Issue #14 THE STAUNCH 8/89'er Sep-Oct 1989

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PORT TO PORTAL -- Editorial

Frankly, some of you are anticipating the content of this issue's editorial! You're already sending renewal checks and I thank you. You may recall that in prior years, **Staunch** didn't ask for evidence of your support till the last issue in the calendar year. And we also didn't ask for more than a year in advance, which meant that some of you had at least portions of your checks refunded or returned.

Not so this year! I expect the dust created by **Staunch**'s expanding format and frequency to have now settled for the next **two** years and as a consequence I don't think you'll see any changes **or** rate increases through 1991. In other words, I feel confident that **Staunch** is here to stay for **at least** another two years!

As I mentioned last issue, circulation continues to grow, though slowly at the moment. However, I've just started another promotional campaign and I thoroughly expect growth over the next few years. Indeed, I expect that growth to help me control costs since many things become cheaper when you order in larger quantities! The only one I **expect** to increase is the new rate the Postal Service will have in place early in '91. But there are ways to get first class delivery (which you deserve!) at less than a standard first-class stamp and circulation has now grown to the point where I can explore those options. One thing holding the line on subscription rates will do is **insulate** you from that coming postal increase. In the meantime, I'll trim production costs while maintaining that all-important quality you've come to expect.

Anyway, the bottom line is that I'll now take subscriptions for up to **two years**, through issue #27! If you want to subscribe for only one year (through issue #21) that's OK, too. But I know that many of you are interested in the longer term. So, a one year extension is $12; two years is $24.

Kirk L. Thompson

***** RENEWAL TIME IS HERE ONCE MORE *****
A one-year extension costs you only $12.
Why not go for two for a paltry $24!
Make checks payable to "Kirk L. Thompson"

THE EIGHT-BIT R/W -- LETTERS

Copy Rights. [From Lee Hart, 28612 Middle Crossing Road, Dowagiac, MI 49047] "I've found the discussion of copyrights in ... [issue #10] very interesting. They reflected the consumer's point of view quite effectively, almost to the extreme. Sure, it would be great if all the vendors put their software in the public domain. But "copyright busting without getting dumped upon"? Sounds like a polite way to describe stealing other people's property without getting sued!

"As a vendor, I am appalled by such a selfish, destructive attitude. In effect they're saying 'I won't buy your software, so you should give it to me free. If you don't, I'll just steal it anyway'. So I'd like to play the devil's advocate, and point out the vendor's side.

"Your readers must realize that writing good software is hard work. It takes a skilled expert 100s or even 1000s of hours to produce a quality product. Such people are using expensive equipment and valuable time, and deserve to be compensated for their efforts. To put it bluntly; if they're not paid, they won't work! Those who espouse the 'all software should be free' philosophy are often people who have never written a program in their lives; they want someone to write their software for free, yet never reciprocate.

"Then there is the issue of a fair price. When the laws of supply and demand function normally, the 'supplier' and 'demander' will eventually settle on a fair price. The supplier doesn't get rich, but he does make enough to support the product and is encouraged to continue development. The buyer doesn't get a steal, but he does get a quality product, decent manuals, and after-the-sale support.

"Sadly, supply and demand have become a rare thing in the software business. Both customers and suppliers have chosen to behave in an extremely self-centered and short-sighted manner, to the detriment of both.

"On the consumer's side, the biggest offender is software piracy. In my experience, a MAJORITY of HUGgies routinely use software they did not pay for. They tell themselves 'I'm not hurting anybody; I wouldn't have bought it anyway; It costs too much; I'm only making a copy for my friend', etc.

"But look what they've done to the market. Suppose just half of a vendor's customers make just 1 copy apiece. An initial sale of 16 originals thus spawns 8 pirate copies. Half of the 8 recipients copy it again, to add 4 more copies. This in turn adds 2 more, then 1. 16+8+4+2+1=31, or DOUBLE the original. You've cut the vendor's sales in half, and by doubling the supply have ruined demand for his product.

"Sure, he could cut his price in half to at least sell something. More likely he'd dump his existing stock, sell his H89, and go program something else. And the LAST thing he'd do is donate his code to the same group who ran him out of business in the first place. That's exactly what has happened to many fine H/Z programmers."

(Continued on p. 3 after the **SOFTWARE LIST**)

SOFTWARE LISTING

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For CP/M Only

ACANAL
(By Gary Appel)

ACANAL is an electronic analysis program to perform AC nodal analysis on an electronc network. The output format was selected for use in analyzing radio frequencies (RF), but lower frequency circuits may be analyzed as well. Element types may be: resistor; capacitor (ideal or lossy); inductor (ideal or lossy); transconductance; transmission line, open line stub, and shorted line stub; coupled inductors (transformer); quartz or ceramic resonator; two-pole monolithic resonator; and transistor (hybrid Pi model). Input/output parameters may be: impedance, VSWR, return loss, reflection coefficient, and mismatch loss. Gain parameters may be: transducer, voltage, current, transductance, and transimpedance. Calculations are single-precision.

The network response consists of an input, output, and forward transmission (gain or loss) parameters. The response parameters are displayed in tabular format at each analysis frequency and can be echoed to printer or disk file. The reverse transmission parameter can be calculated by simply interchanging the source and load connections.

The analyzed circuit is described by an element list consisting of element types, values, and nodal connections. A maximum of 20 nodes may be defined. The number of elements is limited only by available memory. The lists are edited using a simple line editor incorporated into the program. The entire network description can be saved as an ASCII file and retrieved for analysis later.

The analysis frequency can be swept over several frequency ranges in a single analysis. Each frequency range sweep can be selected as a linear sweep, log sweep, or single frequency. The frequency ranges are described by a frequency range list consisting of sweep type, start and stop frequency, and linear step size, or number of logarithmic steps. Only the start frequency is provided for single-frequency sweeps. The latter may consist of as many as 200 analysis frequencies.

ACANAL is especially well adapted for analyzing RF filters, impedance-matching networks, and impedance-matched amplifiers. Included in the manual are examples of four different filter networks and a transmission-line matching network. This package includes the analysis program; example circuit files; on-disk user's manual; and hardcopy supplementary diagrams, circuit samples, and figures. It will run on an H8/H-19 terminal and H-89/90. The package occupies 142K, so requires two (2) standard hard-sector media if ordered in that format. A version for HDOS is in preparation.

DIMS
(By Dan Dugan)
(Provided by Derek Picken)

A database management system written in Microsoft BASIC, DIMS possesses a powerful set of commands even though you could call it a "'poor man's data base manager'." Uses "comma-delimited" fields and records and MBASIC's random-access facilities. Automatically backs up data files to a **second or third** disk, but this could be disabled by editing the source code. The package includes 16 modules (in ASCII-format code), sample data files, and documentation. Requires some knowledge of BASIC and the H/Z-19/89 to configure it for the terminal, as described in the documentation. Comes as **two** .ARK files so it can be spread over two standard hard-sector disks. The archived files cover 112K and the extracted files occupy over 200K. Includes UNARC10.COM to extract the files. Requires Microsoft BASIC and a **minimum** of two drives.

