

SORCERER'S APPRENTICETM

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EVALUATIONS

by Emiliano De Laurentiis

After a long winter sojourn, it is a pleasure to review some fine products that I received this week from Global Software Network (i.e. Howard Arrington). In this issue I will review two games which Howard submitted to me. In the next issue Database System II and Super Disassembler will be reviewed.

Missile Defense, written by Roger A. Kemp, is the Sorcerer version of the Atari Missile Command game. The keypad keys, or a joystick, control the missile sight that is used to aim one of four missiles to an approaching enemy missile. In the opinion of one person on whom I tested the game, the representation of the city is very well done, but the explosions are monotonous, too symmetrical, and predictable. It is not too difficult to obtain a high score in missile defense (I obtained 26000 in the first hour). The highest score obtainable is 32700. The existence of such a limitation also limits the challenge of the game. Where do you go once you have reached the limit? Younger computerists may find the game interesting, but since my greatest competitor in Galaxians is an eleven year old, I doubt this too.

In all fairness to the author and publisher of missile defense, let me say that many of the limitations of the game are due to the limitations of the Sorcerer. If this game were written for the Atari by making use of the Ataris' state of the art graphics capabilities it would be as good as, if not superior to, Atari's own Missile Command.

Howard also submitted CHOMP. This program was reviewed by Ralph LaFlamme in the December issue. I can only add the following comments to Ralph's rave review...Yes, Yes, Yes... this is an excellent game. May I add that the new version has joystick control and sound. It is a definite plus in the excitement that CHOMP delivers. And do not expect just random tones. CHOMP sounds include munching, music, and a guttural burp when you eat the cherry. Do you think that it is because of the absence of violence in this game, and because of the gastronomical connotations that this has become the most popular arcade game for women? ●

ODDS & ENDS

by Ralph LaFlamme, Editor

I would like to start off by thanking Don Gottwald for putting out the last issue for me while I was on vacation. It's a lot of work especially when you haven't done it before. We've gotten some complaints about some of those issues. Some had blank pages or were badly stapled. If you have such a copy, please return it and we'll send you another. We want those copies back so they can be returned to our printer. He apologizes for them.

We have also received a number of complaints about non-delivery of some issues. Please let us know if you've missed an issue. We'll get another out to you. We want to know about any problems you are having in this regard. We want to file a complaint with the Post Office and need your input to do so.

We appreciate the numerous articles on the MX80 printer and will continue to publish them (more in this issue) but we would also like articles on interfaces for other printers as well.

We also need articles on various disk systems, such as the Vista, Discus, Morrow, etc. Please help your fellow member by submitting articles on how you interfaced your drives to the Sorcerer.

Your contributions of articles have been the key ingredient in our success and am looking forward to another very successful year with this Newsletter. I must, however, ask your indulgence once again. We are beginning to get low on articles and need your help. If you have any programs, routines, observations, reviews, successes or failures that may be of interest to others, please send them along. We still haven't published anything on sound generation/recognition, light pens, bar code readers, MicroNET, Source, etc. If you have any particular area of interest that we have not yet covered, please send along your request. We'll see what we can do to help.

In this issue, we are beginning publication of Roger Hagan's spreadsheet program. This is quite a long RamPac Basic program. As received, it runs to 19 pages. In this issue, we have included what is equivalent to five of those pages. This will require several issues to publish. If you don't want to be bothered going through all the hassle of keying it in then debugging that, or you want a disk-based version, then see Roger Hagan's column, *The Office Sorcerer*, elsewhere on this page, for ordering details. If you want to key it in but don't want to wait for the whole program to be published, then Roger has given us permission to distribute hardcopy versions for \$5 to cover our costs. Just send us a check or money order, and we'll send you the whole thing pronto.

