.R. disk controller, which is not very good at this. I'm told Magnolia CP/M has the same problem. [MMS's 2.24 **will** automatically adjust to H-37 media if using the H-37 controller, but the MODE utility is **required** to set the BIOS to recognize Magnolia's custom bootable

format or when swapping back to any H-37 format. -Ed.] It's worse yet with media conversion programs running on a PC-clone, Kaypro, Osborne, because they make no attempt at all to auto-select formats.

"The disk you sent had been formatted **double-sided**, then later re-formatted **single-sided**. C.D.R.'s CP/M found data on the back of the disk, and mis-identified it as double-sided. Then it found duplicate sector numbers and belched out the disk with BDOS errors.

This sort of thing also happens if you format a disk with 80 tracks, then re-format it with 40 tracks (or vice-versa). You wind up with every other track having a different format.

"Your computer has enough trouble with disk formats as it is, without trying to read double-formatted disks. To put it in human terms, imagine trying to read a piece of paper that has several different messages on it, one on top of the other. So if you send disks to people, here are some rules to be sure they can read them:

1. Don't re-format a disk with a different format or number of tracks unless you bulk erase it first. Use a bulk tape eraser, or rub [the disk, still in its sleeve,] with a permanent magnet if nothing else is available.
2. Write the format you used on the disk label (Heath CP/M, H37, DSDD, 40-track, etc.).
3. Don't use enhanced formats (Heath extended density, Magnolia, C.D.R., BIOS-80, etc.) unless you are **positive** the person on the receiving end has the same equipment and software version you do.
4. Use the lowest density practical for the size of the data files you are sending. Your recipient may not have a double-sided or 80-track drive. Single-density is more reliable than double-density. 40-track drives have less trouble reading disks produced by another drive than 80-track drives...

"COMMENTS ON TETRIS/KLUTZ/RUNME DISK. It may not be clear from your description [in issue #18, p. 2] that RUNME.COM is simultaneously executable as a program, and editable and printable as a text file. A caller commented that he thought you meant source was included (an .ASM file for printing and a .COM file to run). Not so; RUNME is a pure ASCII file that executes without being assembled.

"Did the KLUTZ file display for you OK? [Yes, all the way through! -Ed.] I'm concerned that people will have trouble with it. They're not used to using the SCROLL key, and there are bugs in the H19's hold-screen mode and CP/M. It may abort part way through, hanging the system in hold screen mode.

"I created it as separate files, but that was tedious to display. I could have written a SUBMIT file, but that requires SUBMIT and KLUTZ on your A: disk. On the spur of the moment, I PIPed it all into one big file, with an ESC sequence to enable the HOLD SCREEN mode.

"I guess it's a form of copy protection. People will have a doozy of a time if they try to edit that KLUTZ file. It has embedded graphics, ESC sequences,

and 2000-character lines (each picture is one line, ending in a CR-LF pair). If anybody is interested, I can supply the separate picture files..." [Concluded in the next issue. -Ed.]

Comments and Questions. (From Biff Bueffel, 19820 NW Metolius Drive, Portland, OR 97229) "Following is a potpourri of comments and questions:

"1) Followed your suggestions in Issue #16, 'Cooling the H89'. I have replaced the TTLs on the CPU board and the H37 board with HC or HCT chips. Would like to do the same on the TLB but my initial try ended without success. Which chips on the TLB may be safely replaced with HC(T)s and which must be left alone? Multiple combinations failed for me!.. [Lee Hart's reply is below. -Ed.]

"2) I have replaced my 96 tpi drive in the left section of my H77 external drive cabinet with two Toshiba 720K 3.5" drives. The controller treats these as 96 tpi drives. Added another drive connector to the ribbon cable and a Y connector to the power cable (had to move the position of the ground connector). A standard H37 (Siemens) drive remains in the right hand position. The 3.5" drives, which cost only about \$90 each, are much quieter and do not report any soft errors which the H37 drives did on occasion. Since the 3.5 inch drives do not have a terminating resistor you may not use them as the last drive in a chain. To do so gives many error messages and unreliable operation. Does anyone have a solution for this? [See below. -Ed.]

"3) Do you use X10 Powerhouse modules (Radio Shack Plug n Power) to control lights and appliances in your house? Heath and others have a computer interface that allows great flexibility in programming them. The problem? The software only supports Apple, IBM and Commodore. Rick Swenton with a fair amount of help from me has written a sophisticated CP/M program to control this interface. The program is available on his Hartford, CT, bulletin board (203-673-8752). With a little prodding (and a self-supplied disk and mailer) we might be persuaded to supply you a copy on disk. I only support 80 track soft- and hard-sectored drives at present. [Readers will find this package listed on p. 2. -Ed.]

"4) Rick Swenton and I spent much time in early 1989 converting our H89 BIOS to Z80 code and optimizing it by substituting Z80-specific routines where possible. We added equates to delete all H8 routines and to delete the Diablo driver if not needed. This and other changes added to the TPA size. The BIOS is now assembled with the SLR180+ assembler, directly creating a relocatable file--the last step in MAKEBIOS.COM is used to add the header page to BIOS.SYS. Anyone with interest in these changes write to me or Rick.

"5) Ludo Van Hemelryck of Mill Creek, WA, has also been doing much work on his BIOS. He has made it modular and is hoping to use NZCOM or JetLDR to load the device drivers. This will allow dynamic resizing of the BIOS a la NZCOM modules. The 'fixed' BIOS will contain only a primitive device driver with others added as needed.

"6) Ludo has also moved support from the C.D.R. SuperRAM89 RAMdisk into the BIOS proper so one no longer needs to use INSRAM.COM or ARAM.COM to load the RAMdisk driver after cold boot. I have added his

code to the Swenton/Bueffel BIOS. This has gained me a quicker cold boot procedure and almost 768 bytes more TPA. Warm boots are done from the RAMdisk which also speeds operation. If anyone is interested in this code, have them write me. The code is in Z80 format, but I think it can be fairly easily converted to 8080 code.

"7) With disk A: as a RAMdisk, CONFIGUR.COM will no longer work. Ludo and I each contributed one byte of a two byte patch to get it to function properly. For version 2.2.03, change the byte at 1C0A from 01 to 02 (the bytes immediately after this are 42, 49, 4F, 53, 20, 20, 20, 20, 53, 59, 53 [BIOS .SYS]). Change the byte at 296C from 00 to 01 (the byte string preceding this 00 is C5, 44, 4D, CD, xx, xx, 0E where xx is an address that varies from version to version). For version 2.2.04, the bytes to change are at 1D6D and 2C267. CONFIGUR will now read the BIOS.SYS and system tracks from disk B: (the original boot disk) and write any changes there also.

Enough rambling for this epistle, albeit I am sure there is more information to share." [Because Biff's first question referred to Lee Hart's article in issue #16, I sent Lee a photocopy of the letter. -Ed.]

Reply with More Comments. (From Lee Hart) "Kirk forwarded a copy of your letter to me. Wow! You and your associates have been busy with the tired 'ol 89.

"COOLING THE '89. There are a few chips on the TLB that don't lend themselves to being replaced with CMOS. My direct experience is limited to SuperSet-equipped TLB, but should apply to regular TLBs as well. Here is what I've found:

H19	old	new	notes
U411	7404		leave alone; crystal oscillator
U414	74LS616	74HC161	
U413	7492		no known opts., 74C no good
U414	4040		already CMOS
U415	74LS132	74HC132	will change reset "beep"
U416	74LS00	74HC00	"beep" won't be as loud; use 74F00 with Superset
U418	74LS138	74HC138	not tried
U419	74LS138	74F138	replaced by Superset
U421	Z80	Z84C00-4	CMOS Z80 (4Mhz for Superset)
U422	444046	27C256	replaced by Superset
U424-5	2112		no known options
J426	74LS93	74C93?	HC unavailable; C might work
U427	74LS02	74HC02	
U428,32	74LS74	74HC74	
U429	74LS00	74F00	replaced by Superset
U430	444-37	27C16	replaced by Superset
U431	5740		no known options
U433,4,7	74LS244	74HC244	
U435	7404	74HC14	Schmitt-trig works better
U436	74LS132	74HC132	will change repeat key speed
U451	8250		no known options
U452	1488	14C88	not tried, reported OK
U453	1489	14C89	not tried, reported OK
U461	6845		no known options
U463-5	74LS157	74HC257	use 74F- for Superset
U466	74LS00	74F00	replaced by Superset
U467-70	2114	2114L, 5514, 5114, uPD444C	(non-

Superset)			
2114L-2, 5514AP2, TM314-2 (Superset)			
U472	74LS273	74HC273	tie pin 1 high w/ Superset
U473	444-29	27C256	replaced by Superfont
U474	74LS166	74HC166	
U475	74S86	74F86	
U478	74S74	74F74	
U479	74LS86	74HC86	increases brightness,ringing

"A 74S or 74LS output shouldn't be used to drive both 74LS and 74HC inputs at the same time; use 74HCT instead when this situation occurs. On the Z89-37, a couple not-so-obvious changes are U15 = 4503 and U8 = 4528.