ARK04
(By Brian Moore)
UNARC16
(By Robert Freed)
(Both supplied by Derek Picken)

These are archiving and extraction utilities compatible with files created by the most popular archiving utility under MSDOS, ARC. More efficient at storage than the well-know NULU and its LBR format, the archiver (ARK) will determine the most efficient compression method for **each** file to be included in a library before it moves it in. It can save as much space as 50% in ASCII, 40% in binary, and 95% in bit-mapped graphics files, depending on the type of compression used. But ARK libraries are **not** compatible with NULU. Moreover, neither ARK nor UNARC16 are geared toward easy, periodic library "maintenance" as is NULU; neither lets you **delete** unneeded files without first extracting the entire library, ERAsing unwanted files, and re-archiving. And while NULU includes unsqueezing as one of its delibrary options, you must keep a squeeze utility external to it. However, ARK and UNARC gives you access to up/downloads from 16-bit BBS's and the increasing number of 8-bit boards that utilize ARC-type files to conserve disk space. ARK **requires** a Z80 CPU; UNARC includes versions for both Z80 and 8080/8085. And contrary to UNARC's documentation, this package will **not** "self-unpack," so UNARC10 (an earlier version) is supplied to get you going. Total package, including source code for UNARC, covers 128K, hence two disks are required for standard hard-sector distribution.

MTMDM/MTLIST
(By Darrell Pelan, Micronics)

A public domain version (0.8) of Micronics's new modem software. It supports text capture, echo with text capture, conferencing, and XMODEM file transfers. See this issue's VENDOR.UPDATE section for information on updates to the first commercial version. Darrell also includes a file listing program, with C source, that performs page breaks, numbers pages, and prints a title and date at the top of each page. The latter comes as a NULU library, so this library utility is supplied. This package occupies 41K.

For HDOS Only

MTMDM
(By Darrell Pelan, Micronics)
QSE/LABEL.BAS
(By Bob Phillips)

The HDOS version (0.8) of Micronics's new modem program; see immediately above and VENDOR.UPDATE for further info. Darrell also offers to write an HDOS couterpart to the file lister mentioned above if there is enough interest. Bob Phillips's QSE.BAS is a line editor written in HDOS MBASIC. It supports abbreviated or misspelled and upper- and lower-case commands, tabbing, line deletion, finding strings, printing to a hardcopy device, and insertion of control characters into the text. LABELS.BAS is an MBASIC program for printing address labels three-across on an H-125 printer from a text file. It could be modified for other printers.

Updates to Previous Releases

Anapro Patches and Utilities
(By Peter Shkabara)

Pete has provided yet another utility, MAP, to display a directory of up to five drives and 15 user areas. Though of particular interest to users with hard-disks, it could also be useful to floppy users. It **requires** an H/Z-19/89; M80 source code is included. Pete also supplies ASM patches to CONFIGUR and MOVCPM and patch locations in FORMAT that could be of interest to hackers. This package includes a previously-released Epson MX-80 menu utility; BIOS patches to 2.2.03 and 2.2.04 for 4 MHz mods; and patches to PIE 1.5(d), Magic Wand 1.11 and 1.12, and WordStar 3.0 and 3.3 in LBR files (see issue #7). NULU is provided for extracting the libraries. This package covers 180K and will **just** fit on two standard hard-sector disks if you order that format.

HDOS 3.0
(By W. Parrott, R. Musgrave, etc.)

Through the courtesy of William Lindley (Lindley **Systems, Woodbridge, VA), I now include a hardcopy booklet of the on-disk documentation that** accompanies this package, first listed in issue #12. Also in the works by me is enough information on INIT and SYSGEN for the first-time HDOS user to get the system up and running. However, this material is no substitute for the detail provided by Chapter Two of the HDOS 2.0 manual, which I still recommend. Lindley's booklet is being supplied at no charge to purchasers who have already bought this package from me. (Thanks, Bill!)

HOW TO ORDER

Your cost depends on what you supply:

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

Disk formats available are standard (SS/SD) and double-sided (DS/SD), 40-track (48-tpi) hard-sector and 40-track soft-sector, single- or double-sided, for both CP/M and HDOS. Please clearly indicate the format you are supplying or require. If you desire **double-sided** hard-sector or any soft-sector format, I will pack multiple items as described above onto one disk for the **single-disk** charge. But I will not subdivide a disk. Send your order to:

Kirk L. Thompson / **The Staunch 8/89'er** / #6 West Branch Mob Hom Vil / Rte. 1 / West Branch, IA 52358

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THE EIGHT-BIT R/W (Continued from p. 1)

"For example, fully half the calls I get for support on my **Write-Hand-Man** are from non-customers. 'Can I buy just the manual? Oh, I thought it was public domain'. Ever read the sign-on message, pal?. Ray Livingston, Walt Bilofski, and Henry Fale have all related similar tales.

"Another point is the legal issue. Companies like Microsoft, Borland International, and Software Toolworks are big boys now. That makes them sitting ducks for any ambulance chaser out to 'prove' his client's business was ruined by a software bug. There have been hundreds of these cases since a New Jersey contractor successfully sued Lotus Development Corp. over a bug in a Lotus 1-2-3 spreadsheet demo file.

"The risk of a crippling lawsuit is just as great for old stuff as it is for new high-volume software; maybe greater, because a vendor can be made to look negligent since he can't afford a support staff on low volume products. Smart firms like Borland license some small company to sell their low-volume products. [This appears to be what Borland has done by licensing Alpha Systems to distribute Turbo Pascal for CP/M; see my notes in issue #'s 11 and 12. -Ed.] After all, who'd bother to sue Ma 'n Pa's Software for a million dollars?

"Finally, it should be noted that 8-bit products aren't as dead as your readers seem to think. Just because THEY won't pay anything for the software doesn't mean no one else will. Digital Research says it still sells a million new CP/Ms a year [see p. 8 of issue #12 -Ed.], and millions of new systems still come with Microsoft BASIC. 8-bit computers are still hot in foreign countries where a PC clone costs a year's wages; after all, they do the same job at lower cost. Putting the Heath version of these programs in the public domain would ruin sales for other still-active computers.

"It seems to me that H8/H89 owners are divided into two camps; HUGgies and HOGgies. The HUGgies are the original foundation of HUG; enthusiasts banded together for mutual support. They are proud of their machines, and generously share their knowledge with others. This may include writing software, building 'gadgets', contributing articles to magazines or newsletters, or being active in a local HUG group or bulletin board. HUGgies are good citizens, and do not steal at the expense of others. If a program or hardware mod is useful to them, they reward and encourage its creator with cash or contributions of their own. They realize that you vote with your dollars; if you don't vote, you have no say in the shape of things to come.

"HOGgies on the other hand, are simply in it for all they can get. They moan endlessly on the lack of factory support, yet brag about never buying anything except close-out specials. They gripe about the lack of 8-bit articles in **Sextant** and **REMark**, but have never written so much as a letter. They complain bitterly about the lack of software, but haven't actually purchased a program in years. Their software library (which is often enormous) was obtained by copying from other HOGgies, who trade disks like baseball cards. But since they don't have manuals for most of it, there isn't one program in a 100 they can actually use." [Thanks for being a "devil's advocate" on this question, Lee. As you imply, playing fair with the remaining vendors supporting us can only **help** our situation as the software/support crunch becomes tighter. Cooperation amongst vendors and users will be the only way we can keep these old machines running! -Ed.]

Another Newsletter. [From Al Bjorling, Melville, NY] "...Just received issue #13 and some of the new happenings I read were quite exciting for us **8/89'ers.** Ha!...

"Kirk, you do a terrific job of getting out this newsletter and are to be congratulated, period. We appreciate your efforts. This becomes more apparent as you note the demise of other journals. Long live **The Staunch 8/89'er, SEBHC, H-SCOOP,** and **The Computer Journal**!!!!" [Thanks for the plaudits, Al. And for readers who, like myself, haven't heard of it before, **The Computer Journal** is a heavy-weight bimonthly newsletter for advanced CP/M users. Subscriptions are $16/year (domestic). For more information, contact: **The Computer Journal** / 190 Sullivan Crossroad / Columbia Falls, MT 59912 / 406-257-9119. Thanks for that tip, Al; I sent a check! And you readers are the **best** source of information I have! -Ed.]