I am pleased to announce that Tim Huang, our FORTH Editor, has authored a CP/M version of FORTH for the Sorcerer I or II. He has been under contract to Exidy Systems, Inc. since last fall, to produce this new

customized Z-80 version of FORTH for the Sorcerer. This runs under Mentzer's CP/M 2.2 or Lifeboat's 1.4. An Exidy version is in the works and should be ready soon. This \$120 package includes a FORTH disk, a screen disk (loaded and another on the way), his new book **AND SO FORTH** (20 chapters, 5 appendices and more than 300 pages - \$25 separately), current update notes for a year, postage and handling. We have a copy on the way and will do a review in a future issue. We will have more details, however, in the next issue. If you wish more information, or wish to order a copy for yourself, you may contact: Tim Huang, 9529 N.E. Gertz Circle, Portland, OR 97211 tel. (503) 289-9135; Roger Hagan, 109 Belmont Place, Seattle, WA 98102 tel. (206) 394-5034; or Arrington Software Service, 9522 Linstock, Boise, ID 83704 tel. (208) 377-1938.

Some of you may be wondering why we are not offering surface subscriptions for overseas members. Well, we've had many complaints due to extremely long delays in delivery of issues (120 days or more) and in some cases no delivery at all. Since we have no control over the mail in any country (including the USA) we've decided that Airmail is the best way to assure that our members get the Newsletter.

We've had to raise the cost of the Newsletter (to \$24.00 - same as USA First Class) to Canada and Mexico, since we cannot bulk mail to these countries and must, therefore, pay First Class postage. We hope this answers some of you inquiries regarding the price of the Newsletter.●

THE OFFICE SORCERER

by Roger Hagan

This month I commence printing a commented listing of my Spreadsheet program in the Rompac Basic version. As you will see from its 17K size, \$47.50 is hardly adequate compensation for the hours you will spend typing the program and debugging it for your typos. The disk Basic version is in a different vernacular, and its price, \$75, is even worse compensation for the effort you will make to convert it, split it into three overlays, and type it etc. But if you type it anyway, write me if you want a manual, SAMPL sheet file, and occasional update memos. I'll get you there for \$20 or so. I ask only that you include my copyright line in your version, so that my copyright remains valid. Publication of the program does not mean that I relinquish copyright. You may not sell or distribute your typing of the program.

First some news, possibly old when this reaches you. Exidy Systems is leaving Silicon Valley and moving to Texas. As of this writing (mid-January), Paul Terrell is out as president, Ramona Fleck, a point of contact for many dealers, is out, the service department is unpopulated, and the company is directed by a

management consultant hired by BioTech, the owners. Neither the consultant nor Terrell has supported a proposed plan to sell spare parts and diagnostic supplies to servicing dealers, so none of us have them, which is doubly unfortunate at a time when the plant has no service capacity. Exidy in Texas will concentrate on developing a new Sorcerer, and some peripherals in the current catalog such as the S-100/Video display unit, which seemed like a good idea, will never be made. Support of current systems after the move is an open question.

Random reports: I have received a good report from a Sorcerer user on the bargain spelling check program, WORD, from Oasis Systems of 2765 Raynard Way, San Diego, CA 92103. Like Spellcheck it works on any Ascii file. Unlike it, it has a 45,000 word dictionary, displays the correct spelling on request, and costs \$75.

The same user reports difficulty with Vandata's CBasic business program package in the matter of screen formatting, specifically an unwanted linefeed after 50 characters. This in spite of a Sorcerer set-up routine built into Vandata's package. We are contacting Vandata and hope to report an easy solution. He has 8" drives and had no trouble getting CBasic going from a standard disk from Compiler Systems. He is most enthusiastic about the new three-author Osborne book on CBasic.

Another reader reports that Triangle Systems has not responded in some few months to a prepaid order.

Exidy no longer offers 8" drives due to trouble with the Morrow systems they had been packaging. This may be related to the report from a San Diego user that the California Computer new model (2422 Rev. A) System card controller for 8" disks, no longer works well with the Exidy due to long delay states in the Sorcerer RAM. I will gladly pass along reports of 8" drive controllers that work well with our systems.

Exidy has stated that their Exidy CP/M 2.2 can be provided for an upgrade price to owners of CP/M 1.4, if they can provide the serial number to the dealer and evidence that they are the purchaser. We expect that returning the original numbered system disk will serve as well as an invoice. I believe that Exidy's CP/M operates faster than Lifeboat and Mentzer CP/M, due to differences in the keyboard routine, buffer size, and sector arrangement, but am awaiting an opportunity to run the same files through the two systems.