"TERMINATING 3-1/2" DRIVES. In the dark ages of the 80's, disk interface cables tended to be many feet long. You had to 'tune' them (like an antenna wire). Otherwise, the sharp, noisy edges of TTL logic signals echo back and forth like a bullet in a boxcar. It's like trying to communicate in a cave; you can hear each other fine, but the echoes make it impossible to understand.

"The 'characteristic impedance' of ordinary flat cable is about 150 ohms, so that is the value of the resistor put on the last drive [in order] to absorb, or 'terminate,' the echoes.

"150 ohms is a pretty heavy load for a TTL gate; 30 mA apiece. One per output is all they can safely drive, and even that takes special high-drive chips (7406, 7434, etc.). That's why you can only have one terminating resistor even though there's two ends to the cable. Alternatives:

1. Instead of a single 150 ohm resistor to +5v, use two resistors in a voltage divider: 220 ohms to +5, and 330 ohms to ground. This cuts current to 20 mA, yet the parallel combination is still 150 ohms. This was done by the special 220/330 ohm terminators used on early Siemens FDD100-5 drives. With two such terminators on a cable, the TTL gate must sink 40 mA, not 60 mA. That's still beyond ratings, but it often works anyway.

2. Shorten your cables so termination isn't needed. TTL signals can travel about 2 feet before they start degrading noticeably from ringing. If your cables are shorter than this, even a 10K pullup resistor will work. (You still need something because the output gates are open-collector.)

3. Compromise: The longer the cable, the more it needs termination. That means a cable that is only 'a little' long only needs 'a little' termination (no, it's not like being 'a little dead'). I have put 1K termination resistors on all my drives. That's enough termination for an internal drive with its short cable. When I connect 2 external drives (with their longer cable), the parallel combination for the three 1K resistors lowers the termination to 330 ohms; still acceptable.

4. Modern technology: CMOS outputs have soft output rise and fall times, and higher noise immunity on their inputs. They can drive much longer wires without termination. But they don't come in open-collector versions. Up to 5-6 feet of cable, you can remove all terminators and replace the 7406 drivers with 74HC04. The 'catch' is that 74HC

outputs can drive 10 74LS inputs, but only 2 regular 74- TTL inputs. Thus 74HC can't drive 3 'antique' disk drives. Also, CMOS is more susceptible to static damage; they can be 'zapped' by touching the pins sticking out of the external drive connector on the back of the '89.

3-1/2" disks are cute, but I dislike the high price of blank disks. Surprisingly, they are also heavier and occupy more cubic inches than 5-1/4". If I could figure out how to write a format program, I'd be using the Kodak 3.3 meg or 6.6 meg 5-1/4" drives. The drives are \$30 or \$70 apiece, but they expect you to buy pre-formatted disks from them at \$15 or \$20 apiece. [For more detail on the Kodak drives, see issue #14, p. 9. -Ed.]

"BSR X-10 CONTROLLER. I am interested in computer-izing my house with X-10 modules. I bought a Housemaster board for that very purpose and am trying to get it working. The Housemaster emits ultrasonic pulses that are supposed to be received by the BSR command receiver. But that receiver is no longer available; the new stuff uses radio, not ultrasonics, for the hand-held remote.

"I bought a Radio Shack controller, traced out the circuit, and reverse-engineered it. It's just a 140 KHz oscillator that is switched on and off to send serial data. It looks like a 1-transistor circuit can convert an RS-232 port to send X-10 codes. 1's and 0's are sent as long (4 mSec) and short (1 mSec) pulses of 140KHz at 110 baud. It takes two 8-bit words to send the House code and command.

"Does the Heath interface box you mentioned really do anything the H89 (or H8) itself can't do? H89s are cheap enough to dedicate to the task and much easier to maintain over the long term. I'm sending you a disk with Housemaster's approach to the problem. I'd appreciate a copy of what you're doing...

"Z80 BIOS IMPROVEMENTS. Do you read **The Computer Journal**? It's the best source of information I've found on what's going on at the leading edge of the CP/M world. [See issue #15, p. 8, for subscription information. -Ed.]

"It sounds as though you are familiar with Z-System. I have a project that requires such skills. While I am a good hardware engineer and a competent Z80 programmer, I don't know much about operating systems.

"The main weakness of 8-bit systems like the H89 is a lack of memory. RAM upgrades are scarce and expensive, but I have a cheap and simple alternative. It's a spin-off of my Superset technology, but applied to the CPU board. It adds up to 512K of memory ..., requires no expansion slots or PC boards, and actually reduces power consumption. Best of all, it's generic; it works on **any** CP/M or Z-System computer with an 8080, 8085, Z80, or compatible CPU!

"Physically, it's a 24-to-28 pin socket adapter, like those in my Superset. It lets you replace an existing 2K 2716 or 4K 2732 with a much larger bank-switched EPROM (up to 512 x 8). For instance, the 4K MTR-90 ROM in an H89 can be replaced by a 32K 27C256, accessible as 8 banks of 4K each.

"As an experiment, I stored my CP/M BIOS, BDOS, and CCP in such a ROM. Bank 0 (the one accessed after a RESET) contained a stock copy of MTR-90, except that I added a 'Boot ROM' option. When selected at the H: prompt, it block moves a copy of CP/M from ROM to RAM and executes it. Thus CP/M cold boots instantly and disks no longer need BIOS.SYS.

"While this was easy, it has several drawbacks. Disks still need boot tracks and the A: disk must be SYSGENed because warm boots still read the BDOS and CCP from it. There is no RAM savings or increase in TPA. CONFIGUR can only make temporary changes (unless saved to, and booted from read disk). And I can't distribute it to others since the ROM contains my serialized copy of CP/M.

"The next step is to use the extra ROM as a ROM-disk. This means adding some sort of device driver into the BIOS. But I don't know how to do it. My attempts at making BIOS changes and running MAKEBIOS have been a flop. It sounds like you and your associates have figured out how it's done. I have the MAC, M80, and SLR180 assemblers, but don't know how to use them to make a file like BIOS.SYS. Can you provide details?

"I'd like to modify the BDOS and CCP so they can execute directly from ROM. RAM would only be used for BIOS, stacks, buffers, variables, and configuration options. This would increase TPA size, speed up warm boots, and allow arbitrarily large BIOS, BDOS, and CCP enhancements (like Z-System). Disks would no longer need to be bootable, or even need boot tracks. It could also be sold as a product for any CP/M machine because the ROM is generic (**every** CP/M machine has a bank-switched ROM at 0).

"Toward this end I bought a copy of CACHE-22. It provides a 256-byte CCP and BDOS, which actually accesses the 'real' BDOS and CCP elsewhere in banked memory. But installation is so complex I can't hope to do it. It assumes the installer is intimately familiar with CP/M and can write a BIOS from scratch.

"I have described this idea to Rick Swenton, Ludo Van Hemelryck, Joe Wright, Jay Sage, Bridger Mitchell, Howard Dutton, and others. While they are passively supportive, they offered nothing concrete...."

School Daze. (From Stephen H. Kaiser, 191 Hamilton St., Cambridge, MA 02139) "Is there another school teacher in the U.S. (and maybe the world) using hard-sectored Z-89s in computer class? I have three units in one school: an H-89 single drive, a Z-89 single drive (my first computer!) and a Z-90 dual drive. We use TXTPRO for grades 2-8 and SUPERCALC for grades 7+8. These antiques share space with Commodore 64s, Apple IIs, Radio Shacks and IBM XTs.

"I am looking to expand my Z-89s into another school, which has a mixed complement of Apples, Commodores and IBMs. So the next question is this: where can I get three or four H/Z-89s?

