

## BITS & PIECES

### DIGITUS RAINBOW 2000 EVALUATION

Last month I said I'd try to have a report on the DIGITUS RAINBOW 2000 color board. After the company bent over backwards to help me and send me a \$400 board for evaluation, I hate to give a negative report, but that's the way it is.

When I got the board, I was amazed that such a small handful of components on a board could cost \$400. The board contained its own onboard processor, a MC6802, along with EPROM for software operation of the system, but no power supply was included. This may not have been so bad, but besides the usual 5V needed (at 1.2 amps), +12V and -12V at 25mA each, were also needed. I got the latter voltages from the 4 port serial card, and rigged an additional power supply for the 5V, although if the breadboard card was available, it could have been obtained from there.

This board needed at least 2 edge connectors, neither of which I had, and neither of which was included, which again, for the price, upset me. So I hardwired to the board! There is a RS-232 serial port, and a parallel port which, is to be used with a keyboard, but should be drivable off a parallel port of a computer with software modifications, I was told. It was not clear to me how to do this, so I approached the RS-232 serial port method.

The serial port would operate this board up to 38.4K BAUD, setable with a dip switch. Connector J1, connects power, and has the video composited 1V P-P non interlace output, which if not used with video monitor must be rigged to a rf modulator, which I happened to have. There were pins that were labeled NMI and another IRQ, neither of which was defined or explained anywhere in the scant operation manual, which was very lacking in detail. No schematic was included, circuit operation, software samples, or good pin definitions.

Connector J2 was the RS-232 connector, and again, pin 15 was labeled DCD which I never heard of before, and was never explained! Connector J3 was the parallel connector with 8 bits plus a "strobe", whatever that meant. This also was not explained as to what it did, or how to use it.

The board had three modes of operation, and to switch modes, you had to send a CTRL T to the port, which was never defined. Upon calling I found it to be 14 Hex. I never got past the first mode, which was 8 colors, and that I never got to work. I connected the thing to the H8 4 port board, and configured an AT driver to that address and sent data out to the board, and nothing ever happened. Unlike the PERCOM board that requires extra RAM for all the color capabilities, this had all included.

I imagine had I got the board up and running it would have been a quality board, but for that price, and all the needed extras like power supply and connectors, I shipped it back. Like I said, the company was most helpful, and they have a toll free number to call for questions, but I felt one should not have to be on the phone constantly to get info which should have been included. The software was another story in itself, without any sample whatsoever, I couldn't figure out really how and what to send to the board anyway.

Don't despair, refer to NEW STUFF and you'll find some info about PERCOM's board and the HEATH board soon to be released.

### MULLEN PROTOTYPE BOARD

As mentioned in June H8SCOOP, here's more of a report on the new mullen prototype board for the H8. Like I said in June's issue, this is not the board for building and tearing down, because of the hard wire techniques used. However, wire wrap terminals can be installed, which would make this board more usable as a prototype board. Several different type of VECTOR wire wrap pins are included to give the user an idea of what can be used with this board.

A really nice feature of this board is a 44 pin edge/cable connector place on this board, located next to the heat sink/mounting bracket which can be used with a 44 pin connector (\$5 from Mullen) for external signals. Also included on this board is a row of MOLEX type connector locations for mounting standard MOLEX connectors, similar to those used on the side which plugs into the H8 buss, for additional I/O connections to the outside world, or whatever. Again, MULLEN makes these available, male and female for \$1 each.

This is THE BOARD to use if you have a circuit or circuits (since there is quite a bit of room on the board) you want to build and install in the H8 as a permanent operating part, such as clock,

I/O, A/D, and whatever your imagination limits you to. I feel this board, along with the MULLEN buss extender board and the Heath breadboard are musts for the serious computer experimenter and designer. And Bob Mullen is one of the good guys.

If you want this board, order the HKB-1 for \$46 plus \$1.50 for shipping. The extender board is \$39 HTB-0. COD's will be shipped in the U.S. for an extra \$1.25, if a street address is included. They also take VISA and MC. For faster service, call (415) 783-2668. They claim a 2 week or less delivery time. Mullen Computer Products, Box 6214, Hayward, CA 94544.