Finally, here is a tip on an eternal bug in the Word Processor Pac. If you save a file on cassette which includes a 26 space indent, using the Indent key, the file will not reload beyond that point. Reason: the Indent key puts "1F 1A 1F" in RAM for "Indent 26", and 1A is also the tape end-of-file symbol, triggering an ending procedure in the Pac and the placing of an 03 end-of-file symbol in RAM. Cure: never use a 26 space indent.●

Roger Hagan Assoc., 1019 Belmont Place E., Seattle, WA 98102

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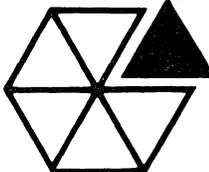
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WPAC - DEV PAC CP/M - LINKER

by Dr. Daniel Little

I would like to share my experiences in relocating the Word Processor Pac using the procedure MOVIT listed in SA 3.1 and interfacing it with the Development Pac.

First, I find the code contained in my Pac is somewhat different from the author's. I have an early version of the PAC on EPROM. There were evidently some changes made later. Consequently, the author's fixes are incorrect for my Pac. In order to fix the relocated code, it was necessary to disassemble both the Pac and the relocated code, and then compare the two listings line for line. The main error which MOVIT makes is to occasionally misread data as an LD command. This error can be easily detected since the two listings will list different instructions. The fastest way I found for comparing the two listings was to put one on top of the other and hold them up to a desk lamp. Differences in the listings are quickly apparent.

Secondly, I use a CP/M system with DISKDRIV.COM, which allows the WP Pac to create and read CP/M text files. I found the DISKDRIV.COM package to also include a revised version of the Word Processor Pac, addressed to run at C000H. I used MOVIT to relocate this code, and corrected the errors by comparing the two listings (before and after relocation). It was necessary to relocate the code to 4000H rather than 5000H, since CP/M resides at 6800H. When the Pac (or the revised version) is located at 4000H, it has full disk capabilities.

The revised version contained in DISKDRIV behaves somewhat differently than the Pac. It has the same commands, but the cursor blinks more slowly and the keyboard routine picks up characters more quickly. I tend to drop characters when typing quickly with WP PAC; this doesn't happen with the new version. What does happen, however, is that the keyboard routine tends to repeat a character in lower case when an upper case character is entered; This is Wwhat is Mmean. (Not so frequently, but often enough to be annoying.) Also, the system crashes if an illegal command is entered -- e.g. 'N' -- rather than responding with the "INVALID ENTRY" message.

I am using the relocated revised WP as a disk-based editor for BASIC and the Development Pac. I've written a short formatting program which converts a WP file in memory into a DEV.PAC file. I've inserted a new command into the relocated WP: G causes control to jump to the format program, which in turn jumps to the DEV.PAC cold start. (See SA 3.1 and SA 3.3 for other applications involving new commands for WP.) This is a simple way of interfacing the DEV.PAC with CP/M. Files can be created, written, and read using the relocated WP while the DEV.PAC is installed, then the source file can be reformatted in memory and control shifted to the DEV.PAC. The source file can then be assembled and linked to the run address, then the code can be moved to a safe area (i.e. 3000H) and CP/M reinstalled. Finally, using CP/M's DDT the code can be moved to 110H, with a short block move program at 100H (see SA 3.3), and the code can be saved on disk as a .COM file. This makes the DEV.PAC as convenient as any other disk-based assembler, since the DEV.PAC permits linked loading and global symbols.

To reformat the WP file, three things are needed. First, the file must be moved, since DEV.PAC expects source code in high memory. Second, WP does not use LF's, whereas DEV.PAC does, so LF's have to be inserted. And finally, WP ends a file with 03, whereas DEV.PAC ends with 00 00. All three of these fixes are quite simple. (I have also found it convenient to limit line length in the WP file to 55 characters, since otherwise the assembler of DEV.PAC will create lines longer than 80 characters.)