"Here's the interesting part. This August I will be traveling from Boston to Moline, IL, for a meeting of EDSELS! My 1959 Edsel sedan has a huge trunk and a wide back seat, so it could swallow several computers and avoid the problems of shipping heavy computers cross-country.

So here are my needs:

H/Z-89 64K hard sectored controller/drive ... 3 - 4
Printer cables (serial) 4 - 5

"...I am also writing similar letters to Henry Fale, Lee Hart and Len Geisler to see how many Z-89s we can scrounge up. My current plans are to be in Moline from late Thursday, August 9, through Saturday, August 11..." [Continued in the next issue. -Ed.]

Software Packing Questions and Suggestions.

(From Lee Hart, 323 W. 19th St., Holland, MI 49423) "Your disks just arrived. Thanks for the prompt service and nice mailer. However, they prompt a few questions...

"I am confused by the various schemes to pack more data on a disk. Files get squeezed, crunched, tokenized, ARCDed, LBRed, and God only knows what else. I have never found a clear explanation of what they do, how they work, their limitations, how to pack/unpack them, and how to tell what method the sender used. Packed files are meaningless gibberish unless you know how to unpack them. Of course, the sender thinks that 'everyone knows' how to unpack his favorite scheme.

"The 3 disks you sent used 3 different schemes. Yet they all had plenty of free space, so it really wasn't necessary to be so frugal with disk space.

"Is it really necessary to pack files? Why send a half-full disk of packed files that takes the user an hour to unpack? Disks are cheap. Unrelated programs should be on separate disks for filing purposes. If you must mix unrelated files on a disk, wouldn't CP/M's USER numbers be the obvious way?

"I humbly suggest avoiding packed formats for distribution disks. If you must use them, include the necessary programs and a SUBMIT file that unpacks them automatically. Finally, include CRCK checksums so the user can tell if the files were successfully recovered." [The question of packing software for distribution is a good one, Lee, so I appreciate your letter. It's one method of saving space, particularly on hard-sector. For some users, disks **aren't** cheap, particularly hard-sector, so they (presumably) appreciate the space savings packing provides. But they should also explore alternative and cheaper sources for diskettes so I would refer them to this issue's VENDOR.UPDATE column. And I usually include file recovery programs and instructions. However, I'm willing to leave the question of packed or unpacked distribution entirely to the purchaser. I can include **both** packed and unpacked space required for the packages I list and supply software unpacked, if desired. Readers, let me know your views on this question. -Ed.]

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CONTACTS

(A Wanted/For Sale/Swap Column)

Ron Strong (1219 Fairfax Road, Bellevue, NE 68005, 402-292-3780) "For Sale - 2 H-89 Systems: H-89 - B&W monitor, 2-100K drives, 2-400K drives, glare filter, UltraROM, SuperSYSMOD3, H&H serial/parallel board, improved ventilation, internal shielding, inverse video switch; H-89A - amber monitor, 64K, 2-100K drives, improved ventilation. Hardware, etc.: much documentation, hardware and software for both HDOS

and CP/M 4 and 6 MHz mods, all NTS and assembly manuals, HDOS and CP/M manuals, REMark issues #1 thru 1988, all Sextant issues, Apple Imagewriter I serial printer (almost new) used with the '89. Much software, including BIOS-80, SPELL, SUPERCALC, WORDSTAR ver. 4, games, REMBRANDT, QUERY!3, dBASE II, HDOS and CP/M BASIC compilers, UD:, many utilities. Make me an offer I can't refuse. Prefer to sell as a group; verifiable tax deductible contribution considered."

Rick Indiano (H/Z WARE, 1080 Farnsworth Rd. S, Rochester, NY 14623) For sale: H47 8" drives with H-8 and H-89 interfaces and assorted H-8 boards.

Manfred Deffner (Gebelsbergstrasse 28, 7000 Stuttgart-1, WEST GERMANY) "I am glad to understand that your subscribers would be interested in my music software. For the moment I am undecided how to proceed. I developed a basic version of the music project running with CP/M and the H8 [with HA8-2 board]. The most comfortable and powerful tools, however, are written for MSDOS. If there is ... interest I would offer to enhance the CP/M package as well as possible. Perhaps it would be good to advertise first my option to the H8 people. I can produce a disk and ... short documentation for a small fee. This should cover my own costs and ... two years' work at the project. If wished I can also supply additional music files in future in order to support a song library.

"...At first glance the MSDOS AT version sounds much better than the CP/M version. But it is possible to improve the CP/M results too. For this purpose it is necessary to make some component changes (filter device) on the HA8-2 board or to use the DC output, provided that the H8 is operating [at] 4 MHz speed."

Albert F. Bjorling (P.O. Box 216, Circleville, NY 10919, 914-361-3272) "Wonder if any of 'the Staunch' readers have solved this problem. Considering purchasing a dot matrix printer, 24-pin, near-letter-quality (NLQ), serial or parallel for use with my Z90 and CP/M (HDOS also, perhaps).

"Matching up printer driver and printers is the problem. I've seen commercial and public domain driver programs for older printers. Not sure what is available for new NLQ printers. Considered Epson LQ-510, LQ-1050, Panasonic KX-P1124, Okidata, NEC, Star, even HP (perhaps LaserJet, ha). Would enjoy hearing from someone who may be running similar systems either serial or parallel interface. Picked up the FBE Parallel Interface Kit a while back; haven't installed it yet, though.

"Anyone looking for an Anderson-Jacobson AJ-832 printer (serial) daisywheel (Qume head), wide carriage, w/ tractor? Nice, but too big for my new residence..."

Robert W. Cummings (Rte 3, Box 88, Astoria, OR 97103-9101) "It is with dismay that I write you to request your help in selling my H-89 system. It has been a trusted friend for many years but I found that I must move on to ... IBM compatible system in order to keep up in my employment. With my recent purchase of a Heathkit 386 system I no longer need or can afford to keep my H-89

"My system includes all of the following and I am willing to sell it to a good home for the best offer I might receive: H-89 computer with DB Super89 CPU board w/256K RAM, green CRT, Imaginator Video board, H-17 hard sector disk controller, H-37 soft sector disk controller, 2 - 96 tpi Mitsubishi drivers (internal), H-89-11 serial/parallel board, KRES Multi-connector back plate; H-77 disk drive case w/ 2 - 96 tpi Tandon TM101-4 disk drives; single 5.25" disk drive case w/ original 100K S/S drive; [and] original CPU board w/48K and 16K add-on board, original 3-port serial board, cassette tape board, and original B&W CRT. All construction and operation manuals. Lots of software, all with manuals--HDOS: MBASIC, TXTPRO, Touch Typist..., Illistrator Graphics for Imaginator board..., Cache89 Disk Cache for DG Super89 board, KEY-IT and MBASIC data base systems..., +++ More; CP/M: MBASIC, BASIC compiler, COBOL compiler, SuperCalc, Super Sort, TXTPRO, ZDOS to CP/M Converter, HRUN HDOS Emulator with CP/M to MS-DOS Converter..., +++ More. 75+ 5.25" 80 track DS/DD soft sector disks, 35+ 5.25 40 track SS/SD hard sector disks."

Nina Tanner (215 Fifth St, Douglas, AK 99824, 364-2222 [eves], 465-4727 [days]) "...I have an H-89 with the 16K RAM upgrade to which I have added a 2/3 I/O card with 2 serial and one parallel interface. It has a hard-sector floppy disk drive, and I put in a card for interfacing with a hard disk drive. (This last item is what blew the whole thing for me. As soon as I tried to hook in the hard disk, the computer threw in the towel. And I don't have enough knowledge to get it running again.)

"In addition to the hardware, I have a CP/M operating system, BASIC-80, several games and various other software, plus a stock of blank hard-sector disks (which are mighty hard to come by any more).

"I think a knowledgeable tinkerer could get it running again. Someone fixed it for me the first time it went kaput, and it worked fine until I tried to hook up the hard drive again. It's not a total loss, so I think I should be able to get a couple hundred dollars out of it. Actually, I'd be willing to make almost any kind of deal on it. I just hate to see it thrown on a trash heap."

Tom Grossman (1900 W. Dunraven, Lincoln, NE 68523, home 402-421-2962, work 402-464-8211) "Kirk, the following is a list of equipment that I have available for sale, preferably not one piece at a time. But I am willing to work out about any arrangement so someone can benefit from this stuff.