#### KILOBAUD INSTANT SOFTWARE

W. Goodwin reports that Kilobaud's Instant Software appears to operate very slowly, as far as getting results from them. He reports after sending them software for the H8, it took them over one year to get back to him, rejecting his software.

#### BIBLIOGRAPHY UPDATE

To keep the H8 bibliography up to date, W. Goodwin also sends along the following article listing which appeared in Dr. Dobbs Journal, a source which I do not subscribe to, thus the omission from issue 2 of H8SCOOP's FEATURE.

OCT '77, Pg 10--Review of the H8 and reply from Heath

NOV/DEC '77 Pg 9--Review of the H8 by a reader, and Pg 11--Announcement of INFO 2000 disk system.

JAN '78 Pg 3--Publishers apology for OCT '77 review, and Pg 5--Reader letter about OCT '77 review.

SEPT '78 Pg 30--Add lower case to the H9

NOV/DEC '78 Pg 22--Review of the H8 and H17 disk

FEB '79 Pg 41--Routine to get paged listings from B.H. EXT BASIC

NOV/DEC '79 Pg 42--Disassembler in B.H. EXT BASIC

MAR '80 Pg 21--Routine for listing of Assembler Symbol Table

He also reports that Patric Swaynes FOCAL has been available since late last year, and it has a couple of bugs in it.

#### HARDWARE CLOCK FOLLOWUP

Walter Scott III, has developed a real time clock interface for the H8. Refer to NEW STUFF.

Follow up from Joe Abbruscato on the MSM5832 clock chip--OKI in Santa Clara has a \$100 minimum order. This chip can be ordered from Advanced Computer Products POB 17329, Irvine CA 92713 at the following prices. MSM 5832 chip \$9.95, Data sheet \$0.50, Shipping minimum \$2.00, plus tax where applicable.

Here's a better deal. Donald Long Jr., 2001 N. Magnolia Ave, Pensacola, FL 32503 has been prototyping a clock/IO card using this same chip. Stay tuned to H8SCOOP for a report on his completed board, hopefully next month. He will be offering the boards for sale. For now, He offers the following: A package containing one MSM5832 clock/calendar chip, one 32.768Hz crystal, spec sheets, full documentation and diagrams for bread boarding on the H8-7, listing of the programs CALENDAR.BAS(sets clock and calendar), TIME.ASM, TIME.ABS(prints time and date on system console, TIME.ACM(time and date reading utility for inclusion into user programs), and all necessary hardware needed, except a 8255 PPI chip, for the low price of \$21.

Add \$6 for the programs on disk, and add \$14 for a 3.6V 225mA PC mountable NICAD battery pack, capable of powering the clock for about a year. Don says he should have this package ready by late June, in other words, by the time you have this H8SCOOP in your hands.

The completed board will contain this clock, plus 12 software programable parallel I/O ports, for probably under \$200.

#### DECWRITER STUFF

For those who use the LA-36 DECWRITER, SELANAR CORPORATION, 3054 Lawrence Expressway, Santa Clara, CA 95051 (408) 737-2777 has a GRAPHICS II package which is a mod to replace the existing electronics of the LA-36 to give features such as: Vector generated Graphics, Bi-Directional line feed, improved speed of up to 50 characters/second, 3 character sets, boldface characters, RS-232 or 20mA, plus more.

The graphics use ASCII characters for control, and will supply 1320 dots per line, and 792 lines/page, quite dense. Price? \$850, over half the price of the LA-36!

DATASOUTH Computer Corporation, 4740 Dwight Evans Road, Charlotte NC 28210, (704) 523-8500 also has a mod for the LA-36 for \$750! It increases the baud to 1200, and uses bidirectional printing at 165 cps utilizing a 1000 character FIFO buffer. It also gives RS-232 and 20mA, Auto line feed, and more.

