

PORT TO PORTAL --Editorial

Well, fellow 8/89'ers, congratulations to you for having enough pioneering spirit to show up for the launching of our own first edition! (Sort of a "staunch launch" one might say.) Welcome to a newsletter that dedicates itself exclusively to an exchange of information among H/Z-8 and H/Z-88/89/90 computerists. I think you'll enjoy this first issue, and as future issues emerge, you will get a better taste of the variety that is in store for you. I want to thank Mick Topping, of CHUG (Capital Heath Users' Group, Arlington, VA), for his understanding ear and his advice when I was in the early "go/nogo" throes of decision-making on this newsletter venture. I would like, too, to express my gratitude to Kirk L. Thompson, my learned colleague in Iowa, who will be penning a regular column, "The 8-Bit Iowan", for us; we are very fortunate to have him aboard, as you will see. Thanks to Henry Fale of H-SCOOP and Charles Floto of BUSS for their priceless contributions in the Publicity Dept. Also, we received loads of nice notes and letters. In return we want to thank all of you who offered your help, advice, sanguine prognostications, and just plain conversation. You know, as they say, who you are!

Now that we have our own periodical, good reading can be more efficient, for as a group, we are divided into fewer camps. Still, it will take participation to make it all work. Share your projects with us. Share your problems with us. Ask questions. Send your letters for publication; you'll have the right audience! If you hit a snag in any of your computer work, quickly scribble (literally!) out a note and mail it our way. And if you have answers, we gotta have **them** too.

This column, Port to Portal, is my regular "editorial" effort. It makes its way from my computer "port" to your front door (well, maybe to your PO Box...or your office). Inevitably, there has been expressed reader curiosity about your kindly old (that's figurative) editor. I'll try, briefly, to clear some of it up. I acquired my H-89A, kit version, toward the end of the summer of 1982. I had worked with computers for years, but not with micros, so when it came to choosing HDOS or CP/M I had little to go on. At the time, CP/M was being touted as the "industry standard", so I let that sway me and made a blind choice. I never regretted it, but I don't think I would have regretted it either way. Anyway, while I was waiting for delivery of the hardware, I bought a book on CP/M, and for 3 weeks that summer my nose was buried therein. That turned out to be a wise move -- once the kit was finished I was far too impatient to spend much time learning the system. I wanted to get right to the applications software, and my own programming. It's been a marvelous learning experience, **and it continues**; that's why I'm not about to change computers in the middle of the stream. I have too far to go yet, and I'm

enjoying it far too much to start all over.

The motivation to learn and hack is a big part of my reason for owning a computer. I'm not the type to be continually looking for new software to purchase. I already have a word processor, several programming languages, a database system, and a couple of great utilities. With these tools I believe one can get just about anywhere else he wants to be, provided he also has some time, and likes to program. But I **do** have some time and enjoy programming, so when I need, say, a utility to perform a certain task, I'd just as soon try to write it myself as buy it. That's the fun, the satisfaction, and the education of it all. And it's not an unattainable goal, especially if you're willing to settle for a single-purpose program, as opposed to a fancy one that tries to do too many things. You can always expand and improve it later. This is why, when I hear people complaining about the paucity of H-89 software left on the market, I cannot **always** identify with them. I guess if I didn't already have the building blocks and all that good stuff it would be a different story. Enough personal philosophy for now. If you want a bit of more telling personal info about yours truly, see "About The Author" at the end of my May 1985 article in REMark, page 51.

A note about the questionnaires you submitted with your subscription orders. I read them as they came in, but I'll have to go through again and sort things out. I'd like to try to get answers for some of the questions I see there. Some will be examined in this very issue, but it isn't possible to catch them all at once.

Some STAUNCH subscribers, we have learned, travel to different parts of the country, perhaps in the line of duty; some have recently relocated, and others are planning to relocate soon. We just want to remind you that it has to be your responsibility to inform us of any address changes (or errors) for newsletter mailings. Send changes to name formats too; if you don't like the way we show your name in our mailing database, we'll **do** something about it.

THE EIGHT-BIT R/W --Letters

[Send letters to the address at the back of newsletter. Letters will be printed in full or in part. If you wish to write me but don't want your letter published, mark it "Not for Publication". If you wish a personal reply you must do the following: 1) Request it; 2) Enclose a self-addressed, stamped envelope; 3) Watch your mailbox; and 4) Keep watching. (Seriously, I'm usually not **too** slow.) -- Ed.]