- 1 - H19 Terminal
- 1 - H9 Terminal
- 2 - H8 Computers
- 1 - DG Z80 CPU card
- 1 - DG 64K memory card
- 1 - Trionyx 90 pin motherboard
- 2 - H8-4 multi-I/O cards
- 1 - HA8-8 extended configuration card
- 2 - H8-17 floppy controller cards
- 1 - Trionyx 64K memory card
- 2 - 8080 CPU cards
- 2 - H8-5 serial I/O cards
- 4 - 8K static RAM cards

- 1 - WH8-37 floppy/hard controller card
- 2 - H8-10 bread boards (1 unused)
- 32 - static RAM chips
- 2 - cassette decks
- 1 - 300 baud acoustic coupler modem
- 1 - home-made speech synthesizer board (interesting); this also has 90% completion of a speech recognition system on it as well (this board is well-documented)

"Lots of documentation, notes and schematics as well, plus the following software: TXTPRO, QUERY!2, SUPERZAP, ED-A-SKETCH, ADVENTURE, MYCHESS, MUNCHKIN, ROOTS, REACH, C/80 with MATHPAK, SUPERCALC, MBASIC 5.21, PRESCHOOL CHALLENGE, CP/M 2.2.03 and 2.2.04."

Stephen D. Holle (3843 Emerson Ave. N, Minneapolis, MN 55412) "I have a problem I'm hoping one of your readers can help me out with. Some time ago I purchased a disk drive at a swap meet. The drive seems to be in pretty good shape but I didn't get any documentation with it. The drive is a Tandon TM100-4. I believe this is an 80 tpi dual-sided drive and would really like to install it on one of my computers. The problem is that the programming jumpers and the termination resistor socket are not [well] marked. The sockets are marked 1E and 2F on the board and I believe 2F is the termination socket. If anyone can help me out with the programming jumper locations I would be forever in their debt."

Tom Slavik (5205 Links Drive, Waco, TX 76708) "I received MBASIC-80 from Lenny [Geisler] a couple weeks ago. It's funny how [my son] Alex [doesn't] care for math all that much but he thinks running [Studio Computers'] MATHWIZ is fun. Is there a way to dump MATHWIZ to my printer? I would like to have hardcopy of assignments for Alex." Tom would like someone to add print routines to the MBASIC math tutor package originally listed in issue #11 (insert).

=====

Menus as Batch Files Under HDOS 3.0

By James Ernest

In this article I will describe a method for creating menus using HDOS 3.0. batch files. I will give an example of using batch file menus to create a shell which runs other programs and then returns to the shell. I will also discuss several useful features in HDOS 3.0 batch files: the "ASK" command, the "IF KEY" command and the use of passible parameters. These features of HDOS 3.0 batch files will be shown in a menu shell I use when word processing under HDOS. One of the laments of the HDOS user is that new software is rare. By using the HDOS 3.0 batch files, we can improve the ease of use of the programs we do have.

Batch Files Under HDOS 3.0. The batch file is a feature of HDOS 3.0 not found in standard HDOS 2.0. Batch files are operating system commands which will be executed in sequence (or as a "batch" of commands, hence the term "Batch file.") By typing a batch file name, a set of instructions is sent to the computer as if typed from the system keyboard.

Operating system command sequences recorded in a batch file create "macros" automating tasks requiring the same command sequence over and over again. Batch files under HDOS 3.0 require the .BAT extension in the file name.

The Batch File "ASK" and "IF KEY" Commands. What little documentation there is on HDOS 3.0 batch files states that they are modeled on MSDOS batch files. One command which I have not been able to find in MSDOS manuals (through MSDOS 3.2) is the "ASK" command available under HDOS 3.0. It seems that HDOS 3.0 has at least one "bell and whistle" for it's batch files not available to the PC compatible computer user.

The "ASK" command allows for a query to printed on the screen permitting the user to choose between several alternative command sequences. Using this choice, the batch file can then branch to a specific command and execute it. A list of options can be provided, choices given the user, and then have a chosen option executed by the computer. Examples of possible options might be to back up all of today's files from one disk to another, list the directory of a disk mounted in a disk drive, or run a program. All of these tasks may be done any number of times during a working session on the computer, and executing these functions using batch files saves key strokes. Another use of such commands is to invoke seldom used features of the operating system which are useful but complex and easily forgotten. You learn command sequences once, record them in a batch file command, and then let the batch file take care of the complexities in the future. If the last command of the batch file is to call itself, one has created a program which performs a particular task and then returns to itself. Another command can branch out of the endless loop of the batch program calling itself. With the inclusion of the batch file feature of "passible parameters," this is the essence of the batch file program which follows.

The "IF KEY" command matches a command sequence with an option chosen by the user, allowing for conditional branching to subroutines. In working with batch files I have found three things about the IF KEY command. First, failure when using the command syntax shown below will result in IF KEY commands which don't work. Second, the match is not case sensitive (the response for a match is the same whether a lower or upper case letter used is an 'A' and an 'a'; they are treated as equivalent). Third, if the first IF KEY command does not produce an exact match, the batch file will fall through to the next and the next until a match is found. If no match is found, the program will execute whatever command sequence follows the last IF KEY sequence.

"Passible Parameters." Batch files under HDOS 3.0 can use "passible parameters." A passible parameter is a variable name which is passed from one program to another for the latter's use. An example of a passible parameter is the running of a Microsoft BASIC interpreter program by typing "BASIC", followed by the program's name in the form: BASIC <PROGRAM.BAS>. PROGRAM.BAS is the name of the program to be run. The interpreter is called and immediately runs the Microsoft BASIC program PROGRAM.BAS.

(PC89LINK Review Concluded)
(PC Screen #2)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

```
+-----+
| Waiting for file ... |
| (Press any key to abort) |
+-----+
```

```
+-----+
|                               Sent  Received |
| Bytes Transferred                nnnnnn |
| Retransmissions                   0% |
| Average Bytes/Sec                 nnnn |
+-----+
```

Then the PC continues:

(PC Screen #3)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

```
+-----+
|                               Sent  Received |
| Bytes Transferred                139360 |
| Retransmissions                   0% |
| Average Bytes/Sec                 611 |
+-----+
```

The PC is in process of receiving files:

(PC Screen #4)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

```
+-----+
| Receiving files ... |
| (Press any key to abort) |
+-----+
```

```
+-----+
| TREE.001  4k Text    *  3936 100  Complete |
| TREE.002  31k Text   * 31553 100  Complete |
| TREE.003  27k Text   * 24074 100  Complete |
| TREE.004           *  nnnnn 50% |
+-----+
| File Name  Size Mode  Xfer  Retry  Wait |
+-----+
```

When the send/receive transaction is complete, the following message appears on the PC:

(PC Screen #5)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

```
+-----+
| Waiting for file ... |
| (Press any key to abort) |
+-----+
```

```
+-----+
|                               Sent  Received |
| Bytes Transferred                nnnnnn |
| Retransmissions                   0% |
| Average Bytes/Sec                 nnnn |
+-----+
```

Detail. To send: from the menu press "S." You will be asked for a filename. Standard wildcards (i.e., "*" and "?") may be used. Thus, multiple files may be sent from the same disk or directory.

To receive: from the menu press 'R.' The destination computer will create a copy with the same filename in the appropriate directory. In addition, text files are converted slightly to make them conform to the "other" computer's requirements.

Configuring: the following items may be reconfigured for the HDOS computer: serial port, baud rate, receiving device (i.e., SY1:, SY2:, etc.; SY0: is the default), and finally the file send mode (i.e., Binary, Text, Automatic; Automatic is the default).

The following items may be reconfigured for the IBM PC: serial port, baud rate, or file send mode. Caution: when sending from the IBM PC, be sure to send any ASCII file in the ASCII mode. Many of the IBM word processors have a choice between their own "native mode" or ASCII. If you attempt to transfer a file in the "native mode," you will not be able to read it in HDOS. Such a mistake is easily corrected. Simply delete the bad file on the destination computer, and resend it from the source computer.

[Source code: in an interesting twist, Lindley Systems **also** includes the C/80 source for all three systems. This is an **extremely** rare practice in commercial software! -Ed.]

My Opinion. I really enjoy using this program. It works so quickly and is so simple to use, I wonder why I kept it under wraps so long before I attempted to utilize it. As a writer, I can compose an article on one computer and transfer it to another computer for the convenience of the customer. William Lindley has done it again!!!