I have a Decwriter II, LA-36 which I run at 600 baud. What's so unusual about that? First of all, it is only supposed to run at 300 baud. Second of all, the mod I built to make it work only cost about \$5 in parts, and lastly, I run it off the H8-4, four port serial board, channel 1-20mA current loop.

Heath states in the operation manual for this board that the maximum that channel with 20mA will operate at is 300 baud. If you are interested in this mod, drop me a line, and if enough interest is generated, I may print it, else I'll probably make it available as a brief article.

I just installed it recently, so I want to give it some time to see if it keeps on working without melting the print head, or blowing anything up.

#### MBASIC HELP

D. C. Shoemaker reports an excellent guide to MBASIC, far better than the supplied Heath documentation, or TRS-80 level II manual is Ken Knecht's new book MICROSOFT BASIC published by Dilithium Press for \$8.98. He says it's worth every penny, covering sequential and random disk I/O operation, along with some of the more exotic commands and how to apply them.

#### DISK WRITE PROTECT PROBLEM

Jan Johnsen reports if the write protect light burns out in the H17, which is rare, but could happen, you would not be able to write to a disk since in actuality you are write protecting the disk. Although this is obvious, when it happens and you continually get an "attempted write protection violated" type message, and you know the disk is NOT write protected, this would be your first area to check.

#### GENERAL STUFF

For those interested in assembly programming, if you already have the HDOS SYSTEM PROGRAMMER'S GUIDE, p/n 597-1973 there is an ADDENDUM out which updates this for covering HDOS ver 1.5 and 1.6, p/n 597-2194. This is supplied free of charge by writing HEATH and requesting it.

Heath will be reportedly using the SOURCE and MICRONET for MODEM communication.

New software will be reportedly cropping up for the H8/H89 to be marketed by Heath, but written by outside sources. This will increase the software goodies for the H8, but be expected to pay a higher price for it.

AUTOSCRIBE, a wordprocessor, will be available for the H8 which will support any printer. Expect a \$400 price, possibly lower if you buy it with a DIABLO.

Gordon Letwin, the author of PAM-8 now works with MICROSOFT in Belview, WA.

I have received questions on the upgrade kit for the H9 by George Risk Industries. Individuals attempting to contact them are evidentially not getting a reply. GRI told me they ARE doing a new keyboard for the H9, but ran into some snags. Some features will be a wider return key, timed auto repeat on all keys, and uses old IC's from the H9 keyboard. Then hopefully to follow, lower case, audible feedback and maybe some decoded functions.

They are holding off on any announcements till they have the thing all together and ready. Bob Nickels (VP) told me he'd let me know the details when they are ready, so be patient. THE H9 IS NOT DEAD. See Editorial.

## NEW STUFF

Since it is a Heath Computer, I'll give you the low down on that first. I got this info, and it's all I got, so don't call me for more, just remember, you saw it here first!

HA-8-3 Color graphic board selling for about \$65(?), projected date to be September of this year. It has a UHF output for connection to a color TV.

HA-8-4 Speech board for \$175, September 1980. I have a feeling it's the speechlink board from HEURISTICS, which will allow the computer to recognize a limited vocabulary, and not a "talking H8" board. See May 1980 H8SCOOP.

HA-8-6 Z80 CPU card, \$50(???) October 1980. This is a upgrade to existing H8 CPU.

WH-54 Diablo write only unit for around \$2000

H-8-10 Wirewrap \$10. This must just be supplies, maybe for the MULLEN board?

H17-3 \$400 3 drive 5-1/4 disk for the H8, similar to the H17, but with an additional space for a third drive. That price may be without any drives, I don't know.

H88-6 \$50 3rd drive mod for the H17. Should be available already.

H47 8 inch floppy for the H8 for (sit down) \$2000. I would assume this is a dual drive unit.

WH8-47 Double density controller with 8 inch floppy \$2700. Again I assume this is a dual drive unit. Why is there no double density for the existing H17 5 1/4 inch drives? Since many H8ers have this, I feel they would rather go this way than spend the big bucks on the 8 inch, and then what about the 5 1/4 inch drives? How about it Heath? Many of the H8SCOOP readers have written me about that one.