No User-serviceable Parts Inside

[From Don Skiff, Ann Arbor, MI]... From the current magazines, seems nobody is interested in low-level

work with computers anymore. I suppose it was the same way back in the twenties and thirties with cars and radios -- at first everybody who did anything with them had to know how they worked, but then they became appliances, and if they didn't work you traded them in for new ones that did...I'd sure like to know where all the H-8's went to... [Editor's reply: Sounds very logical to me -- the part about when something is new one wants to understand it. But I'll bet more people than you think are interested in "low-level" programming, and a lot of H-8's are still in use. Obviously for every second-hand machine sold, one is bought. The contrary illusion exists because we are being trampled. My message is, we really don't have to let that get to us.]

Root of the Matter: Where'd He Put the Book?

[From Jack Miner, 316 S. Rosedale Ave., Lima, OH 45805]... One of my interests...is family genealogy tables which at present I compile with a typewriter and hand-drawn charts. I bought "ROOTS/M" but find it cumbersome and difficult to use. Perhaps your newsletter contributors will know of a program easier to use. I saw a reference to one in some magazine I have since misplaced. It compared "ROOTS" to another program, but did not mention the supplier... [Editor's reply: Funny, I know of at least one person who swears by ROOTS (not at it), but if anyone can help Jack, write to him or me.]

Use It or Lose It

[From John R. Davis, Hurst, Texas]... [We should all] support H-89 suppliers or they will dry up. [Editor's reply: Wise, wise words. And the process would probably be irreversible. Looks like it's now or never.]

Speaking for Many?

[From Win Palmer, Fort Myers, Florida]... I want to know how the H-8 works, from the H-19 character generator to how the H-17 sets up the interface chips, etc. I want to be able to do all needed servicing, from replacing the CRT (which I've already done once) to refurbishing a drive! [Editor's reply: I've always wished I could repair a drive too. Good ideas here for articles, you electronics experts!]

THE 8-BIT IOWAN

Kirk L Thompson
#6 West Branch Mob Hom Vil
West Branch, IA 52358

Hello from Herbert Hoover's birthplace,

Let me welcome you, dedicated (or, to use Hank's term, **staunch**) 8-bit'er. If you're like me, you've had this "obsolete" 8-bit-microprocessor-based piece of gear around for quite some time. In my case, my H89 is so old that I call it "Neanderthal;" its serial number is even less than

1000! In truth, it was boxed by Heath in the halcyon fall of '79 and has been serving me almost continuously ever since. And because I've added to it just as vigorously since the day UPS first placed it on my doorstep, I expect it to continue doing so for some time yet.

Bio Extract. But who am I? Well, I regard myself as a micro hobbyist with delusions of grandeur. I write occasionally, but would like to do that full time. Unfortunately, my creditors presently won't let me! So I maintain my sanity through occasional appearances in **Sextant** (with some materials presently at **REMark**) and monthly contributions to the newsletter published by OMAHUG (Omaha Heath/Zenith Users Group). Central to these activities is my "Neanderthal."

But why did I buy the thing in the first place? In two words, productivity and the-most-for-the-least! Productivity, because I wanted an easier way than the "normal" write/type/revise/retype/revise/retype syndrome which most writers put up with until the introduction of the micro; and the-most-for-the-least because, in the summer of '79, when I pursued my research on desktop computers, the '89 had the most features for the least outlay. (In fact, most of those other popular brands didn't even have lowercase built in!) I've never regretted the decision.

Commercial software was a bit spare, of course, for the first year or so. But that was no problem since I was learning computing. However, once "ORG O" CP/M was added (which I anticipated when I bought; CP/M capability was one of the specs developed during my research), the software base went out of sight. I **did** have to retrofit the latter, but it was the simple plug-in board from Magnolia Microsystems. So I built my software base to the point where I am now doing a number of things beyond the original impetus: home finance, database, programming (when I can't find a commercial version for what I want to do), and some gaming. Of course, I've increased the capabilities of the system over the years.

And strange to say, most of the trouble I've had with it as I did that, were those I created myself. Have you ever installed a chip backwards? I have! And watched a tendril of smoke lazily rise out of the works before the fuse finally blew...

So I've had my share of grief, but in a good cause. I think getting the most out of the computer **requires** some hardware knowledge. I've seen Accounting Dept. personnel at work complain about problems on their IBM PC, but do nothing about them. And although I could go, like the rest of the world, to one of those compatibles, I see no point to it. My '89 still does what I bought it for, so why replace it. Do you feel the same way?

But another reason for hanging onto the "Neanderthal" is simply that I have considerable time and money tied up in the '89. In order to reproduce similar capabilities on a 16-bit system would require an outlay of effort and resources **at least** equivalent to what I've already expended. I'm simply not prepared for that. And I suspect that many of you are in the same or similar situation.