Source of Program. PC89LINK, Version 1.7, is available from Lindley Systems, 4257 Berwick Place, Woodbridge, Virginia (VA) 22192, telephone: 703-590-8890.

For those of you who are new to the H89 Computer, Lindley Systems has been a very reliable vendor to the Heath/Zenith community for the whole time that I have been a part of it. You may wish to write to him and inquire about other programs for either the H89 or the IBM PC.

From STUDIO COMPUTERS

(Courtesy of Ray Massa)
(and the authors noted below)

INCLUDES HARDCOPY DOCUMENTATIONFor HDOS Only**COMPACTA**

(Written by William Moss)

Allows storing up to a disk of files as a single file to conserve storage. Also permits packing system files (HDOS.SYS, HDOSVLO.SYS, etc.) for later recovery. Similar to CP/M's LU and NULU, but does not "squeeze" or "unsqueeze." Particularly effective on high-capacity drives, but would be still more storage-efficient if a file squeezer (such as CRUNCH.ABS, available from SMUGH) were used. Two drives recommended. Source code included.

DATABASE

General-purpose database system specifically for Benton Harbor BASIC. Uses pseudo-random-access for searching and reading data. Also automatically constructs an index of records. Records based on 14-line "pages" of information, with each record containing up to 9 "pages." Two drives and 32K memory required. Printer not required for basic use, but routines included for hardcopies of data and index.

FINANCIAL

One program in this package calculates amortization, investment rate of return, and cost of borrowing. Output device is selectable (TT: [default], AT:, LP:, DD:, or BP:). The second program draws bar graphs on the selected device. Data to be graphed must be manually keyed, but up to 100 items may be entered. These two programs also "chain" to each other. Requires MBASIC and 48K memory.

MAILIST

A mailing list maintenance package for **either** Benton Harbor BASIC or MBASIC or both. Includes sorting and printing labels. Runs on either one or two drives; uses "stand-alone" for the former. Requires 48K memory.

PARALLELER

(Written by Tom Jorgenson)

A device driver for controlling your system from a remote terminal or control a remote terminal from your system, whether hard-wired or by modem. Occupies only 2.5K when loaded. Mass-storage device independent. Supports Hayes-compatible modems. 15 SET options and PROLOGUE.SYS, password protection, and auto-start of a user-supplied program. Could be used as the core of a BBS. Includes source code. Requires standard HDOS 2.0 and 32K memory.

PROBE

General purpose database package using random access techniques. Data entry built around an entry screen set up like a mailing list with 12 fields. Max. record length is 256 characters. Utilities included builds a compatible test file, removes records flagged deleted, recovers records flagged deleted, converts data files created under MAILIST (above), and creates a backup file index. Requires 56K memory, two drives, and MBASIC.

QUIZMASTER

Program to create, update, and give individually constructed tutoring. Content of the quiz is determined by the user. Requires Benton Harbor BASIC and 32K memory or MBASIC and 48K.

TERMINAL

(Written by Larry Boufford)

Menu-driven communications package for calling remote BBS's. Features auto-logon, Hayes compatibility, CTRL-S/CTRL-Q (XON/XOFF) protocol, and 2,000 character buffer. User-configurable baud rate, duplex, interrupts, and port. Status of carrier detect, aux. I/O, printer on/off, and free space displayed on 25th line. Does **not** support XMODEM file transfers. Source code not available.

T.N.T DRIVER/DEMO

(Written by Tom Jorgenson)

Device driver for Votrax TYPE 'N TALK. With a custom cable and some care, a printer could be run off the same port as the Votrax. Includes a demo program and SPELL-IT game. The last requires MBASIC. Includes source code.

Additional Materials for CP/M only.**HANK LOTZ'S UTILITIES 3**

(Written by Hank Lotz)

MCOLS, a utility that creates multiple-column listings from a single-column input file. User specifies number of columns (2 to 13), space between them, effective page width and length and horizontal pitch, and record to start at. Includes MBASIC interpreted and compiled versions with documentation. The indices in #'s 10 and 16 were prepared with this package.

Magic Wand/PeachText HELP

(Written by K.L. Thompson and R. Stokes)

Menu-driven online HELP set up as an INCLUDE file for **Magic Wand** or **PeachText**, a command reference for both EDIT and PRINT. Sluggish on floppy-based systems; hard-disk and/or RAMdrive recommended. Includes an article telling how to prepare menu-driven INCLUDE files. With Randy Stokes' PROCESS print preprocessor to support the features of almost any dot-matrix printer. The latter requires minimal assembly language knowledge to install the custom codes for your dot-matrix.

Placing an Order

Each of the above packages will fit on standard hard-sector media. Your cost depends on what you supply:

Formatted disk(s) and self-addressed, stamped return mailer	\$2.00 per disk
Formatted disk(s) without mailer	\$4.00 per disk
No disk(s) or mailer	\$6.00 per disk

The packages from Studio Computers include on-disk **and** (in most cases) hardcopy documentation. Formats available are standard (SS/SD) or double-sided (DS/SD) hard-sector and 40-track (48 tpi) soft-sector, single- or double-sided, for both HDOS and CP/M. Please clearly indicate the format you are supplying or require. If you desire double-sided hard-sector or soft-sector, I will pack multiple items onto one disk. I will not subdivide a disk. Send mailorders to:

Kirk L Thompson / **The Staunch 8/89'er** / P.O. Box
548 / West Branch, IA 52358

This can also be done with batch files. The name of the batch file is entered followed by the file name the batch file will use in it's operations. As an example, if the batch file's name is "BATCH" and the file it would use as part of it's operation is "EXAMPLE.TXT", one would type: "BATCH EXAMPLE.TXT" as one entry. If the BATCH file program calls an executable .ABS program and then passes the name EXAMPLE.TXT to that program, we have passed the name of a file to the batch file which has then passed it on to an .ABS program. If several executable .ABS programs are all going to operate on the same file, we have lessened the number of keystrokes needed by using batch files.

HDOS 3.0 Word Processing Batch File Shell. For word processing, I use the following executable .ABS programs: TXTPRO 4.0 (a text editor), TEXT 4.0 (a text formatter) and SPELL 1.0 (a spelling checker). TXTPRO was available from Newline Software, while TEXT and SPELL were available from the Software Toolworks. [The latter two can still be had from Quikdata, Sheboygan, WI, orders: 414-452-4172, for either HDOS or CP/M. -Ed.] Some may have these programs available with computers they have purchased second hand. Each of these programs allows one to run the program by typing the program name and the file name the file is to act on (a passible parameter). As an example, I can type TXTPRO LETTER which will run the editor TXTPRO as well as cause the editor to access the file LETTER. This common feature of these three programs allows a batch file menu to act as a shell for calling each program and an associated file.

The logic of the following example is:

- 1) the batch file name is typed from the operating system prompt along with the name of the file to edit;
- 2) the batch file lists to the computer screen the options available to the user;
- 3) a choice is made from the list;
- 4) the program/option is run acting upon the specified file;
- 5) after the user has exited the program/option he/she is returned to the menu unless the exit batch file menu choice is chosen from the initial list.

In the following listing, the batch file calls itself repeatedly as WP.BAT (which is it's name), and will exit from this continuous loop to the batch file WP followed by the FILENAME to be worked on in the form: "WP FILENAME".

Specific screen formatting commands preceded by an "\$" are included. If you don't enter the program listing exactly as listed, you may end up with unexpected results on your screen (but life is an adventure, isn't it??). The listing is:

[Editor's Note - Lines longer than column width are indented 4 characters; these lines should be typed in combined with the preceding line. The underline characters should also be preserved.]

```
CLS
ECHO$ WORDPROCESSING$
ECHO$ _$
```

```
ECHO F ==> RETURN TO MAIN MENU$ _$
ECHO E ==> EDIT $
ECHO S ==> SPELL $
ECHO P ==> PRINT TO LP: USING TEXT 4.0$
ECHO B ==> PRINT FILE TO SCREEN SHOWING PAGE
BREAKS/FORATTING$
ECHO I ==> CAT OF SY1: TODAY'S FILES$
ECHO $ $
ECHO FILE SPECIFIED:$ $ $ $ $1$ $
ASK WHAT IS YOUR PLEASURE:$ $ $ $
CLS
IF KEY = 'F' JUMP END
IF KEY = 'E' EDIT %1
IF KEY = 'S' SPELL %1
IF KEY = 'P' TEXT %1 LP:
IF KEY = 'B' TEXT %1
IF KEY = 'I' JUMP CAT
WP.BAT %1
:CAT
CAT 1:/SO/FUL/PA/CUR
ECHO $ $ _$
PAUSE
WP.BAT %1
:END
MENU
```

First, the CLS command clears the screen and homes (positions) the cursor at the left top corner of the computer screen. Next, the ECHO command proceeding a line "echoes" that line to the screen. Anything you want printed on the screen must be preceded with this command. The ASK command will print anything immediately following it and wait for user response. The "IF KEY = ''" checks the key selected in the ask command and branches to the command specified by the user.