H-8-64 64K dynamic memory board with 32K supplied on board, to be available in July. Could this be the Capital HUG board??? I assume it is, since I already got my hands on the assembly and operations manual for it. It looks pretty good!

HOS-817-1 HDOS to be released in October for \$150. What's this? I guess it will be serial numbered and a license will be required to be signed to help prevent pirating. The same applies to the next 2 items

HOS-817-2 CPM for \$150.

HOS 817-3 USCD PASCAL for \$150, with FORTRAN coming soon.

PERCOM DATA CO., 211 N. Kirby, Garland, TX 75042 (800) 527-1592 has a color board out that uses an 8 bit parallel port, for around \$200. This one includes power supply, a 6802 on board CPU, ROM and 1K RAM all in a box. It requires an RF mod, just like with the RAINBOW, if you want to use it with a standard TV. For more info, or to order, call PERCOM.

Here's a neat one, a H8 expansion interface, but instead of building outside the H8, the H8 cabinet is modified to hold 15 boards in addition to the CPU and front panel monitor board. It actually includes the stuff to elongate the H8, and includes an additional 7.5 Amp 8V power supply. Longer oak wood sides, and a new top and bottom metal cover S T R E T C H E S the H8 to a new length of 10-1/2 inches in addition to the original. My info doesn't say

anything about drivers or buffers, and I'd be extremely hesitant of loading any buss not designed to be loaded with 17 cards! For more info, STRETCH-8, PO Box 1120, Burbank, CA 91507.

ASAP Computer Products, INC., 11542-1 Knott St., Garden Grove, CA 92641 (800) 854-6411 has 4116 memory chips (200ns) 8 for \$55 and 16 for \$105. I had a report from Charles Bennin that he got a price of 8 for \$38. I called to check it out, and yes they did offer them for that price if you mentioned it, but they are not any more. The special price appeared in an OEM magazine and some hobbyists got the price. It appears ASAP ordered a whole lot of them and could offer them for that price. If it happens again, they will let me know, and I will let you know.

DG ELECTRONIC DEVELOPMENTS CO., as mentioned in the last months H8SCOOP has announced their Z80 CPU board for \$249 in June BYTE(pg 175). It states the board is operational at 2 or 4MHz. Since timing for HDOS among other things is done in software via the system clock, it seems to me that using the 4MHz rate would really screw things up. I'm not sure, that's only my opinion. It does allow advantages to those running programs utilizing the Z80 instruction set, and should make more software compatible with the H89. For more info contact DG, PO Box 1124, Denison, TX 75020 (214) 465-7805.

For the H19/H89 owners Aurora Enterprises offers black metal engraved plate with silver letters that mounts on the H19 where the disk drive would go, and contains the most referred to escape sequences. \$6, request part ES02. 34343 Groesbeck Highway, Fraser, MI 48026.

Computer Enhancements Co, 18966 G Drive North, Marshall, MI 49068 has available the "Original Smoke Screen" for \$9.95. This is a filter placed on a 12 inch CRT tube to increase contrast, and reduce glare. The blurb says "no drilling, screws, or other damaging mounting is required". This may be good for the H19 and/or the H89 screens, as the glare and contrast are pitiful as compared with my HAZELTINE screen.

I haven't ordered one yet, since my H19 is in the shop, but probably will and report on it. Meanwhile, if you want more info, or desire to order one, send to the above address. The price includes postage and handling for this introductory offer. If anyone has it, or is going to get it, write to me and give me the SCOOP!