This Column. But now that you have some inkling of my stubbornness (or **staunchness**), a word about this column. It will be oriented mostly toward the H/Z19/89/90. (You H8 users will, I think, find my discussion of software interesting.) Topics will, of course, vary all over the wiring schematic. But they will mostly (but not exclusively) be slanted toward enhancing the productivity of your system. You **are** interested in doing that, I presume?

I expect to discuss hardware, operating systems, software, books I've found useful, high-level languages, and so forth. In other words, I could cover almost anything between the soldering iron and the disk drive! But I also must emphasize that I need your feedback, positive or negative. Maybe you're running some program which makes what you do really move out; let me know and I'll pass it along to other readers. [Editor's note: A service for those who don't care to write their own articles.] Perhaps you strongly disagree with something I've pontificated on or have a correction of a "fact" I declared to be true. If so, write! (Just go easy with the cattle prods!)

Simply send your remarks to the address, above. If you desire a reply, be sure to include a self-addressed, stamped envelope (SASE). (Without that, you can't even touch me with your stumm! I hope Gene Roddenberry forgives me that reference.) If I think your input is of interest to the greater audience, I'll mention you here. (So if you object to seeing your name in print, let me know!) But getting down to brass gargoyles (or is it microchips?), how do you, or I for that matter, improve the overall performance of that bucket of silicon wafers?

Hardware Enhancements. Actually, there are four ways of doing it. But I'm only going to discuss three. How come? Well, the price of Winchester drives (hard disks, to you cognoscenti) is still not in the range where they are affordable by the average home computer owner. (Namely me, but don't tell anyone!) But the other three are still worth taking a hard look at. In fact, I wouldn't be at all surprised if some of you really **staunch** 8-bit'ers have already picked one or more of them. But just what are they? To be brief, they are:

- 1) soft-sectored floppy disk drives,
- 2) RAM disk, and
- 3) doubled CPU clock speed.

All three are hardware additions to your system which significantly improve the speed at which the computer operates. But the first two are not particularly easy on the checkbook, either. If you were to put me on the rack to decide which of these to choose, exclusively, I'd pick the second. But the first, the one I'll discuss this time, also provides you with increased external storage if you're still running hard-sector, 100K drives.

What is Soft-sector? I've seen three different versions of Heath's original "standard" hard-sector controller board, one in my "Neanderthal," and two others when I was in St. Louis for Midwest HUGCON last May. This board is about as bare-bones as a

floppy disk controller can be. The reason: sector layout is "controlled" by the floppy disk, itself. All the board must do is read and write the sectors on each track where the disk tells it to.

But this arrangement has distinct limitations. There are **only** two methods for increasing the capacity on a disk, both hardware: double the number of sides and double the number of tracks per side. The former is pretty straightforward: just position read/write heads on **both** sides of the disk. But the latter isn't all that difficult, either, at least in theory. Standard drives have 40 tracks spread over a little less than an inch of radius on a disk. These are also called 48-tpi (tracks per inch) drives. In fact, dividing 1 by 48 will give you the distance between each track. Double-tracked drives sandwich twice the number of tracks into the same radial distance. These are also called 96-tpi, or 80-track, drives. Hence, the head positioning mechanism travels only half the distance of a 40-track drive when moving from track to track. And the **width** of the track is about one half that of the 48-tpi.

I suspect many of you out there did one, the other, or both of these. (I never did, just bought more drives!) Now there's nothing wrong with any of this, mind you. **Anything** is better than being cramped to one 100K drive, as I learned within the first month I ran my system. (Has anyone edited Zenith's BIOS.ASM on 100K drives? Can it be done? Let me know if you have!) But Heath never put its blessing on these improvements.

What it did, instead, was develop the Z89-37 soft-sector controller. Standard configuration on this board permitted double-sided, double-tracked drives, various densities, and the disks were the more-easily-found type used on other makers' equipment. Moreover, you **could** vary from standard configuration.

For example, when I converted to it three years ago, Heath was having considerable trouble with the Tandon "quad-density" (double-sided/double-tracked) drives it was selling. I had heard of their poor reliability, so negotiated a swap for single-tracked Tandons then being sold with the H/Z100. (These, by the way, have been very dependable.) And you can also vary the number of sides and density; some of the soft-sectored distribution disks I've received have been single-sided, single-density, with capacity equivalent to "standard" hard-sector.

However, unlike hard-sector, format is controlled by the hardware **and** system software. The disk, itself, only tells the controller when it starts a new rotation. The increased capacity which soft-sector provides is because (to oversimplify a bit) the number of sectors per track can be varied for less or greater storage. Moreover, the board has its own, on-board clock which runs at 4 MHz. This higher clock speed means that reads and writes are **faster** than on hard-sector drives. For example, loading and saving an 1150-word document with 8-bit "PeachText" (an upgrade to "Magic Wand" under CP/M-80, and the word processor I'm writing this article with) yields the following table:

Operation	Disk	Timing
=====	=====	=====
Load file:	H/S	12 sec.
	S/S	9
Save file:	H/S	24
	S/S	13

Of course, these timings may vary, depending on your operating system version and hardware.