Screen formatting commands preceded by "\$" are unique to batch files. As an example, "\$_" causes the cursor to return to the start of the next line. Failure to use this when you want a new line causes the next echoed string to be merely appended to the last string as a continuation of the first string. The "\$\$" command inserts spaces where desired. Both of these commands are important if you want a screen that appears like that intended.

The JUMP command causes a branch to a batch file subroutine bearing the same name with an ":" immediately preceding it. If you cannot put a desired command on one line, you can branch to more complex subroutines. Since the batch file as listed will loop back to itself endlessly, the jump to the END subroutine exits this file and calls another batch file MENU which may be a general listing of commands available on this particular disk. The jump to the CAT subroutine will produce a directory listing on drive SY1: of only today's files in sorted alphabetical order. This subroutine also sets the screen to "hold mode" so that a long listing will not scroll off the screen before the user can read files. The PAUSE command causes the computer to stop, ask the user to press any key, before resuming executing the batch file.

The "%1" specified after the batch file name is the variable name assigned by the batch file to the passible parameter given by the user when the batch file was initially run. It will substitute the file name exactly in the command sequence. Please note that when the batch file calls itself in the endless

loop, the "%1" is again specified so that the passible parameter is passed to itself when it runs itself again. Actually, the concept is easier to understand than the sentence describing it. One "bell and whistle" I have put in the batch file is the "ECHO FILE SPECIFIED" command string, which lists to the terminal screen the file given as the passible parameter. This serves as a reminder of what file has been specified for use with the editor, spell checker, and text processor.

In Conclusion. I hope that this material is of use to those of you using HDOS 3.0. Since programs are becoming scarce for HDOS, the use of HDOS 3.0 batch files allows one to use old programs in a more coordinated way. Since my editor, spell checker, and text formatter all use passible parameters, as do the batch files under HDOS 3.0, one can save many keystrokes. Might as well let the computer do the work.

The basic documentation for using batch files under HDOS 3.0 is found in the system help files. There are many options listed that I have yet to explore. Hopefully what I have described here will cause others to comment and explore the possibilities of HDOS 3.0 batch files.

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VENDOR.UPDATE

Central Computer Products. I mentioned this outfit quite some time ago (#6, p. 8, and #8, p. 3) and it's still in business since I got one of its catalogs this spring. The CP/M software described includes: graphics programs, printer utilities, word processing, spelling checkers, financial packages, games, educational software, miscellaneous utilities, and some hardware (an external modem, surge suppressor, soft-sector diskettes, tractor feeds for some printers, and data switch boxes). When you browse through the catalog, though, read the fine print! Some of the software is specifically for systems like the Kaypro, Commodore 128, or PC-compatible. Also watch the prices; for example, it lists WordStar 4.0 for \$150, but this can be ordered directly from WordStar International for about \$90 (see #9's Insert and #14, p. 12). I also don't believe it can supply material on hard-sector, but I'd be happy to perform media transfer for you. Some things, such as Turbo Pascal, that were in prior catalogs aren't in this one, either. If interested in the last, check the vendors I give in the last issue on p. 11.

But when you contact Central Computer, specifically ask for the CP/M catalog since it also has one for PC systems. The address is:

Central Computer Products / 330 Central Ave. /
Fillmore, CA 93015 / 805-524-4189

Used Computer Locator. If you're looking for or want to sell the odd mainframe, mini, or micro, you might be interested in this **free** magazine. It's chuck full of ads for Ataris, PC-compatibles, minis, even (if you believe the ad in issue #2) the ENIAC that Albert Einstein learned on! Also printers, accessories, software, and service agencies. There **isn't** anything specific to our equipment in the

three issues I've received, but you never know. Contact:

Used Computer Locator / 2314 Iowa Ave. /
Cincinnati, OH 45206 / 800-359-7160

REMOTE-CONSOLE. Do you have need to access and/or control a PC XT or AT from your H/Z-19 terminal, an '89/90, or a laptop? Using an RS-232C cable between the two (or a pair of modems if the separation is lengthy) and this software, you can do it. The software permits remote control of the PC host, fast file transfers if the remote is another computer (up to 115,200 baud depending on hardware), password protection, a "chat" mode, a "shutdown" command to remove the software from the host's memory without rebooting, and easy installation. It's compatible with MSDOS vers. 3.0 and up, various shells and extensions, some TSR's, and a number of PC word processors, editors, spreadsheets, database, financial, and utility packages. The only thing it **can't** handle is dot-graphics screens; it's **only** for ASCII text. Price is \$99. For more information, contact:

Louis E. Wheeler / P.O. Box 888 / Oceano, CA 93445 /
805-481-5687

Rehashing a Diskette Source. I finally placed orders for disks with **Midwestern Diskette** (noted here in #15, p. 10)--actually, I phoned them in. I paid 48 cents each for "generic" hard-sector and 33 cents each for the "house-brand" soft-sector. And one thing I noticed when the first shipment arrived was that **mail** orders are given a \$3 **credit**. This means that shipping is **free** for disk orders of 100 or less quantities or ribbon orders of 12 or less. Personal or company checks must clear before an order is shipped (usually 10 working days), but money orders and certified or cashier's checks are processed immediately. I had very prompt turnaround on my C.O.D. orders. And ribbon prices on the flyer enclosed with the order are the best I've seen **anywhere**. Contact:

Midwestern Diskette / 1301 Clayton Road / Creston,
IA 50801 / Nat'l 800-221-6332, IA 800-332-3035

Items from the July REMark. While perusing the July issue of **REMark**, I noted a couple of letters that contain information of interest to us. First, Bert Desmarais gives a source for parts for MPI printers. This is:

Cyber-Force / 3508 E. T.C. Jester / Houston, TX
77018 / 713-682-0668

Second, Ray Isenson announces a packet TNC package for amateur radio operators using the '8 or '89 under CP/M. It's based on the modem package, PLINK, and is called **PACKET89** by Ray. It features line printer toggling by function key and reception and transmission of files to and from disk. It requires 64K and will run without modification at 2 MHz. Ray will supply the package with ASM source on either **preformatted** standard hard-sector or 40-track, single- or double-sided soft- for free if a stamped, self-addressed mailer is included or for

\$10 if no disk or mailer is sent. For further information, contact:

Ray Isenson, N6NUE / 4168 Glenview Dr. / Santa Maria, CA 93455 =====

SUPERSTUFF - They Really Are A review of

SUPERSET, SUPERCLOCK, SUPERFONT, and SUPERKEY By Bernard L. Waltuck

"Spoil Yourself!" That's what the flyer from TMSI said. Lee Hart, designer and implementor of all that superstuff, was right. He has designed a series of modifications for the H/Z-19/89 to enhance what is already a most powerful system. If you don't already know, the H/Z-19 is a microprocessor-based computer terminal which means it has a Z80 CPU, ROM and RAM to control its three major "ports". One is input from the keyboard, the second is output to the video screen and third is input and output to what you think of as the computer. For some of you it's the H-8, for almost all the rest of you it's what you call the H/Z-89. It's really only a 70 because $(H-19) + 70 = (H-89)$. If you don't know what I mean, then load your favorite text editor and fill a portion of the screen with text, depress the OFF LINE key and enter in more text onto the screen. Press the OFF LINE key again, immediately save your text and exit. Finally "TYPE" your saved text to the screen and you will see that while you were "off line" nothing you typed to the screen was echoed to the computer portion of your system. The OFF LINE key separates the H-19 from your computer. What Lee Hart has accomplished is to increase the RAM and ROM of the H/19 portion of your system without using any of what you usually think of as computer memory because it is confined just to the terminal. But **so what!**

SUPERSET is a basic modification to your H/Z-19 that increases the number of "independent" functions of the terminal by over 50%. Additionally, by the use of faster IC's that use less power, the terminal runs cooler and faster. In fact, I previously had an overheating problem of my terminal, here in Florida. No More! By increasing the terminal's own clock speed from 2 to 3mhz the display is steadier and faster. Terminal baud rates (up to 38,400) are possible. To take full advantage of the these faster baud rates, you should have your computer running at 4 to 6mhz.