Did you know the PIE editor is now available for the H8/H19 combo? I haven't used it, but if you want info contact

## REQUESTS

Walt Bilofsky, 14473 Glorietta Dr., Sherman Oaks, CA 91423. This is a text editor using the H19 screen as a window into a file. The Cursor motion keys position the cursor so changes can be typed anywhere on the screen. Price \$29.95

With his package is TEXT FORMATTER by Dr. Jim Gillogly, which when used along with PIE makes a powerful word processing package. It includes page numbering, headers, indents, centering, justification and more. \$34.95

Other programs offered by Walt are C Compiler for \$39.95, MACRO ASSEMBLERS for Z80 and 8080 for \$29.95, LISP INTERPRETER for \$39.95, FILE COMPRESSION AND ENCRYPTION by Dr. Jim Gillogly for \$24.95, FLIGHT CONTROLLER GAME by Dr. Jim Gillogly for \$19.95.

All programs include documentation, and most will run on the H8 with 32K. These programs also may be available at your Heath stores, check to see, or contact WALT for more info.

I got my hands on a TINY PASCAL interpreter. It comes on disk with a sample program and some documentation, but you have to know something about PASCAL to take full advantage of this language. I make it available without any endorsement or support whatsoever! It was adapted to the H8 from some articles in BYTE magazine. If you want a copy send me five bucks, or a disk and two bucks to cover costs.

Walter Scott III, 7608 Luscombe Dr., Knoxville, TN 37919 (615) 690-3864 has developed a hardware real time clock for the H8 using the MM5309 digital clock chip. It displays the time on its display, and will interface to the H8 via Parallel Port. The clock is set by pushbutton switches and time is read by the computer one digit at a time with a series of "IN" and "OUT" (PIN and OUT in BASIC) commands. For more details, contact Walter.

The KEYBOARD STUDIO offers two new MB programs in the FINANCIAL PACKAGE disk which will run on the H8/H19 or H89. With program modifications, it could run on the H9. This package includes Amortization, Investment rate of Return, Cost of Borrowing, Output device selection, and a program to GRAPH the figures. Contact the Keyboard Studio 1726 Mansfield, Birmingham, MI 48003 for more info.

Robert Baldauf, 330 Sherman Ave, Elmhurst, IL 60126 is interest in anyone having information on interfacing a FLEXOWRITER to his H8/H19/H17 system, to be used as a printer only. It has a 8 level code.

## WHO'S WHO

Joe Abbruscato, 1541 West Birch St., Oxnard, CA 93030 has an H8/H17/H9 combo and wants to trade software. He has lot of disk programs, and a small amount of cassette programs. If you have anything, or want to know what Joe has, or his needs, Contact Joe.

## CLASSIFIEDS

WANT TO TRADE my H9 and H8-4 Serial I/O card for good 8K memory cards. Ed. Freeman, 8628 Swiss Place, Anchorage, AK 99507.

FOR SALE, 1-8K memory board \$85, 1-12K Godbout board \$150, and one DG32 32K board \$375, or all three for \$525. All work fine. Went to one 64K board. Edwin R. Ranson, 35020 45th Ave. So., Auburn, WA 98002 (206) 838-3308.

FOR SALE--H8 with 20K which includes a 12K Godbout board. Approx 6 months old. \$350. Ralph Hastings, Rt 1, Box 184Q, 710 Tori Road, Richmond, TX 77469. (713) 342-4683.

FOR SALE--one Godbout 12K RAM card. \$110. Donald C. Long Jr. 2001 N. Magnolia Ave., Pensacola, FL 23503. (904) 433-4451.

## EDITORS MAILBOX

This is a new heading in H8SCOOP. When readers write in questions that I feel the general H8 public may benefit from, rather than sending only a personal response to the reader, I will make it public in this column, thus more may benefit from it.

Several readers have written in requesting Kilobaud's address for subscription information, since I have pushed this magazine quite a bit in H8SCOOP. For subscription information, write MICROCOMPUTING, Subscription Department, PO Box 997, Farmingdale, NY 11737. U. S. Rates are \$18/year, CANADA, \$20/year. For foreign rates, contact them, because they vary quite a bit.

## GOOD GUYS and BAD GUYS

questions as to sprocket feed mailing labels from Radio Shack. Stock number 26-1450, 5000 15/16" X 3 1/2" labels, 1 label wide, for \$19.95. They are called Pressure Sensitive E.D.P. labels. If the stores do not carry them, they can order them.