But one of the fancy additions which Heath included was to make the thing semi-intelligent. You could put a disk with almost **any** of the recognized formats in a drive and the system would configure itself to read the format. Neat! The only exception (yes, there is one of those!) is that single-tracked drives can't read double-tracked disks. That's because the size of the read/write head on the former bridges **two** tracks on the latter. However, the reverse can be done.

Implementing the Hardware. Although I've only discussed Heath/Zenith's board so far, there are actually **three** sources for soft-sector controllers. (Heath is no longer one of them!) In alphabetical order, they are C.D.R., Magnolia Microsystems, and Technical Micro Systems, Inc. (TMSI). The chief disadvantage of the first two is that the necessary system software (device drivers for HDOS and BIOS for CP/M) departs more or less from the "standard" which Heath established for soft-sector on the '89. Moreover, if you are running both operating systems, the driver software for the second system (usually HDOS) costs extra. The other side of the coin is that they may provide you with features (such as access to eight-inch drives) which you want and which the "standard" can't supply.

But that "standard," the Z89-37, is still available from TMSI. This is a functional equivalent to Heath's board. That means you can bring up soft-sector CP/M directly from Zenith's 2.2.03 or .04. For HDOS, you'll need a device driver since the freebie which Heath supplied is no longer available. But because TMSI went to CMOS chips, the board draws only half the current of the original. So the power supply upgrade (which came with the original) is not provided. However, if you've added a lot of hardware to your system, you should do this anyway. (If you need advice, write me; I'm **always** free with advice! And if you have a question, criticism, or other remark, write. Just don't forget the SASE!)

In the future, I'll cover bringing up system software on soft-sector. If you're running HDOS or Zenith's CP/M, you can do the whole thing yourself! If you have Magnolia's CP/M, you will need some assistance from the vendor. Either way, when you've completed this, you can have a plaque inscribed with your name and the phrase, "SYSTEMS IMPLEMENTOR," hung on the wall behind your equipment! But whichever way you go, you will have a faster system (with higher external storage). And that's the name of the game! And this column!

Backing Up the Hardware. These days, if you run one of Heath's discontinued 8-bit machines, you shouldn't only worry about backing up your soft-

ware. You also should consider backing up your hardware. If you attend one of the HUGCON's, you have the opportunity to pick up various sale items and, of course, local and national newsletters typically include systems for sale. But there is another source if you're interested in single boards or other components.

This is an electronics liquidator, Al Davis, whom I stumbled across while at Midwest HUGCON in St. Louis last May. If you send him a list of your needs, he will ship what he has, COD. Prices are **very** reasonable (\$10 to \$25). The only thing you will note on receipt is that boards usually have a hole drilled in them in a noncritical area. This is to mark them as surplus and should not effect usage.

However, if you're running a very old machine like mine, the only boards you will find are for the '89A. But there are significant design differences between the two! For example, some of the connectors are oriented differently, as I noticed the last time I had my system torn down. So I can't just drop in a spare board and expect to fly. I'm currently querying Heath on manuals for the '89A and will let you know how that turns out.

VENDORS MENTIONED:

Al Davis, Electronics Liquidator / 187 Lake Chapin Road / Barrien Springs, MI 49103

C.D.R. Systems / 7210 Clairemont Mesa Blvd. / San Diego, CA 92111 / (619) 560-1272

Magnolia Microsystems, Inc. / 2820 Thorndyke Ave. West / Seattle, WA 98199 / (206) 285-7266

Technical Micro Systems, Inc. / 366 Cloverdale / Ann Arbor, MI 48105 / (313) 994-0784

See you next issue,
Kirk L Thompson

THE SEBHC JOURNAL

Another newsletter with *raison d'être* similar to THE STAUNCH 8/89'er was born recently. It, too, deals solely with H-8 and H-89-series computers. It is the SEBHC Journal, edited and published by Leonard Geisler. (SEBHC stands for "Society of Eight-Bit Heath Computerists".) The new publication is a monthly, and October marked its third issue. At this writing I have seen the first three issues, and am impressed with the high quality of articles. Subscriptions are \$12.50/year. Make checks out to "P.E.S." ("Plain English Services"). The address is: 895 Starwick Drive, Ann Arbor, MI 48105. [Funny thing, perhaps it **requires** a Geisler to try to reestablish an exchange of 8-bit information. The following **coincidence** is a case in point: Len Geisler and Hank Lotz are each of Geisler lineage. Len's half, from his paternal side, is obvious. But I also have 50% Geisler blood from my maternal ancestry. -- HL.]