SUPERSET effectively doubles the number of function keys by sending a second, different set of codes to your computer when you use a shifted function key. What good is that if the programs don't recognize the added escape sequences? Well you can write your own or just program the function keys to send one of three sets of "canned responses" for BASIC, CP/M, or HDOS. Furthermore, you can use the control key with the function keys to change the fonts and graphics on the screen. You also get an on-screen clock-calendar, without taking up overhead from your computer proper, that you can display or not on your 25th line whenever it is not otherwise in use. These and many more functions can be immediately accessed without committing anything to memory because by hitting CTRL-ESC a magic window appears on the screen with every "escape-sequence"

to which the terminal will respond or send. There are actually 12 pages of "Magic Windows" filled with options that can be displayed at any time. Almost all options can be exercised immediately from that point without your program even knowing. (If that's not windowing, what is?) Or, your program can change things by sending the appropriate escape sequences to the terminal as if it were sending any other data. By Hitting CTRL-WHITE or sending "ESC ;" you can insert the current time into text or set your computer's time as in HDOS. Likewise, the on-screen calendar can be inserted by SHIFT-CTRL-WHITE or sending "ESC ~".

To me, the most important feature is the **white screen**. It's as if you are always in reverse video. If you have ED-A-SKETCH, or can borrow it for a few minutes, load it and fill the screen half way with text as if you were using an editor. Now hit f5 to reverse the screen. You will have your whole screen in reverse video, just like you would see with the "white screen" option. If it is too bright, **very carefully**, with the set off, reach inside your terminal and decrease the brightness with the brightness control on the video board directly under the CRT itself. [Some systems may have the brightness control mounted on the back panel. -Ed] I **never** use my computer unless it is in white screen. It reduces eyestrain and therefore user fatigue.

A multitude of other features are also available and useful: the scroll key now sends "S" and "Q" alternately to start and stop screen action like it should. The CTRL key can now be used to allow you to move the cursor around without your program's help or knowledge so that you can edit commands on screen and then re-send them with CTRL-RETURN or "ESC ?" for a partial line or "ESC ~" for the entire line or "ESC UNDERLINE" to just send the current character. That's in addition to the familiar "ESC #" and "ESC]" to transmit the entire page and 25th line. You can now choose a steady rather than blinking cursor just as you can select blinking reverse video rather than steady if you wish to flash a warning. However if you are in white screen, then reverse video will be black. Sounds logical, except that now if you choose blinking rather than reverse video the whole screen flashes except what you thought was in reverse video. There is also a "Screen-Saver" that blanks the screen after 15 minutes of terminal inactivity. And an interlace mode that gives you 499 lines per screen refreshed every 30 seconds rather than 250 every 60. With long persistence phosphors, that might be nice; but for everybody who photographs their screen for displays it should give you much smoother pictures.

Finally, the modes you select, like cursor type, reverse video on or off, keyboard shift and/or alternate, key click, autowrap of line at 80th character, auto CR on LR or vice versa on or off as well as ANSI or Heath Escape sequence recognition, can all be saved in the terminal's memory so that when a program is run that may change them they can automatically be reset on program termination with an "ESC z". Unfortunately these saved modes will be lost when the terminal is off since not all of these functions are set by those DIP switches.

Now add SUPERCLOCK... This is an additional set of chips including a tiny battery built right in to one of them that allows your clock to keep time even

when the computer is turned off. The clock is programmed to keep an accurate date through leap years up to the turn of the century. (But then the battery probably won't last more than 10 years, anyway.) The speed of the clock is software controlled up to an accuracy of 6 seconds per month. SUPERCLOCK also uses some of its memory to allow you to program the function keys yourself with up to 16 characters per key but only 40 total characters. Then it provides a second page of screen memory that can be saved, even when the computer is off, by that sneaky little battery. You can switch back and forth between these two screens, at will, from the keyboard or from a program if you want really fast screen changes. You can even access part of the second page and insert it anywhere on the screen to have the effect of a moving "sprite" on the screen. Even those modes that were lost when the terminal was off can be saved by that battery when the power is off.

Add SUPERFONT and extend the 4 font choices from SUPERSET (1: normal H-19, 2: Norcom T-Prom text with G-Prom graphics, 3: DEC VT-100 with fine-line H-19 style graphics, 4: modified H/Z characters to include special Greek and math characters) to add 4 more (5: H-29 characters which provide super and subscripting, 6: double-wide characters, 7: "All-points-addressable" graphics on a 160x100 grid, and 8: a PC compatible monochrome display). These added fonts utilize the 8th bit normally unused in the ASCII codes.

Finally there's SUPERKEY that makes the H-19 SHIFT LOCK behave more like a (excuse the expression) PC keyboard. With the SHIFT LOCK down, almost every key on the standard part of the keyboard is shifted except the comma, period, equal and "[" keys. The function keys and keypad are unchanged. This facilitates such entries as PIP B:=C:STUFF?.* all without hitting the SHIFT key. Even in BASIC you can type: 10 OPEN "I",#1,"DATA" in MBASIC (or 10 OPEN "DATA" FOR WRITE AS FILE #3 in B H BASIC) without hitting a shift key as long as you remember to use the keypad for the numbers.

To install any or all of the modifications requires a moderate level of skill with a soldering iron as well as a little courage to scratch off some circuit board tracing. If you built your '19 or '89 yourself, you can modify it. The directions are perfectly clear. Pictures accompany the instructions and are provided for both the H-19 and newer 19-A. You must remember that once you modify the H-19/89, Heath will not be able to troubleshoot or fix it for you. After all, they cannot support what they do not make and you are remanufacturing the terminal logic board.

But not to worry. When I recently called Heath about an unrelated problem with my H-19 they told me they didn't work on them much anymore and didn't have complete information on them, REALLY! At last report Lee was offering to install the SUPERSET for \$25 extra but I would contact him first. He will also fix a board you tried first and failed for \$50 plus parts. But he includes a long list of possible problems in his directions in case (like mine) it didn't work immediately upon turning on the set. In my case I cut the wrong circuit trace the first time around. By careful inspection, going over each direction step by step I found my own problem. To

fix it, I scratched off a little of the coating over the adjacent good copper foil, and soldered a flat jumper wire over my error, cut the correct trace, and everything was OK. Nothing, luckily, got fried.

Time required for installation was about 2 hours. **Don't do it when you are tired.** You must be able to concentrate.

Drawbacks: I can spend more time at my terminal than ever before with white screen. My wife doesn't like that. When using the function keys in HDOS or CP/M I have the function keys programmed. When I run a program that uses the function keys, I must manually disable the special functions, write a .BAT file or modify the program itself to do that. I've enjoyed doing that. Its only the SUPERKEY that might have any real drawback. After 10 years of hitting the shift key whenever I type the "*" or ":" I am having to slowly be retrained. But I think I like this new way better. There is no downside to SUPERSET, SUPERCLOCK or SUPERFONT. You judge how much of the system you need. I think SUPERSET is required by anybody who is a serious terminal user. SUPERCLOCK is a nice luxury, SUPERFONT is for someone who likes to play, SUPERKEY is good but it requires unlearning old habits.

Prices as listed in the Quikdata catalogue 9/89:

H89SS	Superset	\$49.00
H89SC	Superclock	35.00
H89SF	Superfont	29.00
H89SK	Superkey	19.00

[See also Lee's ad on the insert to the last issue. -Ed.] All of these items are available directly from:

Lee Hart / 323 W. 19th St. / Holland, MI 49423 / 616-396-5085

or from:

Quikdata, Inc. / 2618 Penn Cir / Sheboygan, WI 53081-4250 / orders: 414-452-4172

If you have one of the earlier SUPERSET's, before programmable function keys, contact Lee directly about the cost of an upgrade.

=====

MISCELLANY

Brother HR-20 Daisywheel Printer Mini-Review.