Pete's Answers? [From Peter Shkabara, **ANAPRO Corp.**, 8895 Pino Solo Ave., Atascadero, CA 93422, 805-466-4284. As an introduction, your editor picked up Ashton-Tate's old dBASE II from his local Kaypro dealer, but had trouble converting to a readable format. Once accomplished, he sent Pete the disks he couldn't read with EMULATE. Pete responded:] "I am returning your KAYPRO disks. There is nothing new with them, you forgot the problem with the KAYPRO double sided format! Side two of the disks formatted with a KAYPRO II or 10 does not include the side identification mark required by the Western Digital controller chip in the H89. This is a deficiency in the KAYPRO machine. My 386 clone machine running Uniform can read the disks ok since it uses a different hardware system.

"When dealing with KAYPRO, stay with single sided formats, or format the double sided disks on your H89 with EMULATE as you ended up doing. Another alternative is to use the Televideo or Morrow formats which are often supported by media transfer programs. Those formats hold a good amount of data and do not cause problems.

"One item in your latest newsletter [#13] triggered a response from me. There was a patch for the Heath FORMAT program to display the Extended Density format option. There are in fact three locations in the program which need to be patched! In any case, I realized that there are many things about the Heath CP/M system which I have learned over the years which may be of interest to your readers. I am willing to share this knowledge with others, but I am not sure which way is best. One way is to include a question and answer column ... Any ideas?

"...you will find several files [on the enclosed disk] which should be of interest. The ASM files contain patch locations which should ... interest hackers. Not all of them are well documented, but I do not have time now to write the explanations. If anyone is interested, I can explain in further detail later. You are welcome to publish the info if you wish. The MAP.LBR file contains my own creation of primary interest to hard disk users. There is a DOC file included as is the source." [Thanks, Pete. The ASM listings will appear in later issues. And I think a Q-and-A column would be just peachy! Readers can send their questions to me and I'll forward them to you. Readers can also check this issue's software listing for the additional material you so generously provided. Finally, what questions do you readers have about CP/M? -Ed.]

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CONTACTS

(A Wanted/For Sale/Swap Column)

Everette P. Reeves (2526 E. La Cienega, Tucson, AZ 85716, 602-795-3917) "I have a number of H89's, H90's, and their associated gear as well as a lot of software, documentation, etc., and would like to offer them for sale in your publication ...: One complete H90/H37 operation system. HDOS, MBASIC, FORTRAN, COBOL, approx. 100 disks and data, and some 12 to 15 volumes of documentation including the original HDOS assembly listings. $500 or best. New 96-tpi M4853 floppy half-height drives, $85 each. New 96-tpi 101-4 floppy full-height drives, $85 each. Two H89 CPU's complete but need minor work, $150 each. Extra parts included gratis as I find them in storage. All shipping extra ... Oh yes, I have an extra H37 drive and also some original 100-5 drives. $90 for the H37 bare and $40 each for the 100-5's."

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How to Get The Most Out of EDIT19 Version 3.10 - Part II

by Dan Jerome

(The second of three articles telling how to get the most out of EDIT19.)

A list of most commonly-used commands include the following:

I/O COMMANDS:

(1) FILE -- COMMAND: FILE This command given from the COMMAND MODE, sends the file to a disk drive, while leaving you still in the editor. Prior to typing this command, insure that the correct device and filename appears in the slot on line 25. If it isn't, just type: FN DVn:FILENAME.EXT<RTN>. If there is some other DVn:filename present, your command will replace it! You also have an option to

send the file to the printer by replacing the DVn: with LPn:.

(2) GET (or READ) -- COMMAND: GET DVn:filename.ext n m Inserts a file, or part of a file, from any mounted disk drive. To obtain parts of a file, **m** lines starting with **n** are inserted. These commands are generally used from the COMMAND MODE to append another file to the file being edited. They may also be used, for example, to insert a data table from any disk file into the current file.

(3) QUIT -- COMMAND: QUIT This command is given from the COMMAND MODE. No checks are made to determine whether there is a DVn:filename.ext in the slot on line 25. However, if you have no DVn:-filename.ext called out in the slot, your file will be lost!! Similarly, it will be lost if you have the wrong filename called out and it duplicates an existing one.

(4) READ (or GET) -- COMMAND: READ DVn:filename.ext n m Same as **GET**, above.

(5) RESET -- COMMAND: RESET DVn: If you are up in EDIT19, but you wish to mount a disk in any of the drives of your system, simply insert the disk in the appropriate drive and type RESET DVn:<RTN>. EDIT19 will mount your disk and give you the standard HDOS mounting message. You will then be able to access your file without ever having to leave EDIT19.

(6) SAVE -- COMMAND: SAVE In case you do not have SAVE operated by the RED function key, you can hit ENTER and type SAVE. The first time you SAVE a file, nothing happens. The second time the file is saved, you will get the message: "File already exists, are you sure?" Just ignore the message and type Y to send the file to disk, while you continue editing.

FUNCTION KEY COMMANDS:

(7) BLUE -- COMMAND: ENTER BLUE KEY (NO <RTN> IS NECESSARY) This special function key centers one line (or n lines) of the title or a phrase. This convenience relieves the typist of laboriously having to count blank columns and divide by two, such as we had to do during the typewriter era.

(8) RED -- COMMAND: ENTER RED KEY (NO <RTN> IS NECESSARY) This special function key saves your program to disk and allows you to continue typing after the computer finishes its task. You do not leave the editor.

(9) WHITE -- COMMAND: ENTER WHITE KEY (NO <RTN> IS NECESSARY) This special function key moves you toward the end of the file 60 lines. Excellent for checking pagination.

FORMAT COMMANDS:

(10) CENTER -- COMMAND: CENTER n If you do not have CENTER operated by a function key, you can hit ENTER and then type CENTER n<RTN>. The **n** equals the number of lines you want centered.

(11) FILL -- COMMAND: FILL n Justifies lines to the right margin set by the MARGIN command. The command affects one paragraph at a time, and may be used to justify without having to count lines. It is also useful if one wants to indent the first line of a paragraph. However, JUSTIFY is preferred!

(12) FORMAT or FORMATI -- COMMAND: FORMAT n or FORMATI n This command MUST be followed by the number of lines you want it to format, otherwise EDIT19 will format from the line the cursor is on to the end of the file. This could be a disaster!

(13) INDENT -- COMMAND: INDENT n The number of spaces indented at the beginning of a new paragraph, where n stands for the number of spaces. This command is used by FORMATI n and by JUSTIFYI n.

(14) JUSTIFY or JUSTIFYI -- COMMAND: JUSTIFY n or JUSTIFYI n Just put your cursor on the first column of a paragraph. Count the number of lines in the paragraph, and then hit the ENTER key and type JUSTIFY n. If you want to indent the first line of a paragraph, use the JUSTIFYI n form, also with the cursor on the first character of the first line. NOTE: if you are careful, you can justify several paragraphs at once. Simply count the lines and the spaces, and go to the top line to JUST n.

(15) LEFT -- COMMAND: LEFT n Scrolls your screen in a horizontal direction by the number of columns you indicate with the n. To return to normal at column 0, just type LEFT 0<RTN>.

(16) MARGIN -- COMMAND: MARGIN n m Sets the left and right margins used by CENTER, FILL, FORMAT, and JUSTIFY. The left margin is set by **n** and the right margin is set by **m**.