In order to insert LF's, I use WP to insert a dummy character (%) where the LF should be, and then a simple machine language routine to replace '%' with LF. To use WP to insert '%' after every carriage return, just put '%' in the buffer, then enter the following command:

COMMAND: T/100F1/U/

(The number 100 is just an example. You should use the number of lines in your program and there should be a '%' after the last line.) Now type 'G' and the word processor will shift control to FORMAT, and then to DEV.PAC. This leaves you in the DEV.PAC with the drivers configured for assembly, and with :SI pointing to a modified Centronics

routine. You can also still use the editor of the DEV.PAC, although you must use WP to make changes in the disk file.

This program also provides several useful I/O drivers for DEV.PAC: a display delay routine (DELAY) which allows the user to stop screen display during an assembly listing, and a Centronics routine which allows you to send LF to the printer. (To use DELAY for :CO it is necessary to install it using the M :CO command; a coldstart of DEV.PAC sets :CO to :SV.) The print routine supplied here is useful because Exidy's CENTRON routine in the Monitor strips off the LF; this means that the printer must be set to auto-LF, which is inconvenient for word processing. (For word processing it is necessary to be able to separate CR and LF in order to pass over the same line for underlining.)

I link this program to run at 80H, but store it immediately below the relocated Pac (3F00H), along with a short block move program to move it to 80H when it is called. (Since finishing this program I've run into one annoying feature. The Centronics routine outputs a formfeed every 56th line. But it doesn't reset the linecount (LNCOUNT) at the end of assembly. This means that if you do a second assembly, the linecount will simply pick up where you left off with the first run. In order to block this, simply use the M: command of the DEV.PAC to enter 00 into LNCOUNT (START+3 in the listing). ●

```
; THIS PROGRAM INTERFACES ZSM WITH WPSK. IT UTILIZES
; WPSK AS A SCREEN EDITOR--THEN MOVES TEXT INTO HIGH
; MEMORY FOR ASSEMBLY. IT THEN SETS UP DEV.PACK WORK
; AREA AND JUMPS TO WARMSTART.
```

```
;
; PSECT REL
;
TXBUFF EQU 3E80H ;BEGINNING OF ZSM TEXT
BLSIZE EQU 3E80H-80FH
WPBUFF EQU 80FH
VIDEO EQU 0E01BH
QCKCHK EQU 0E015H
COLDST EQU 0C000H
OO EQU 0F020H
SI EQU 0F026H
SO EQU 0F028H
OI EQU 0F022H
OO EQU 0F024H
AI EQU 0C5F5H
AO EQU 0C60AH
BI EQU 0C61EH
BO EQU 0C624H
CR EQU 0EH
LF EQU 0AH
FF EQU 0CH
;
; ORG 0
; JP FORMAT
LNCOUNT DEFB 0 ; PRINT ROUTINE SETS PAGE
; LENGTH TO 55 LINES--THEN
; SENDS FORMFEED
PRINT ID A,D
CALL VIDEO
CALL CENTRO
CP LF
RET NZ
ID A,(LNCOUNT) ; CHECK FOR PAGE LENGTH
INC A
ID (LNCOUNT),A
CP 37H
RET NZ
ID A,FF
CALL CENTRO
ID A,0
ID (LNCOUNT),A
RET
;
CENTRO PUSH AF
JP 0E99BH ; ROUTINE LEAVES LF'S IN
; OUTPUT STREAM
;
DELAY ID A,D ; ESC OR RUN/STOP INTERRUPTS
CP 0EH ; LISTING AS LONG AS KEY IS
JR NZ,CUT-§ ; DEPRESSED
CHECK CALL QCKCHK
JR NZ,CHECK-§
CUT ID A,D
CALL VIDEO
RET
```

(continued on next page)

```

FORMAT ID HL,WBUFFER ; MOVE TEXT UP TO TXBUFFER
        ID DE,TXBUFFER
        ID BC,BLSIZE-10H
        IDIR HL,TXBUFFER
NEXT ID HL
      ID A,(HL)
      CP 03H
      JP Z,CLOSE
      CP 25H
      JP NZ,NEXT
      ID (HL),LF ; INSTALL LF FOR TARGET CHAR
      JP NEXT
CLOSE ID (HL),00H ; REPLACE 03 BY NULLS FOR
      INC HL ; END OF TEXT
      ID (HL),00H
;
SETUP ID HL,PRINT ; :SO IS INITIALIZED TO CENTRO
      ID (SO),HL
      ID HL,BO ; :SI IS INITIALIZED TO :BO
      ID (SI),HL
      ID HL,AO ; :OI IS INITIALIZED TO :AO
      ID (OI),HL
      ID HL,AI ; :OO IS INITIALIZED TO :AI
      ID (OO),HL
      JP COLDST ; COLDSTART DEV.PAC
;
; :CO SHOULD BE INITIALIZED TO DELAY AFTER DEV.PAC
; SIGNS CN.