[From Hank Lotz, 2024 Sampson St., Pittsburgh, PA 15221] "In an early **Staunch** I mentioned the new Brother HR20 daisywheel printer was available, not knowing I'd some day own one. Now, my hew HR-20 is up and running (alongside my HR-15) ... With the new printers a printwheel comes installed. The one with my HR-15 was the Prestige 1020. Happily, the HR-20 had a wheel I did **not** already have! Not only that, I like it better. It's the Brougham 10. I noticed it is a lot like the font of **your** letters [Courier 10 -Ed.] ... The HR-20 has a few improvements over the HR-15, and a few things "worse." To mention a few of each, the HR-20's ribbon is slightly less convenient to change. Also, when I tried to pull the paper down through the printer (to remove it from the rear) it got caught at the perfs, due to a design change. The

'20's paper bail will not rest against the paper without closing the paper release lever (it will on the '15) which you don't want to do with the tractor feed installed. There is an LF [line-feed] button, but you can't control line-spacing on the '20 from the panel. The '15 has a line-spacing panel switch. But the '20's buffer is larger (8K vs 3K) and a lot easier to clear than the '15's. Overall, as I rate it, the HR-20 loses the user-friendliness contest between the two. In fairness I must add that anyone using the '20 without having first used the '15 would not notice the minor negatives. And the HR-20 is quieter, probably a bit faster, comes standard with **both** serial and parallel interfaces, and has a (pseudo) "graphics" mode...

"Unfortunately, those budget ribbons I got do **not** transfer to paper nearly as well as the expensive retail ribbons. The last batch was the same way, but I wasn't so certain of it then. **And** this heavier paper I just bought seems to take the ribbon less well. I'll still have to buy the costly [carbon-film] ribbons for my outgoing correspondence. The cheap ones won't be wasted though; they're good for prog listings, etc. One last item: this paper did not cost nearly what I expected! At CompuAdd it was \$19 for 2600 sheets, and at the cash register the clerk found out it was on sale for \$18! Also at CompuAdd that day, they had ten-foot RS-232 cables for \$11.65. I'd just purchased a **six**-foot one from Radio Shack for \$17.95!...."

=====

PC89LINK From Lindley Systems

By Dan Jerome

I have just been experimenting with a real nice program that enables you to transfer a file from either an H89 to an IBM PC (or in reverse), or from another H89 or H8 to your H89. The following description concerns itself with transferring files from an H89 to an IBM PC. You can also transfer files from one H89 to another, or from an H8 to an H89, or one PC to another PC. The only requirement is that the computers must be connected to each other by means of a null-modem cable. More about the cable later.

Lindley Systems furnishes two disks: one for the H89 and one for the IBM PC. The disk for the H89 carries both HDOS and CP/M files on it. If you boot up HDOS, either HDOS 2.0 or, better yet, HDOS 3.02, you will see the file, PC89LINK.ABS on it. This allows you to create an HDOS bootable system disk which contains minimum files: at least PC89LINK.ABS and ERRORMSG.SYS. When you boot up your CP/M system disk, you will see the PC89LINK.COM file on the same disk. This is done by means of "dual format." This allows you to create a bootable CP/M disk with PC89LINK.COM on it, plus minimum files. I realize that it is not necessary to create a bootable system disk for both HDOS and/or CP/M, but it is more convenient this way. Once you get to porting files back and forth, you will need a little extra room, which is what a bootable disk with minimum files will provide.

To install this program on your system, besides the software described above, you will need only a "Null Modem" cable. In the "old days" in order to transfer a program to another computer, one used a

"Null Modem" cable, but it was vastly more complex, since each computer required a separate modem program. Using two modem programs at once can be a problem, and there were times when one could have used four hands.

Regarding the cable, the simplest way to obtain a cable is to purchase one. Cables may be secured by mail order from CompuAdd, 12302 Technology Blvd., Austin, TX 78727. Their shipping and handling costs are an additional \$3.00. You will need a female-to-female "Null Modem," part no. 40037 to plug into port 330 of your H89 (cost \$5.95), and then an extension cable to connect with the IBM PC or equivalent. One end of the extension cable should be a DB25 male to match the "Null Modem" end, and the other should be a DB9 male (at least that is what I used). Part no. for the extension cable that I used is: 39663 (cost \$10.00.)

There is no question about the need for a female "Null Modem" cable, but to fit with your IBM computer, you must select a cable with the proper plug, or purchase a "gender mender."

Another way you can go is to make your own cable. All you would need is one DB25 female connector for the H89 side, and one DB9 or DB25 connector for the IBM PC side. The problem with hand-constructing a cable using a DB9 connector is to determine which pins to connect to. Lastly, you will need at least six feet of raw cable, preferably 22 gauge cable with at least 3 stranded leads. The cable diagram is as follows:

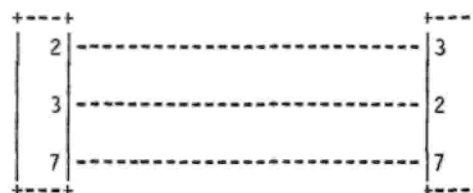


Figure 1. Null Modem Cable

NOTE: Crossover between pins 2 and 3

Suggested source for the cable connectors is Radio Shack. Parts are as follows:

[1-A] DB25 Male:	276-1547:	\$1.49 \	Select one
[1-B] DB9 Male:	276-1537:	\$0.99 /	
[2] DB25 Female:	276-1548:	\$2.49	
[3-A] DB25 Hood:	276-1549	\$0.89 \	Select one
[3-B] DB9 Hood:	276-1539	\$0.79 /	

NOTES: (1) Choose parts according to your specific application.

(2) Radio Shack does not carry the exact type of cable that is required. This type of cable may be difficult to find. Keep in mind that you can use cable with more than 3 leads. In this case, just tape the unused ends and fold them back inside the hood.

Once you get your cable connected and turn on both computers, call PC89LINK on each computer. NOTE: The following screen diagrams are separated by strings of equal signs (=) while dashes represent actual lines on the screen. [Screens are also sized to fit **Staunch's** column-width so do not **exactly** reproduce the originals. -Ed.]

The first screen that comes up in the H89 is:

(H89 Screen #1)

```
=====
PC89LINK Version 1.7, Copyright 1990 Lindley Systems
```

Press any key to continue:

After pressing any key, the screen changes to:

(H89 Screen #2)

```
=====
PC89LINK Version 1.7 Port [330] Baud [ 9600]
Send [AUTO] Receive Device [SY0:]
```

Enter:

```
S - Send a File
R - Receive a File
D - Directory
C - Configure
Q - Quit
```

You type: 'S' and the screen changes to:

(H89 Screen #3)

```
=====
PC89LINK Version 1.7 Port [330] Baud [ 9600]
Send [AUTO] Receive Device [SY0:]
```

Send Files

Enter File Name: SY1:TREE.*

```
SY1: TREE.001 4k      *      31   100 Complete
SY1: TREE.002 31k     *      247  100 Complete
SY1: TREE.003 27k     *      217  100 Complete
SY1: TREE.004 22k     *      189  100 Complete
SY1: TREE.005 23k     *      191  100 Complete
SY1: TREE.006 24k     *      216   86
```

```
FILENAME      Size Mode Xfer Retry Wait Pack% Status
=====
NOTE: The file names and stats are painted on the
screen, one line at a time, as the files are copied
to the destination computer.
```

The IBM PC screen looks like this:

(PC Screen #1)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

Press:

```
S - Send File(s)
R - Receive File(s)
D - Directory
G - Go To Directory
C - Configure
Q - Quit
```

After you press the "S" key on the H89, the following change takes place:

(H89 Screen #4)

```
=====
PC89LINK Version 1.7 Port [330] Baud [ 9600]
Send [AUTO] Receive Device [SY0:]
Sending          Packet nn (nn%) Complete
=====
```

Note: Where the letters 'nn' stand for numbers, such as Packet 44, 32 and 10% thru 100%.)

After you press the "R" key on the IBM PC, the following change takes place:

(PC Screen #2)

```
=====
+----- PC-89 LINK Version 1.7 -----+
| PORT: COM1; Baud 9600; Directory [C:\PC89LINK] |
+-----+
```

```
+-----+
| Waiting for file ... |
| (Press any key to abort) |
+-----+
```

```
+-----+
| Sent Received |
| Bytes Transferred      nnnnnn |
| Retransmissions        0%     |
| Average Bytes/Sec      nnnn   |
+-----+
```

(Continued on the Insert)

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