(17) TABS (Just like a typewriter) -- COMMAND TO SET: CTRL-T This sets a TAB at the cursor position. COMMAND TO DELETE: CTRL-R This deletes a TAB at the cursor position. To move the cursor from tab to tab, hit SHIFT-Right Arrow or SHIFT-Left Arrow, as appropriate. The first time you use the tab for any one session, you may want to tab from left to right and delete the unwanted tabs before proceeding.

OTHER COMMANDS:

(18) ALOCMSG -- COMMAND: ALOCMSG OFF When EDIT19 pulls in a large disk file for editing, it creates a series of "scratch files" on SY0:. After you begin editing, EDIT19 continually shifts in and out and to and from of these files. If this switch is turned on, the editor prints the messages describing what it is doing on your screen. This can get irritating. Therefore, it is best to turn this switch off by typing: ENTER ALOCMSG OFF<RTN>.

(19) CAT -- COMMAND: CAT DVn: Given from the COMMAND SCREEN, CAT provides a disk directory from any mounted disk in the system.

(20) DEFSAVE -- COMMAND: DEFSAVE "Freezes" all the commands and settings you have entered into EDIT19 at this moment. Later on, you may change the commands as you wish and then do DEFSAVE over again.

(21) DELETE -- COMMAND: DELETE n Deletes n lines from the buffer from wherever the cursor is positioned. Deletes in a downward direction.

(22) GO -- COMMAND: GO n To move rapidly up or down in the buffer, just hit ENTER and type GO n. The **n** stands for the line number of the line you want to move to.

(23) LOCATE -- COMMAND: LOCATE/string/n m Where: **n** = the number of lines following the current line and **m** = the mth occurrence of a given string. EDIT19's way of searching for character strings. This command will work whether you type your command in either upper or lower case letters. In order to enable this command, "CMPCASE" must be set to "OFF." NOTE: EDIT19 does not use "FIND."

[Concluded next issue. -Ed.]

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Square One for Computerphiles
Part 1 -- Languages and the CPU

by Hank Lotz / 2024 Sampson St. / Pgh, PA 15221

A Gentle Start. Here, folks, is a program in BASIC:

```
10 PRINT X
20 X=2
30 END
```

Simple? Sure. But a rank newcomer might wonder why it prints 0 and not 2. I remember when I was first starting out. I understood statements like A=5 and GO TO 100 and so on, but my first **notable** discovery was a very striking revelation (to me, at the time)! It was this: A computer performs the statements **one at a time**, and **in their order of occurrence.** (The rest of the world **always** knew that without ever having to learn it. Or did they?!)

Whether beginners cry out for help or just suffer quietly, I for one know how they feel. For years I cried out (and suffered regardless) before I began to get a proper handle on programming. In the past I pledged to you I'd attempt future assistance for novice types. At last the "future" has arrived and now I find myself faced with at least two problems: First, **books** could be written. But second, I have a fear of being too **elementary** to be of real use. So I'll try to strike a balance. I remember the confusion of my earlier days (as opposed to that of the **present**!) and that gives me an approach. What I offer may be simple (like that little opening vignette) but it comes from actual experience, so it should benefit a person who's at "that awkward stage" **now.** The "Part 1" you see above suggests a possible "Part 2" down the road.

Trying for a Handle. I want to try to put programming languages into **perspective** for beginners. To help, I'll talk about the CPU. Not in the detail of a tutorial on CPU's or languages, but if you're hearing it for the first time it'll be very good background, whether you wish to learn assembly language, or something like BASIC. I'm guessing almost everyone **already** knows certain things -- like how binary numbers work; that there are 8 bits in a byte; and that each memory location in an 8-bit computer holds exactly 1 byte though it takes 2 bytes to define the location's address. But if this is too fast for anyone let me know.

Your computer has memory, ports, a central processing unit (CPU), all kinds of other chips and hardware, and peripherals like floppies and printers. But **it is the CPU that carries out the instructions** you write when you program, whether in BASIC, PASCAL, C, FORTRAN, etc. In H-8's and H-89's, the CPU's used are 8080 chips or Z80 chips.

I think of the memory as an extension of the CPU, since the CPU can **store** a value anywhere in memory, or **retrieve** a value from any memory address. For example, the CPU accesses your program steps **from memory where they are stored.** Among other things, the CPU does arithmetic, and can compare values to make decisions. All the memory your computer has exists for the CPU. And the "values" stored in memory can be either **pure data, instructions** to the CPU, or memory **addresses**, but all three of these "value" types are expressed only as binary 1's and 0's. Right now, please don't worry about that diversity of information types.

Zeroing in on "Language". To a CPU chip it matters not whether a program is in BASIC or assembly language, or whatever; the instructions must still look like binary bits by the time they reach the CPU. For our purposes I'll simplify this a bit: The CPU is built so that a single byte (8 bits) of information fed to it will cause it to perform a specific act. Let's call that "act" an "operation," and the byte causing it an "operation code" or "opcode." There is a finite number of legal opcodes defined for a given CPU model. The CPU fetches (from memory) a byte containing an opcode and responds in a fixed way to that particular code. Then it fetches the next consecutive opcode from memory and interprets it as a new instruction, and so on.

Certain opcodes can make the CPU fetch data from remote parts of memory. Others cause the CPU to put data from its registers **into** memory. There are opcodes that can tell the CPU to (for example) add together the data contained in two of its registers. All this is to mention but a few of its capabilities.

But **some** opcodes tell the CPU to consider the 1 or 2 bytes immediately **after** them **not** as more opcodes! -- but as data or an address to be processed or remembered. In that kind of situation the CPU does just as the instruction dictates, and then when it is finally **ready** for its next opcode, the CPU knows to look in the memory location immediately **following** the "data or address" byte(s). (Exceptions exist, like the jump instructions, but you get the general idea.)

Assembly Language. What I have described is a concept very important for you to **fully** realize: All the CPU needs from you, in order to know what to do, is an orderly arrangement of bytes in memory (opcodes it is "wired" to recognize). And it doesn't care how they got there. If you can "poke in" meaningful 1's and 0's with a BASIC program and can point the CPU to them (all of which you indeed can), it would execute them the same as if they were loaded from an ABS or COM disk file. However, if you programmed **that** way (at a 1's-and-0's level) you'd

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444-42 CPU memory PROM (48K max RAM, no CP/M)	2	3
444-43 CPU I/O PROM (H17, 3-port, cassette)	2	3
444-66 CPU "0-org" memory PROM (64K max RAM, CP/M)	2	3
444-46 TLB program ROM	4	8
444-61 CPU I/O decoder PROM (H17/37/47/67, 3-port)	5	9
444-62 CPU MTR-89 boot ROM (H17/47, 3-port)	3	6
444-66 CPU bank 0 decoder PROM for MTR-88,89	2	4
444-81 Z89-37 I/O control PAL	5	8
444-82 Z89-37 interrupt control PAL	5	8
444-83 CPU bank 0 decoder PROM for MTR-90	3	6
444-84 MTR-90 boot ROM (40T H17/37/47/67, 3-port)	7	10
444-142 MTR-90 boot ROM (40/80T,H17/37/47/67, 3-port)	8	12

be writing in **machine language** -- slowly and laboriously. Which is why **assembly language** was invented. Allowing you to escape "programming by numbers" is what assembly language is for. It's a step above machine language. Go up still more steps and you arrive at **high-level** languages like BASIC, FORTRAN, etc., etc.