What about the MODEM and related stuff? That will be the subject of a future H8SCOOP.

Question continue to come in about the H8 and its memory size. I hope I can clarify this once and for all. The H8 is an 8 bit machine, but the Program Counter, uses two 8 bit words, giving it 16 bits. With 8 bits, in other words, using Address lines A0-A7, there are 255 possible addresses or "locations" capable of being called. You have to know the powers of 2 (binary math). The Program Counter is what addresses or "points" to memory. Register combo "HL" is used as a pointer for the same thing in certain cases. Suffice it to say, without getting to lengthly here, this is the case. And since I/O devices are addressed only with an 8 bit word, there are only 255 possible I/O ports capable of being addressed, without going into memory mapping, and that's another story in itself.

If a computer could only give 255 memory locations, it would be quite useless, so they combine two 8 bit words to give 16 bits. This gives 65,535 possible locations (2 to the power of 16), thus all address lines, A0-A15 are used. So actually, the typical 8 bit micro can DIRECTLY address 65535, or about 65.5K. They just call it 64K, again due to binary math.

The H8 is no freak, and is capable of addressing this amount, and using it. BUT Heath RESERVES the first 3K for their things, like PAM-8 monitor, DISK operation, ROM routines and things like that. So although the computer can work with up to 64K, the user can only use 64K-8K=56K of that memory. Now if you decided to re jumper the CPU board, and write your own software, you could indeed use all 64K yourself.

Just as a little extra, for all practical purposes memory addressing is identical to I/O device addressing, except for the extra decoding signals used. Memory read (MEMR pin 28 on the buss) and memory write (MEMW pin 23) use the same DATA lines and ADDRESS lines as Input Output Read (IOR 26) and Input Output Write (IOW pin 21), just different signals!

GOOD GUY--TED MIESKE, 741 Oakwood Ave, Hurst, TX (214) 826-4055 (days). Refer to last months H8SCOOP Under WHO'S WHO and find Ted listed there as one who is willing to help H8SCOOPers. Ted has been supporting the H8 system for quite a while, designing and making the H9 24 line mod PC board, and making up a PC board for the original MORSE8, to mention a few. Since He works at a Heath store, He gets to work with various aspects of the H8 and H89's and gets to know them quite well, hardware and software wise.

But it doesn't stop there. Ted is willing to share his expertise with those in need of help. I quote from a letter I received by Bill Switzer in response to last months H8SCOOP.

". . .I knew Ted Mieske when he worked for Heathkit in San Diego. I purchased his 24 line mod and developed some problems. When I approached him for some help, he set aside 4 or 5 hours one evening and went through the mod with me. - - -Anyway, Ted will come through for any user in trouble."

I know Ted has come through for H8SCOOP many times for information, software exchange, and technical advice. Because he really cares about the H8, H8ers and H8SCOOPers, and then DOES SOMETHING about it, Ted is really one of the GOOD GUYS. NOTE: Last month a phone number was given out for Ted's home phone. Ted asks that he is called at the store, and not at the home number as this is not HIS home. He is in the process of moving. So please refrain from using the number listed last month as Ted's home number.

GOOD GUYS--TIDEWATER SOFTWARE INC., Box 4465 Virginia Beach, VA 23454. DC Shoemaker reports "I recently purchased a utility disk from them and was quite pleased with the working and documentation of the set of programs they provided." Shortly latter, he received an update disk from them to upgrade the software to HDOS 1.6, since he purchased the software just as HDOS 1.6 was being released. Normally this would have cost \$10, which is still reasonable. DC says, "John Capestro and Tidewater Software are definitely first-rate."

BAD GUYS--ADVANCED COMPUTER PRODUCTS, POB 17329, Irvine, CA 92713. Charles Bennin ordered some parts from them and received the wrong ones. After sending them a letter which was ignored, he phoned them and explained the problem. They said they would send him the proper parts right away. Charles informs me that Computer Products then held the order an additional 5 days before shipping.