HOW TO PRINT TEXT IN TWO COLUMNS

- including -

Some Little-Known Behavior of MAGIC WAND

by Hank Lotz

Here's a procedure for printing two-column text with the MAGIC WAND word processor. It took some development, so I outlined the procedure in hopes that the next time I needed it I could just follow it to the letter and not have to think too much. This is **essentially** what was used in printing this newsletter.

Two-column printing with WAND is not an automatic process; it's not a design feature. The "Supplemental User's Manual", furnished with the word processor, briefly describes how it can be accomplished, but some thought on the part of the user is still needed. I've already worked through some rough spots, so the procedure, if not automatic, is now at least mapped out. There are, however, certain requirements (things you must have, or do). The method also has limitations (things you can't do).

The Requirements:

1. A version of MAGIC WAND that has the "LINE-n" feature. (That's not a dash, it's a minus sign. The n is a numerical value.)
2. A version of MAGIC WAND that has a "hard space" recognition character. (M.W. Version 1.1 has these needed features -- the book says Version 1.0 had some of the features even though it didn't document them, so you can see if yours has them by trying it.)
3. A printer that does reverse linefeeds on line. An H-14 won't work, (not with **this** method).
4. You must be completely finished modifying your text, i.e., all spelling corrections must have been made, and all other editing final. More than one pass of the PRINT program is required, and if you go back to make text changes, you will have to start all over. This is probably the biggest drawback to this method, but it's not fatal. Just don't do it till you're ready to print your finished draft and you should be OK.

The Limitations:

1. Bottom margin should be at least 2 lines. It'll work as low as 1, but 2 allows operator error.
2. Method does **not** sweep across the page, breaking a given line into two-column components. Instead, it completes the left column of the page first, then rewinds the page to print the second column. This may sound crude (it did to me) but when you actually do it, it isn't bad at all.
3. You may find other limitations in special circumstances.

This method is for printing columns with both margins justified. It should also work for ragged-right columns, but a somewhat simpler method would suffice there. You won't have to think hard to use this procedure, but I'll expand on certain aspects anyway, because if you didn't want to understand you wouldn't be reading this type of newsletter. Besides, this article is just the place to broaden

the scope, and talk about WAND behavior that might otherwise never be covered.

First let's look at this "LINE n" comand, as I like to call it -- what does it do? If PRINT is processing line 13 and it encounters your embedded "LINE 18" command, it will move down on the paper to line 18 to output its next line. Get the idea? For another case, if you are on line 9 and you say "LINE 60", all the intervening lines will be blank and you'll print the next line way down on line 60. **You don't skip any text;** you just insert white space, and continue at line 60. If your page length is 66, you can't go beyond line 66. Now, let's consider another example. Suppose the printer is printing line 50, and PRINT encounters the command "LINE 11". What will happen? It'll just rewind to line 11 and print **there**, right? Sorry, that's the old "Right? Wrong!" ploy. MAGIC WAND PRINT will not go **backwards** unless you put a **minus sign** in the command! In the latter example, then, you should have had "LINE-11", not "LINE 11". This is easy to overlook, so watch out for it. And sure, you can dream up schemes to try to drive it nuts, but it handles itself in a nice, logical manner, and **you** go nuts. For example what if you were printing at 8 lines/inch, and you **changed the vertical pitch** at, say, line 20. There you resumed printing at 6 LPI. A few lines later you told it to go back to line 6, i.e., "LINE-6". Can it remember that **the real** line 6 was printed at 8 LPI? No. The rule I worked out empirically is: LINE-n will rewind to where line "n" **would have been** had the whole page been printed at whatever vertical pitch was current when the LINE-n command is given. If that twists your mind into knots, try this: LINE-n rewinds at the vertical pitch in effect when the command is specified. The position of line no. "n" is computed anew, working from the top of the page downward. That's an important rule to remember if debugging. For a couple other posers, suppose we have top margin (TM) of 5, and from somewhere far down on the page we tell PRINT to rewind to line 4. Where does it go? Answer: It will go to line 6 because it **cannot back into the margin**. So it goes as far back as possible, and line 6 is the next line after the top margin. Ok. Now we know the rewind command, "LINE-n", can never go into the top margin, so we're ready for the **next** lesson. Suppose we have a TM 6, and a 6-line header (HEAD 6). That **header** will completely fill the **margin**. Naturally, as we have just seen, we cannot rewind to print within this header, since the header is in the margin, right? Right! (Fooled ya!) But, yes, it's possible to print within the header if we reduce or eliminate the top margin! If we say TM 0, and HEAD 6, the header will still be 6 lines -- but now we can rewind into it at will, since it overflows the top margin. It's the margin itself that's forbidden territory. Much more could be said about all this, but this is a long article as it is.