Assembly language provides a more friendly way, a mnemonic way, for a human being to code in machine language. It substitutes a set of mnemonics for the opcodes, making it unnecessary for you to remember (for example) that 41 hex tells the CPU to move the contents of the C register into the B register. Instead you just code "MOV B,C" and when you run the assembler it generates that 41 hex for you. (It would be folly to reproduce a table of all the 8080 opcodes here; they've been published enough times to cause a paper shortage.)

Don't be concerned **now** about **why** you'd want to move the C register to the B, that can be understood only in the larger context of an assembly-language program (or a section thereof). However, I mentioned "running the assembler" and that I'll expand on very briefly: You put your mnemonics (like MOV B,C) in a source file, and the assembler (supplied with your system) reads that file to generate what's called a HEX file. (That name makes sense because, as I just said above, the assembler converts your mnemonics to HEX bytes.) You then must run the loader (also system-supplied) on the HEX file to get your executable program.

The Higher Languages. Even the high-level languages, the FORTRANs, the BASICs, and so on, **must** break down a programmer's beautiful high-level code (e.g., a statement like "X=2") into a series of assembly-like instructions. This is ultimately true whether those languages say it's an "interpreter" or a "compiler" that processes their statements. All statements, complicated or simple, get broken down into an equivalent series of opcodes, because these **alone** are what the CPU understands! (The "X=2" example is pretty simple, so consider that this also applies to all of the more involved things, like "IF A=B OR C=D GOTO 9999", etc.)

In other words, just as assembly language gives a convenient, labor-saving way of writing individual **machine-language** opcodes, so do the "high-level" languages, in turn, essentially give convenient, labor-saving ways of writing **assembly language**!

But that analogy doesn't quite say it all: It's true that for every assembly-language instruction, you'd have to write a machine opcode; however, for every **high-level statement**, you'd have to write **several** (and perhaps very many) assembly-language instructions!

Where It Takes You. One of the most **recent** things I learned is that knowing assembly language can lead to more efficient programming in higher languages. I used to yearn for more "inside info" on compilers so I could code more efficiently. Now I find that not all secrets lie within the compilers. They also get revealed by an understanding of what kind of assembly code is **needed** to accomplish a given task. Knowing that, you have an approximate idea what assembly language the compiler must generate, and you find ways to reduce the amount.

Don't underestimate the fundamental importance of understanding this talk about the CPU and how **opcodes** make it work -- hence making the computer look alive. Knowing something about (if not "learning") assembly language gradually unlocks doors for confused beginners. And if you get yourself an assembly-language book (old REMarks are good, too) and start to get your feet wet, remember not to expect too much too fast. Assembly language **really** takes time to digest! Forgetting, relearning, and feeling discouraged are all par for the course. But ignore the discouragement, it's an illusion! You **will** pick the stuff up if you keep trying.

Finally, there is your author to consider. If anything here helped you I'd like to hear about it. If you feel that includes you and still don't let me know, you must assume other readers will be equally remiss. I, in turn, hearing nothing, must assume no one profited. But if this **was** useful your response will offer encouragement and show me I'm on the right track!

=====

A New Prize Printer

By Dan Jerome

With technical assistance from John P. Toscano

Panasonic has developed a whole "family" of real neat printers with standard carriages and reasonable prices. Most of them are dot-matrix models, but one is a daisy-wheel. The printers included in this family are as follows:

* KX-P1091i ($225) (9-Pin Dot Matrix)
* KX-P1092i ($359) (9-Pin Dot Matrix)
* KX-P1124 ($369) (24-Pin Dot Matrix)
* KX-P3131 (about $349) (Daisy Wheel)

Of course, as you go up the line, the features become more attractive. For example one of the main parameters, printer speed, as delivered by the KX-P1091i is 160 cps, but with the KXP-1124 it advances to 191 cps. For the improvements provided, the price difference is not that much. It won't be long before Panasonic comes out with printers that provide even more advantages, since they want to be a leader in the field.

Being in need of a printer that would provide me with excellent quality of printing for my work as a free-lance writer/copy typist, I purchased a Panasonic KX-P1124 early last December. It was one of the first ones available in Minneapolis. I had planned to use it with my H89 computer system, but couldn't purchase a serial card for the printer because they were not yet available.

Therefore, instead of running in the serial mode, I was compelled to run it in the parallel mode via the FBE Spooldisk and the software supplied by FBE. It turned out to work just fine in the parallel mode.

For the money, this is the best 24-pin dot matrix printer available. When I made a few adjustments and tried it out, I found that I was printing like a champ right from the start. It takes a little while to get used to any new equipment.

It has so many features it would make your head swim. One minor thing that I like very well--it is a

major item for me--is that when it finishes printing you don't have to waste a full sheet of continuous paper. You just break off the printout right at the print head, and that is that.

Another nice item is the ribbon. The machine makes use of a small cartridge ribbon that fits into the palm of your hand, and when you install the ribbon it simply snaps into place: no fiddling around to adjust it. It has a "re-ink" feature that really works. When your printing gets a little dim, you just press your ballpoint pen into a recess on the ribbon and break a seal. From that time on you get a new spurt of dark ink that lasts longer than the original.

Some of the major features of the KX-P1124 that intrigue me are:

[1] The "EZ Set Panel" where you can program about 40 features by setting web switches, without the need for disassembling the printer in order to go inside and adjust dip switches. A few of the most prominent of these are (NOTE: P-S stands for proportional spacing):

Fonts: 1 draft and 5 near letter quality (NLQ)--
Courier, Prestige, Script, Sans Serif, and Bold P-S
Pitch: 10, 12, 15, 17, 20, and P-S
Form Length: 11", 12",14", 8-1/2", and 11-2/3"
Margin: Right and Left
Quiet Mode: cuts printing "noise" by about 50%
Macros: 3 memory backed-up macros
Hex Dump: provides a Hex dump for programmers.

The panel settings override the software settings, so if you coordinate them correctly, you will have a very pleasant printer to cooperate with you in performing your tasks. It will take you a while to become accustomed to all these convenient options. For example, the initial settings when shipped include an 11-inch form length, which is designed to automatically skip the paper perforations. However, it also feeds single sheets easier than any other printer I have ever seen (even sideways), and you can adjust the form length to accommodate any requirement.

[2] This is a fast printer. In the elite draft mode it clips away at about 192 CPS. In NLQ mode it does 63 cps in Elite. I really enjoy choosing the font, since this is my first experience with fonts. For most of my work, I print in the DRAFT mode, but when I write letters, I print out in SCRIPT. For business uses, I print out in PRESTIGE, and if I really want to have my manuscript printed dark, I go to COURIER or BOLD.

[3] Unique features include the ability to feed paper in the "pull" mode (the port is located on the bottom, front) or the "push" mode (conventional feeding from the rear). But you can also feed it single sheets and large letter envelopes from a door that opens up at the front. The positive force tractor comes with it, and is not an accessory.

[4] Like a little variety? It can give you 5, 6, 7.5, 8.5, 10, 12, 15, 17, and 20 characters per inch. If you are creative, you can do a lot with that. Are you familiar with any other printer that can provide 20 CPI?

[5] It emulates either the Epson LQ-2500 or the IBM Proprinter X24, depending, I suppose, upon what computer you want to use it with.