BAD GUYS--LIFEBOAT ASSOCIATES--AGAIN!  
 This time Joe Abbruscato says he purchased CPM from them, and it came set up for a 32K system. Since he has a 28K system, he had to send it back to be changed, and they charged him an additional \$10.58. As was reported before, Lifeboat is apparently getting too big for their own good. I am not running CPM, and I do not intend to. I am happy with HDOS and MBASIC. One main reason most individuals reportedly are going to CPM is to be more compatible with the general public. I doubt if it is worth it, and the more I hear about Lifeboat, the more I confirm my doubts. Lifeboat may have the wrong name, because it sounds to me like they are SINKING! Once Public Relations starts going, Watch Out!

### \* PROGRAMMING GOODIES \*

Last month I talked about the CAT AT:=SYL: command to catalog the contents of a disk in SYL: to the AT:, or LP:, or whatever. That's a neat little thing, but has one drawback. When you use it for a CAT, you don't get the volume number of the disk, or the label printed on the AT:, which can be a hassle if you're CATALOGing lot of disks. Well, here's the answer, another not too well documented feature of HDOS.

By using the command

COPY AT:=TT:

Everything that you type on the console TT following this command will be printed to AT:, or LP:, or SL:, or whatever else you choose, in this example, the Alternate Terminal.

When you are all done, and wish to close the buffer and print the contents of the screen to the AT:, simply type a CTRL D. If you have made any mistakes along the way, and you are still on the same line, you can backspace to correct it. If you make a mistake, which you first discover on a latter line, or you wish to abort and start over, simply type a CTRL C, and the mission is aborted, you can start over.

The following is a typical example of how I use these commands. Note you do not have to use the Text Editor for this. You could, if you want, do a COPY SY0:TEST.DOC=TT:, in which all you typed would go to a file on the disk, named TEST.DOC, again, all without the text editor. Anyway, the example follows.

mount the disk you wish to catalog in SYL:  
 COPY AT:=TT:  
 VOLUME 007 MOUNTED ON SYL:  
 LABEL: MUSIC DISK #1  
 JUNE 1980

ctrl D typed

Now a header is printed to AT:, so I say:

CAT AT:=SYL:

and the directory is printed to the AT:

Is that all there is? No! If you happen to have an extra terminal laying around, such as an H9, try this. Place it in a remote location, such as where the wife spends most of her time. Then if you are busy working with the H8 and wish to occasionally send a message to her, just to let her know you are thinking of her to keep her happy, configure it as AT:, or some other name, and send a message once in a while to this terminal. The first thing you should send is a CTRL G, which will sound a bell at that terminal and call her attention to the message. If the distances are great, in most cases you should use a 20mA loop, or you will need to make up some sort of driver circuit for the RS-232, as the effective range is limited to a few feet.

## TECHNICAL FORUM

### MORE ON HDOS 1.6

There still appears to be strange happenings with HDOS ver 1.6. Ralph Munroe reports that since running HDOS 1.6, his BASIC programs are not loading correctly. Program numbers are loading out of sequence. Heath's reply to this is a possible memory problem.

Individuals are wanting to know exactly what ver 1.6 improved or changed over ver 1.5. Besides adding features like 3rd drive operation, and some minor changes in the editor, I don't know. Looking at the catalog listing of ver 1.5 and 1.6, many of the files are slightly longer in 1.6. Examples, HDOS SYS 26 TO 30, PIP 18 to 19, ONECOPY 19 to 20, EDIT 16 to 17. See last month's H8SCOOP for a discussion of a new unsupported feature of EDIT. HEATH, why don't you tell us!!

Ed Ranson writes: He was running an MBasic program which writes sequential files to SYL:. "The discs I was using were initialized under HDOS 1.5. Since the program is too big to be held on a SYSGENED disc, I was using MBASIC's RESET feature to boot up, load MBASIC and then RESET to mount my program disc on SY0: and my data disc on SYL:. The program ran fine, it seemed until I tried to recover the file on SYL:. It was not in the directory, and so therefore did not exist. No warning or unusual operation

was noticed during the running of the program. By initializing the data disc with HDOS 1.6, the program ran fine."