Another thing you must know is that the "LINE-n" command is usually not executed precisely at the location where you have it embedded in your text line. If you place it after a RETURN, that's all right. But when PRINT is justifying text and sees

the command in the **middle** of a paragraph, it cannot necessarily rewind **there** and still conform to its justification algorithm (or other line-formatting algorithm). So it anticipates the command (i.e., executes it as though you had placed it earlier in the text). The result is that the next line to be printed, a top line **after** a rewind, does **include** your desired rewind point, **but** usually also includes **other** words which appeared in the text **before** your rewind point. If those preceding words are too few (or exactly enough) to complete a full bottom line in the previous column, they are robbed from that column, and carried with the rewind. This shortens the previous column, thus it will not do for what we want. We need to know ahead of time exactly where the columns will break.

The lone example in the WAND documentation does the rewind at the end of a paragraph, but the real world isn't that simple -- you'd have to be pretty lucky to see each of your columns end right on a paragraph. "Well then", you ask, "why not **force** a paragraph (by inserting a carriage return in the middle of a sentence) just before you embed the 'LINE-n' command.?" Because, while that **would** perform the rewind right where we wanted it, and while that **would** prevent a shortened column, it would inhibit justification of the last line in that column, making that **line** short. A bit shoddy.

My solution, embodied in the following procedure, uses "hard-space" recognition characters to form an invisible phantom "word". As you will see, we insert this dummy word only after the end of a known output line at the bottom of a column. It "prints" on the **next** line, but is invisible since it contains only blanks (hard spaces). What this does is cause the last **visible** line to justify. Not only that, we can now follow this hard-space word with a carriage return and a "rewind" command (or an NP), thereby controlling the exact point of the rewind to the top of the next column (or the eject to the next page).

Notice, when you get to where we output to the printer, we will first set the bottom margin to zero (BMØ). If you're saying, "But what if I **want** a bottom margin?", don't worry, it'll be on the printout. For now, we must alter the bottom margin anyway, and it's just as easy to set it to zero as to subtract 1 (as the book would have you do).

The Procedure:

I won't cover all contingencies, like inserting tables that are too wide for the columns, etc., but this will get you started. We will use a sample set of parameters to illustrate the procedure for justified text. **If you desire different parameters it's a simple matter to make the substitution.** These parameters completely define a two-column layout on an 8½ x 11-inch page:

Vertical pitch = 6 lines/inch
(Page-length default is 66 lines.)
Horizontal pitch = 15 char/inch
Top margin = 5 lines
Bottom margin = 4 lines

Column width, each col = 51 chars
Space between cols = 5 chars
Extreme left margin = 8 chars

The related WAND commands are **LPI 6**, **CPI 15**, **TM 5**, **BM 4**, **RM 51**, and two LM values: **LM 8** and **LM 64**, for left and right columns respectively. For the hard space recognition character, I use what the Heath Op. Manual calls the "grave accent" (HEX 60); it is lower case on the key next to the backspace. (I will represent it in this write-up as ' , as it isn't on this printwheel.) The defining command, then, is: **HS'**. Now for the steps:

- 1) You need a "SETUP/TEXT" section in your text file, at least a dummy one, to cause PRINT to issue an initial command prompt. You also need the related commands we just mentioned, except **LM 64**. It comes later. Using EDIT, embed all those defined parameters in your text file. Be sure to include **BM 4**, **LM 8**, **HS'**, and **JUST**.
- 2) Run PRINT, typing "SCREEN ON" at the first prompt. At the next prompt hit RETURN. Output will now go to the screen only. You can control the speed of the display by typing a number (not the function keys) while the display is moving. The higher the digit, the slower. Zero is the fastest. You can **stop** the display with ESCape and start it with RETURN.
- 3) Grab a pencil and a sheet of paper. Watch the display for a page break to occur and jot down the **last** few words in the **last** line. Include any final punctuation mark or other symbol.
- 4) Repeat Step 3 for all the remaining page breaks. You now have a complete "table" of all the bottom lines of all columns, on all pages.
- 5) Go back into EDIT with your text file, and do the edits as listed in the next steps:
- 6) Change **BM 4** to **BM Ø**. Never change it back unless you repeat steps prior to 5, in which case you **must**.
- 7) Referring to the first line of your penciled notes, find that line in your text file. We want that line to be the bottom of the left-hand column of page 1 of the output.
- 8) Follow this step **very** carefully. Look at the **last word** in that bottom line (you will find it in your notes). We have arrived at a fork in the road: If that word is immediately followed by a carriage return (that is, if it **ends a paragraph**) we must do 4 things:
 - a) Delete any carriage returns **in excess** of one -- leave **one** there.
 - b) Now place the cursor on the first letter of the first word in the next paragraph.
 - c) Hit the Insert Line (IL) key, and
 - d) Jump ahead to Step 13 (skip 9 thru 12).