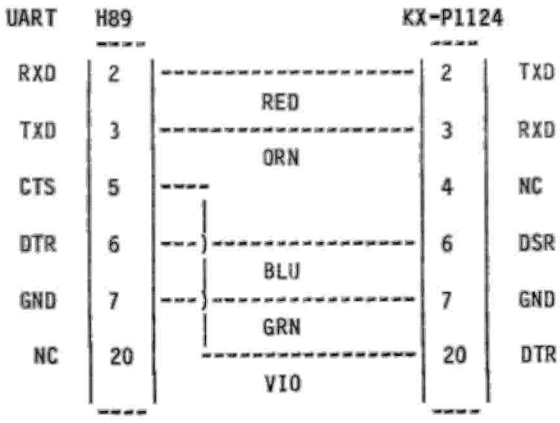
As you see from all these factors, it is a very fine printer, with a lot going for it. For the price, it is an excellent value. I have enjoyed using this printer since I proudly brought it home, and received many fine comments concerning its printing quality. It is available from Quikdata, and Henry Fale will set it up for you with cable and all, if you ask. Of course there will be a minimal charge for the cable and the accessories, which include a 32k buffer chip and the serial interface card.

A friend and I have recently completed installing the serial interface card. He brought over his special test equipment, and we started working. Originally, the tech data was provided by Henry Fale of Quikdata, but my friend wanted to double check everything just "to make sure." A big "THANKS!" goes to Henry Fale for his spirit of helpfulness and concern, even though I didn't purchase my printer from him. Through the years he has developed a fine reputation for taking good care of his customers.

Initially, we had a little trouble developing the cable wiring setup, but when that problem was resolved, we began changing options on the serial printer driver software, such as "UD.DVD" for HDOS and "UD.COM" for CP/M. When we were done, the printer performed beautifully in all modes. I really haven't had time to evaluate it 100%, but every time I print out a file, it works like a charm, and I haven't had any problems with it yet. In order to make your life easier, should you desire to purchase this fine printer, I share the details below:

[1] Hardware:

[A]: Cable Wiring Diagram:



[B]: Serial Card Dip Switch Settings

Switch 1

1	OFF	Data Length: 8-Bit
2	OFF	Parity Check: Invalid (No Parity)
3	ON	Parity Bit: Odd
4	OFF	DTR Signal Polarity: Normal
5	OFF	ON for 1200 Baud

6	ON	9600 Baud: Enables 2400 Baud
7	ON	ON for 1800, 2400, 19200 Baud
8	OFF	ON for 1800, 4800, 19200 Baud

Switch 2

1	OFF	Not Used (Don't Care)
2	ON	Enables the on-board 8k buffer
3	OFF	Buffer Recovery Rate set to 256 bytes
4	ON	Signal Control Set to "SPACE"
5	OFF	Self-test Enable Off
6	OFF	Self-test Mode Select
7	OFF	DTR Control Enabled
8	OFF	Protocol Set for XON/XOFF

Jumpers J101 = A-B (Pin C Open)
J102 = Not Used
J103 = A-B (Pin C Open)

[2] Software:

NOTE:
When setting up for printer protocol, use XON/XOFF for all seven printer units!

[A] Overall Layout:

UNIT	PRINT STYLE	CPI	LPI	CPL	LMARG	FORM	PAGE
LP0:	Draft Pica	10	6	80	12	66	60
LP1:	Draft Elite	12	6	96	12	66	60
LP2:	Draft Micron	15	6	120	12	66	60
LP3:	NLQ Pica	10	6	80	12	66	60
LP4:	NLQ Elite	12	6	96	12	66	60
LP5:	NLQ Compressed	17	8	137	13	00	00
LP6:	NLQ Compressed	17	8	137	13	88	88
LP7:	NLQ "Royal"	20	10	160	13	110	100

[B] ASCII Codes for UD:

[1] Normal Print Codes (10 and 12 CPI) **in Octal**

Unit	Horiz. Pitch	Note 1	Draft or NLQ Mode	Horiz. LPI	Note 2
LP0:	033 120	022	033 170 060	033 062	033 124
LP1:	033 115	022	033 170 060	033 062	033 124
LP2:	033 147	022	033 170 060	033 062	033 124
LP3:	033 120	022	033 170 061	033 062	033 124
LP4:	033 115	022	033 170 061	033 062	033 124

[2] Compressed Print Code (17 CPI) **in Octal**

Unit	Horizontal Pitch	Draft or NLQ Mode	Horiz. LPI	Note 2
LP5:	033 017 033 120	033 170 060	033 060	033 124
LP6:	033 017 033 120	033 170 061	033 060	033 124

[3] Very Tiny Compressed Code (20 CPI) **in Octal**

Unit	Horizontal Pitch	Draft / NLQ Mode	Horiz. LPI
LP7:	033 115 033 017	033 170 060	033 063 022

Superscript Mode
033 123 061

NOTES:

(1) Table 1: Code that turns compression on or off. For the normal sized type, no compression is needed, so it is cancelled. However, for the smaller print, compression is necessary. On LP5: and LP6:, this is done by combining the Pica and Compression modes to produce 17 CPI. This requires two codes each. Similarly, to produce "Royal," the Elite Mode is combined with the Compressed Mode to result in 20 CPI.

(2) Table 1, Table 2: In order to get LP7: to produce tiny disk directories that you can cut and paste on the disk jackets, you want to have as many LPI as possible. In this case, 10 LPI is optimum. However, if you don't modify this, when you print out, the lines bump together. The solution is to add code for Superscript, which will cause the characters to shrink to 66% of original. This comes out perfect! The Superscript code must be then cancelled for the other 7 units, or unpredictable results will occur. This is accomplished by the escape codes, 033Q and 124Q.

(3) This is the semi-final setup, after much experimentation. This setup works for HDOS 2.0, HDOS 3.0, and CP/M-80. It also enables you to print out as many pages as you desire. Because the printhead requires a larger, more substantial heatsink, it will limit your printed files to about 25 pages max. Be sure to let it cool before starting another long file.

You might be able to work your printer at a higher baud rate. Mine is limited to 2400 baud because of a suspected bad 32k Buffer Chip, which Panasonic is in the process of replacing.

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VENDOR.UPDATE

What's Doing at TMSI (Continued from the last issue). [From Lee Hart, **TMSI**, 28612 Middle Crossing Road, Dowagiac, MI 49047, 616-782-3980] "...MULTI-MEGABYTE FLOPPIES. 3-1/2" disks are now the 'in' thing. Never mind that disks cost 4 times as much, or that they are actually larger and heavier than 5-1/4". Don't believe me? Check for yourself. While 30% shorter and narrower, 3-1/2" disks are 3 times thicker; thus they take MORE cubic inches to store than 5-1/4"!.

"But 3-1/2" disks hold more data, don't they? Yes, if you compare an 80-track 3-1/2" to a 40-track 5-1/4". Of course, IBM and Apple are claiming they invented the idea of 80-track drives, but us HUGgies know better. We've been putting 800K on a disk for years.

"Truth is, a PC-style 3-1/2" drive is electrically interchangeable with a 5-1/4" drive. All that stuff about single/double sided, single/-double/extended density, 40/80 tracks, and step rates applies just the same. You can plug a 3-1/2"

drive into any H8 or H89 and treat it just like the 5-1/4" (**soft-sectored**; don't expect to find any 10-hard-sectored 3-1/2" disks!).

"How did they pack 80 tracks on a smaller disk? Technology, my boy. They made the head smaller, and squeezed the tracks closer together (135 tracks per inch). Then of course, somebody had to wonder what would happen with that head in a 5-1/4" drive. Poof! 1.6 megabytes on a 5-1/4" disk. That's as good as the old 8" drives. Several Japanese firms did just that, and offer 5-1/4" drives that behave electrically just like an 8" drive.