I called Ed to get more info. He told me he HAD initialized the disk under ver 1.6 first and it failed. Next he BULK ERASED the disk and then initialized it under 1.6, and then it worked. Before he originally initialized the disk, it had stuff on it from ver 1.5.

This seems to confirm feedback I have received on 1.6 initialize, that it does not erase the disk first, at least not all the way. So a word to the wise, if you are initializing an old disk to 1.6, erase it first, until we receive more info on this apparent problem.

Thanks to the support of HEATH, Steve Parker, Technical Consultant, I finally got my selectric going under 1.6. Steve told me the difference in device driver format for HDOS 1.6 is the CODE HEADER. This description is normally contained in the file DDDEF.ACM. DDDEF.ACM can be found in REMARK 9 for version 1.6, even though it is labeled 1.5 (see page 13). Following is the listing as I had it, and the necessary change.

```

OLD WAY
CODE PIC
DB 307Q      SERIAL D. D. FLAG
DB 4         WRITE ONLY
DB 1         ONLY 1 UNIT
DS 503      SKIP OVER REST . .

```

```

NEW WAY
XTEXT PICDEF FROM HUG DEV DRIV DISK
XTEXT DDDEF  FROM REMARK 9

```

```

CODE PIC
-----
DB DVDFLV  DVD.DVD
DB 4Q      DVD.CAP
DB 1       DVD.MUM
DB 1       DVD.MNU
DS DVD.UFL-* POSITION UNIT FLAGS
DB 4Q      WRITE ONLY, UNIT 1
DS DVD.SET-* POSITION FOR DVD.SET
DB 0       NO OPTIONS
DS DVD.ENT-* NEW POSITION FOR ENTRY

```

I hope you can all benefit from this by noting the difference in the different versions of device drivers. If you are using standard format as supplied by HEATH in the device driver disk, you should not have this problem. However, I had to write my own driver before Heath had this available.

## PEEKING & POKING

### THE FORGOTTEN H9

What about that H9? Do you have an extra one collecting dust? There has been many, many mods for the H9 in the past few years. 24 line mod, lower to upper case conversion, GRAFIX, Screen erase mod, 4800 flicker free mod, Upper and Lower case keyboard mod, and more.

Some have written in with fear about the H9 24 line mod. I have it installed in my H9 and it works. It is NOT hard to read due to the space between the lines, in fact it's not much different than the H19, or any other 24 line terminal. I have even received info from Tor Tverre in NORWAY that he has installed the GRAFIX in his 24 line mod, and with slight modifications, it give acceptable results.

Even if you want to leave it alone, how about configuring it as an Alternate Terminal, and using it in a remote location in the home to send messages to other family members(see PROGRAMMING GOODIES in this issue). Or how about getting a MODEM and using it as a remote terminal for your H8? Or what about building a driver and connecting it in parallel to your H19 or whatever you run now, as a video monitor? This would be beneficial when you have large groups over, or for game playing so everyone is not crowded around your console TT.

As a last resort, you can sell it to someone else who may want to run MODEM with his computer from a remote source, or to a beginner, to someone who has a very basic computer such as an ELF or ET-3400 trainer computer and doesn't want to spend the big bucks on a better terminal? Or trade it in at the local Heath. I think you'd be better off in any of the above cases to install the 24 line mod first, as you have a more useful terminal.

In any case, the H9 for the time and price was not a bad piece of equipment, although I open the cover of mine with the same fear as when opening up my selectric--FEAR OF THE UNKNOWN! If you don't want to sell it, I hope some of the above may open a new avenue for your creativity. When I get the time and all the info together, I will be putting out a blurp on the H9, what you can do as far as mods, who offers what, along with some reports of who has done what, and the results. If you are interested, contact me.

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AUGUST issue deadline---July 13

Subscription Rates--\$12/Year (\$16 overseas)

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