On the other hand, if that last word is some-

where in the middle of a sentence or paragraph, then proceed directly to Step 9.

- 9) Position the cursor on the **first letter** of the **next** word.
 - 10) Hit the Insert Line key (IL), opening an insert.
 - 11) Type a row of hard space symbols: ' '. I use **at least** ten. Just one or two won't always work. (You should be able to figure out why, with some familiarity.) Never use more than your RM value. If you've followed instructions you'll have 1 soft space before these. We need it.
 - 12) Hit RETURN right after the ' '.
 - 13) Type the line "\WAIT Ready to rewind..." (sans closing backslash).
 - 14) Hit RETURN. *
 - 15) Type the command "\LINE-6,LM64\"
 - 16) Hit the Insert Line (IL) key **immediately** following that command, to close up the insert.
 - 17) We are now ready for the next column. Check your notes and locate your next bottom line in the text. The procedure, starting back at Step 7, is the same **every time we do a left-hand column** (with obvious wording changes in Step 7). **However**, for a **right-hand** column, like now (if this is your first pass thru these steps), there are vital exceptions. We still start at Step 7. But **when editing a right-hand column** (i.e., preparing for new page), **always omit Steps 13 and 14, and replace the command in Step 15 with "\LM8,NP\"**. When all columns are processed, go to Step 18.
 - 18) Leave EDIT, saving your edited file. You should now be ready to run PRINT normally, with output going to the printer. If you are not sure, run it to the screen again, as is, for a check.
- * Between steps 14 & 15 is where to insert an LPI command to rewind at different pitch if necessary. If desired, LPI could be reset before resuming print, by annexing a final term in Step 15.

When finally printing the hard copy, **very gently** take up the slack on the paper when you see "Ready to rewind..." on the screen. Then hit RETURN and let the paper reverse. It takes some practice. The first time I did it, it backed up too far and really had me puzzled. Turned out I was tugging too hard on the paper and causing slippage. I thought I was hardly touching it. Depending on your printer, and your courage, you may want to omit the WAIT message (13 and 14). Personally I like to be warned at times like that.

THE "MISSING COMMAND" IN MBASIC

MBASIC (Microsoft BASIC) for CP/M is an extremely powerful implementation of BASIC. (The hint to be described here may also work for HDOS; I couldn't try it. If it doesn't I'd like to hear from someone what the differences are.) The documentation that comes with MBASIC is also among the best with any software I've seen. With this BASIC, you can renumber lines, edit them, merge, and all sorts of things. But I found one thing I wanted to do with MBASIC that I could **not** do. It would be nice, I thought, if I could **move** a long line of code to another place in the program instead of having to **retype** it. The manual doesn't cover that one, but it **can** be done! I came across this in an old **H-SCOOP** once, while looking for something else (isn't that always the way!). It's on page 7 of the September 1982 **H-SCOOP** (see review of **H-SCOOP** in this issue). That goes back a few years, but I didn't have MBASIC (or **any** BASIC) back then, so I wasn't paying attention. OK, let's forge an example to illustrate this. Suppose we have a long line of code, numbered 60, and we want to move it to line 380 without renumbering anything else. First we type LIST 60 and hit RETURN. Next, do a CTRL-A. The response should be an exclamation point (!). Now simply type the letter I (the MBASIC editor's "Insert" command), then type your new line number, in this case 380, and then a RETURN. The job is done, except you'll have to delete the original line 60, which will still be there. If you wish to move more than one line, you must do them one at a time. This trick also comes in handy for making multiple copies of a line. If you have several lines that are **similar**, you can duplicate them and then "edit in" any variations, thus saving a lot of typing! --HL.

A LITTLE REVIEW ON H-SCOOP, AN H/Z NEWSLETTER

From the survey of our H8/H89 subscribers, a surprising number do not subscribe to **H-SCOOP** (and perhaps never have). So a word about it is in order. **H-SCOOP** is an H/Z-oriented newsletter, with circulation in the thousands, published by Henry E. Fale of Quikdata Computer Services, Inc., 2618 Penn Circle, Sheboygan, WI 53081. A one-year subscription is \$24 in U.S.A. I've subscribed to **H-SCOOP** almost from the time I married my computer 4 years ago. That's a little misleading, as I also ordered all the back issues then available, and read every one of them. That's the next step up from a charter subscriber. I'll reprint a couple pieces from **H-SCOOP**, but it is **not** my intention to turn **STAUNCH** into a copier of info from other published sources. I may often **refer** to other published work, even amplify or expand on it, but I will not often **copy** it. Originality is the aim here: my own, and material from readers. I will use "reprints" only when I find them **exceptionally** useful or interesting, and feel the information should be passed along, like the MBASIC piece in this issue.