"If you have a CDR or Magnolia controller, these 5-1/4" drives will provide 1208K of formatted capacity (exactly the same as 8"). But 8" drives used a 50-pin connector, instead of the 34-pin one common to all 5-1/4" and 3-1/2" drives. So you need an adapter with a 34-pin connector on one end, and 50 pins on the other (CDR had these for about $25, or I can make one up for you for the same price).

"But of course, somebody introduced a 3-1/2" drive that stores 1.6 megabytes (1.2 formatted). This time, it was Eastman Kodak who put it in a 5-1/4" drive. It holds 3.3 megabytes (2.4 formatted), and they tried (unsuccessfully) to market it for the PC. But PC-DOS does not take well to non-IBM drives, and it was a flop. They later upped it to 6.6 Mb, which isn't selling any better.

"As a result, the Kodak drives are available for a song on the surplus market. A friend of mine bought a pair for $25 each! For fun, I hooked one up to my H89 with a CDR controller. It immediately worked as an 8" drive, though the CDR BIOS didn't know about the extra tracks. So I 'hot patched' the BIOS disk tables with DDT, and got 2362K of storage on a 5-1/4" disk!

"The bad news: I can't format disks. The stock CDR format program doesn't handle the extra tracks, and I lack the expertise to make it do so. No FORMAT program was supplied for the PC, either; they expect you to buy pre-formatted disks from Verbatim for $5 or $10 apiece. Eastman Kodak (who owns Verbatim) subscribes to the old we'll-get-rich-by-making-you-buy-our-disks gambit.

"There could be a real opportunity here. The Kodak drives are readily available in quantity at low prices. Herm Brooks at CDR says he'd be happy to sell the 8" to 5-1/4" adapters to hook them to 8" controllers. But they've lost the source to their FORMAT program. So we need a software wizard who knows how to write or modify a FORMAT program. Imagine; disk storage at $10 a megabyte!...."

PC-FILE 80. [From Benjamin H. Cohen, **KaftorWare Corp.**, Box 1674, Chicago, IL 60690, 312-965-8144] "Some time ago you wrote us about PC-File 80tm [see my note on p. 7 of issue #9 - Ed.], and I had to write to tell you that we didn't support the codes necessary for the program to run on a Heath/Zenith terminal since it requires two bytes to clear the screen. The program has now been modified and supports two (or more) bytes for clear screen as well as multiple bytes for cursor position and end cursor position, so the program should now support the Heath/Zenith terminals...

"The price remains at $49.95 plus $5 shipping. For better or for worse we do not support hard sector disk formats, sorry, but I'm sure your readers have methods of getting around that problem. There is a $2 disk format charge for formats other than Osborne or Kaypro (our native formats) since we have had to purchase disk format programs in order to deal with our non-native formats.

"I'm a bit biased, of course, but I still think that PC-File 80 represents an excellent value for CP/M users, being an easy to learn and easy to use database program that meets all the needs of almost all users because of its power. There is also a clear path for those who move to MS-DOS, as we offer ButtonWare's MS-DOS versions of PC-File, ranging from PC-File+ Version 3.0, the recently released update, and PC-File:dB, ButtonWare's top product, which uses a dBase compatible data format. Conversion of PC-File:dB comes with a utility to convert the files to the dBase format.

"The **User's Guide** for PC-File 80 has just been updated, too. It's longer than ever, 68 laser-printed pages (all done with **Magic Series** on a Hewlett Packard LaserJet using CP/M computers) come with a four-page table of contents and more than twelve pages of index! Our users tell us that the **User's Guide** is one of the best software manuals they have ever seen...." [As a service, I'll convert soft- to hard-sector for the same $2 fee Ben gives above if you supply me with **three (3)** formatted, 48-tpi disks, along with the distribution, and a postage-prepaid return mailer. (The files for this package occupy 260K!) If running only hard-sector, you should have a minimum of two drives. I also have some additional observations you should know on setup for the '19/89 terminal. And I have a review of the package in the works for early next year. -Ed.]

MTMDM and other things. [From Darrell Pelan, **Micronics Technology**, Suite 159, 54 Dalraida Drive, Montgomery, AL 36109, (voice) 205-244-1597 / (BBS) 205-244-0192] "The Micronics Technology Modem (MTMDM) program I wrote you about in my March letter [excerpted in issue #11, p. 7-8] is enclosed. Both HDOS and CP/M versions are included. MTMDM supports XMODEM file transfers, text capture, and a split screen for conferencing. The split screen allows you to type your message without interruption from incoming traffic. The current version is 0.8 and is public domain as long as the program isn't modified or sold. (A fee for copying the disk is okay.) [Readers should see this issue's software listing! -Ed.] MTMDM is a low $14.95 from Micronics Technology and includes a free upgrade to version 1.0. Version 1.0 will be a commercial product. It will support Ymodem file transfers, scripts, and a phone directory. I am still hosting a conference every Monday night for 8 bit users on CompuServe in the Zenith Forum. The Conference starts at 8 PM CST.

"Micronics expanded our BBS to include an HDOS file section. I loaded a few files, but we need help from all the HDOS users to make the section really useful. The BBS has 66 meg worth of disk space, so there is lots of room for 8 bit files.

"I recently started selling NZ.COM, ZS-DOS, and DateStamper from Plu*Perfect for the H-89. The supplied ZS-DOS clock driver didn't set the BIOS clock or even read it correctly! I wrote a new driver and supply it with ZS-DOS and DateStamper versions sold by Micronics...

The WIN89 20 meg drive for the 89 is now only $399! Your readers will get free shipping if they mention **Staunch.**

"Thanks for your help in spreading the 8 bit word." [And thank you for the software and your continued support of our 8-bit machines, Darrell. -Ed.]

Unlabeled Hard-Sector Disks. A recent issue of Lenny Geisler's **SEBHC Journal** (Vol. III, #12), included information on inexpensive hard-sector media. The cost he noted was about 85 cents each in quantities of 100 for disks without labels or sleeves. This is almost **half** the price of name-brands from other suppliers! The source is:

Miriam Campbell / Disk Movers / 8534 McCormick Blvd. / Skokie, IL 60076 / 312-769-3727

Sleeves can probably be obtained from there, but if not, many computer suppliers stock them. Disk Movers also handles generic soft-sector, though Lenny didn't note the price of those. I'm going to give them a shot myself as soon as my supply of hard-sector 3M's from Lyben Computer Systems drops to my "reorder" point.

Lindley Systems' HDOS Support. The September issue of **REMark** contained an ad from Lindley Systems for products of interest to us. One of these is PC89LINK, software for transferring files between computers through the serial ports. One end is HDOS on the '89, the other another HDOS machine or MSDOS on an IBM-compatible. Transfers can run at up to 19,200 baud and the software supports wildcards. Price is $25 postpaid.

Lindley also announced printer driver support for HDOS 3.0. These are updates to its "Ultimate" and "User-Programmable-Character" drivers, which are still available for HDOS 2.0 and CP/M. New features include programmable macros, new Epson-compatible codes, and UNLOADing under HDOS 3.0 and the upcoming 3.02. Printers supported are Epson-compatibles, NEC/C.Itoh, Okidata, and MPI. Call or write:

William Lindley / Lindley Systems / 4257 Berwick Place / Woodbridge, VA 22192 / 703-590-8890

H-8 Factory Service Fees. [From Leon Cray, Supervisor, Computer Hardware Consultation, **Heath Co.**, Benton Harbor, MI 49022] "As you requested in your letter of August 14, I have listed below the flat rate labor fees for the H-8 Computer and the various modules that may be installed in it. Please be aware that these flat rate labor fees are revised from time to time to reflect current market conditions...