But getting back to **H-SCOOP**. Over the years it

certainly has been a wealth of information. **H-SCOOP's** main emphasis today is no longer on H-8's and H-89's (not to their utter neglect, however). That's largely a sign of the times, not the fault of the publisher. I think it can still be an advantage for people like us to subscribe to **H-SCOOP** considering its "fringe benefits" and the news it gives about the computer industry. Worthwhile fringe benefits to subscribers include free computer consultation from Henry Fale (a knowledgeable consultant), and free advertising in his newsletter. **H-SCOOP** allows reprints of its articles if subscription information is also given. Since I used a bit of **H-SCOOP** material in this issue, I have fulfilled that requirement here.

H-SCOOP's parent company, Quikdata, Inc., is an excellent, dependable mail order business, selling, among other things, a good bit of H89-related hardware, usually (or always) at better prices than direct from the manufacturers. A catalog is available, and shipping of merchandise is consistently **very** prompt. I have bought several items from him over the years, some fairly big pieces of peripheral equipment, and some things such as refurbished H-17 drives (which he often carries at a reasonable price, with warranty). I purchase all my hard-sectored diskettes from Quikdata. They are **SENTINEL**, among the best I've ever found. (They run quietly in my drives, too -- not "scuff, scuff, scuff" like some brands.) Again, delivery is fast; a week is about the **longest** I've ever had to wait. -- HL.

QUESTIONS and ANSWERS

Column policy: Submitters of questions remain anonymous. No one must be "afraid to ask" a question. There's no such thing as a stupid question when you don't know the answer! Sources for answers are books, other readers, etc., and are not listed. Thanks to all who help.

Q -- Is it still possible to install a soft-sectored disk controller on my H-89 in addition to the 40-track controller? I use CP/M.

A -- Yes, but the use of the term "40-track" for "hard-sector" here could be confusing. You may have both hard- and soft-sectored controllers hooked up at the same time. At this writing the Z-89-37 (soft-sectored) controller is still available from TMSI, 366 Cloverdale, Ann Arbor, MI 48105. Quikdata is another source for this (see article on **H-SCOOP**, this issue). You will also need the MTR-90 ROM, and must change chip U516 from a 444-41 to a 444-83. Certain jumpers also need to be changed. The necessary chips are also available from Quikdata, and, we assume, from TMSI. It is hoped those firms have the instructions too. You can have up to 3 soft- and 3 hard-sectored drives installed simultaneously.

Q -- Can programs and data be swapped between hard and soft disks?

A -- Yes. The system software (for example, PIP)

and the controllers handle all that. Of course a diskette cannot hold the entire contents of a larger-capacity diskette. And the H/Z CP/M DUP program will only copy between **like** disks.

Q -- Does a double-sided disk perform the same as a 1-sided disk twice as large?

A -- Yes. Again, the system software and controller handle writing to and reading from the disk. You the user don't have to worry about which files are on one side of the disk and which are on the other. What makes a difference is that you must have **FORMAT**ted your disks answering the questions that **FORMAT** will ask. The information is written to track 0 of the disk. When this is later read, the soft-sectored controller knows (under CP/M, but not HDOS) whether the disk is 2-sided, double-density, etc. And for hard-sectored, you would need Livingston Logic Labs' BIOS-80 if you want to use double-sided or 96-TPI drives on the standard H-88-1 hard-sectored controller.

Q -- Although the H-89 seems to meet about all of my needs, I often wonder whether any of my present disks would work on a new (IBM-compatible) computer. [Or] even with the 100 series -- presumably soft-sector on the 8-bit side.

A -- No hard-sectored diskettes will work on a PC-compatible. H-89 soft-sectored diskettes can be used on a Z-100, at least for data-file transfer under CP/M-80. Some CP/M COM files may even be executable directly on the Z-100, if they don't contain machine-specific code (function keys, direct port accessing, etc.).

Q -- How can I use the H-19's "Cursor Position Report" [CPR?], which is "ESC n", from a program, and have the results be picked up and used by my program, instead of having to push RETURN and then seeing the results as numbers on the screen?

A -- That's what we'd **really** like to know. An example of the "Cursor Position Report" is given in the H-89A operation manual, page 5-6, but does not seem to answer your criteria. This would indeed be very useful; does anyone know how to get at this from a program? Or is it, pardon the expression, impossible? If you have this info **please** help -- we don't.

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