H-8	Complete Computer	$115.00
	CPU Card only	37.00
	Front Panel only	28.00
H-8-1	4/8K Memory Card	33.00
H-8-2	Parallel I/O Card	44.00
H-8-4	Multi-Port Serial I/O Card	61.00
H-8-5	Cassette/Serial I/O Card	46.00
WH-8-16	16K Memory Card	37.00
WH-8-37	Soft sector Floppy Controller	50.00
WH-8-47	Interface for H-47 Disk Drives	67.00
WH-8-64	64K Memory Card	46.00
HA-8-6	Z-80 CPU Card	46.00
HA-8-8	Extended Configuration Card	17.00
H-17	Chassis with one disk drive	40.00
	Each additional drive	15.00"

Quikdata Now Has Toolworks Software. [From Henry Fale, **Quikdata Computer Services, Inc.**, 2618 Penn Circle, Sheboygan, WI 53081, (orders) 414-452-4172] "Some info and some clarifying. Per issue 13 page 6 where Lee Hart states that I buy the boards (H37) from him may need some clarifying. I don't know if it's a big deal or not, but when we do purchase the boards, we purchase the bare boards from him and assemble them with our own parts, test and calibrate them here. We also have H37 boards that we do not purchase the bare boards from Lee, but we managed some time back to get a load of brand new Zenith Z37 controller boards. What one will receive just depends on what gets pulled off the shelf when the order is being filler.

"As for the Software Toolworks stuff, we now have all the HDOS and CP/M disks and most of the documentation as listed in our new 9/89 catalog (free for the asking)..." [That catalog lists the following for both systems: C/80 compiler, C/80 Mathpak, MYCALC spreadsheet, PIE full-screen text editor, TEXT formatter, SPELL spelling checker, UVMAC 8080 macro assembler, UVMAC Z80 macro assembler, PCPT file compressor and encryptor, LISP/80 interpreter, MYCHESS chess program, ED-A-SKETCH graphics editor, RATFOR FORTRAN preprocessor, SZAP patch and dump utility, ELIZA psychiatrist game, COMPUTER CHEF cookbook, WDIN additional recipe package, WOK TALK Chinese cookbook, and WWIG vocabulary game. For HDOS only is SPOOL-N-GO, a print spooler. Prices range from $19 (for WDIN) to $59 (for MYCALC). In **H-SCOOP** #114, Henry adds that carrying these is a **six-month experiment!** So place your orders and write with encouragement. He's also having some trouble getting documentation out of Software Toolworks, so some patience **may** be required, depending on which packages you order and how long you procrastinate. -Ed.]

"As for cooling the H89, the best thing one can do for now is reverse the fan so it blows air into the computer. I generally am a firm believer in exhausting air, but not in the H89. If you exhaust the air like it is when the unit comes from Heath or Zenith or is built up, you pull most of the air in directly from the adjacent slots cut in the top of the cabinet, and right out to the fan. Lot of good that does the H89 innards! Best is to blow the cool air where it is needed most--on the power supply assembly. Also blow out the unit once in a while so the layers of insulating dust and dirt are blown away. These two things will help greatly. I could write a book on cooling the H89, but most of that has appeared in past **H-SCOOPs**!" [Readers will get a somewhat different approach to this problem in Lee Hart's January article. So hold onto your keyboards! -Ed.]

MicroPro Changes Corp. Name. MicroPro Corp. has a new name. It's WordStar International, to emphasize its WP market. And the CP/M version (release 4) is still available as I mentioned in issue #9. But it requires 50K TPA and two **soft-sector** drives minimum. Disk formats are also limited to Apple, Kaypro, Morrow, Osborne, Televideo, and generic 8-inch. (If you're interested, but are concerned about media conversion, order the Morrow, Osborne, or Televideo media and I'll do the conversion for you, using Anapro's EMULATE.) And the price is right; still only $89 plus $10 shipping. The address is:

WordStar Customer Sales / P.O. Box 7079 / San Rafael, CA 94912-7079

WordStar will take plastic if you call toll-free 800-227-5609.

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Father of the Computer. You've probably seen recent news reports about the computer history exhibit that the Smithsonian is putting together. And wondered what the dispute over who actually designed the first digital computer is about and just who this Atanasoff character is.

Most older histories on computing observe that ENIAC (built in 1943-45 by John Mauchly and J. Presper Eckert for the Army) was the first modern, digital machine. But more recent material reveals that the concepts embodied in that device were originally conceived by John Atanasoff, a professor at then Iowa State College (now I.S.U.). Indeed, the central ideas behind what you have sitting on your desk there (electronic circuitry, using binary processes, with regenerative memory, and digital computation rather than the enumerative process used in mechanical calculators of the time) date to almost a decade before ENIAC made its debut.

After Atanasoff settled on those four specific design points in the winter of '37, he and graduate student Clifford Berry built prototypes between '39 and '41. These were something of a hybrid system by today's standards: the system clock was a motor-driven switch, but computing was done using vacuum tubes as in its better-known successor. Main memory consisted of drums of capacitors. I/O was by means of a card punch and reader, but numerical representation was binary. Also bear in mind that those were the days when a program was hard-wired into the machine. Reserving a part of computer memory for instructions first appeared in the British EDSAC, in 1949, but based on the design of Mauchly and Eckert's second-generation EDVAC (finished in '51).

In the meantime, Atanasoff discussed with Mauchly the system he and his assistant were building at Iowa State in those pre-war years. The two first met at a conference in December of 1940 and after corresponding Mauchly spent six days in Ames, IA, in June, '41. Three decades later this visit would shake the patent foundations of computer technology. Atanasoff was trying to secure patent applications through Iowa State, but because of the confusions of the war years, ineffective patent application people, and his varying jobs, those applications were never made. (Much to Iowa State's regret in retrospect, I'm sure!)

After the war, Mauchly continued computer development, first at the University of Pennsylvania, then with his own company, UNIVAC. But because of his wartime work, Atanasoff became an ordinance scientist for the Army and Navy, then a private consultant. Once during the fifties, he was approached by IBM about breaking the stranglehold Mauchly and Eckert's ENIAC and EDVAC patents held on the budding mainframe industry. Then Big Blue licenced rights! But the prospects continued to be explored by Sperry Rand (which had acquired UNIVAC) and a suit was even attempted by Ma Bell in '62.

The real challenge emerged, however, with publication of a book (**Electronic Digital Systems**) by R.K. Richards in '66. He questioned ENIAC's primacy and documented Atanasoff and Berry's earlier work **and** Mauchly's visit. This sparked an investigation which led to a Minneapolis federal court decision in October, 1973, overturning the ENIAC patents.

A recent hardcover book by Clark Mollenhoff, a former reporter for the Des Moines **Register**, covers these events very well. And it makes for fascinating reading. The only criticisms I might make are that his reportorial style often becomes repetitious and he gives little coverage to the hardware. But if you happen to be interested (as I am) in the latter, there is a source.

Check your public library for the August, '88, issue of **Scientific American**. In an article titled "Dr. Atanasoff's Computer," Allan Mackintosh summarizes the history covered in depth by Mollenhoff, then goes into detail as far as he is able on the two prototypes Atanasoff and Berry built. Unfortunately, the originals were dismantled in the late '40's. But the book and article include enough photographs and drawings for you to form a good idea of what these pioneering machines looked like and how they functioned. Oh, before I forget, the book is **Atanasoff: Forgotten Father of the Computer** (Iowa State University Press, 1988). And if you want to investigate further, Mackintosh's article concludes with a short bibliography.

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