```

W-PAC TITLING AND PAGE NUMBERING

by Emiliano De Laurentiis

There may be some concern by those who have the Exidy Word Processor Pac, that there is no built in way of titling and numbering pages so the first page is not numbered, and may or may not have a header. The programmable feature of the WP Pac makes such features possible. The following two Macros will accomplish just that.

The first Macro will print a title on the top of each page and start numbering on page two only. The second Macro will print neither a title nor a number on page 1 (your title page) but will print a title on the second page and both a title and number on page 3 which is in reality the second page of your manuscript since the first page is only a cover page.

In the following descriptions, the comments are not to be placed in the Macro; they are just for descriptive purposes. Enter your Macro at the end of the file, and press "a" when in command mode. To execute the Macro, simply type in "a!". Printing will automatically begin from the top of the file. The first line of your file should contain the header title left justified on the screen.

Macro to title from page one and numbering starts at page 2.

Macro	Comments
y / / 1	Select page title option
t/f1/pxx	Go top/forward 1 to skip title/ Print XX lines. XX=page length.
1s/YYY/YYY 2/	Search string YYY and add number 2 to it. The search string is the title at top of file.
i	Pause to insert page 2
fXX/p	Forward page 1 (of XX length) and print rest of file

Macro to start title on page 2 and start numbering on page 3.

Macro	Comments
t/f1/pXX	Print 1st page
y / / 1	Select titling option in y table
i	Pause to insert page 2
pXX/t	Print page 2, goto top to insert page number in title for page 3 which we shall call page 2
1s/YYY/YYY 2/	Add number to title
i	Pause to insert page
fXXXX/p	XXXX=2*XX (i.e. 2 pages)/print remainder of file

I hope that these Macros will prove useful to you WP Pac users. ●

RELOCATED W-PAC WITH J COMMAND

Reviewed by Mark Northrup

The SORCERER'S APPRENTICE Users Group has been working on relocating the Word Processor Pac into RAM, and to send the edited BASIC code to the BASIC ROM-PAC.

The copy I made worked very well. There were very few bugs in the relocated version. One problem was that the relocated Word Processor did not "know" it had been relocated at 5000 hex, and would write over itself. To fix this, load the relocated Word Processor, then type EN 5015 <CR> (Carriage Return)

```

5015: CD 87 70/<CR> CALL ADJUST
then type: EN 7087 <CR>
7087: 23 <CR>      INC HL
7088: 7C <CR>      LD A,H
7089: C6 CE <CR>   ADD A,0CEH
708B: 67 <CR>      LD H,A
708C: C9 / <CR>   RET

```

There are only two other problems. The first is the RUN command which will give an OS error on the newly loaded program. This problem can be corrected by prefacing the program listing with a CLEAR nnnnn command. The other problem happens when there is a program already "active" with BASIC; this will cause some lines to be redefined. This problem requires that you preface your Word Processor program with a NEW command.

The J command method of processing offers many advantages such as batch and command list (CLIST) procedures. I tried several job streams and CLIST's. They went extremely fast, although they cannot be stopped by the RUN/STOP button. The direct mode commands all execute as noted in "A SHORT TOUR OF BASIC". The batch job streams will not allow the values of the variables to be used by different programs in the batch. This is just like in most large systems. Despite this seeming disadvantage, the batch and CLIST capabilities really enhance the power of the Sorcerer, giving us powers like text-files on the APPLE II computers using DOS.

This package is a powerful enhancement to the Sorcerer, and provides new opportunities for using the Word Processor.

Mark Northrup, 9212 North 70th St., Milwaukee, WI 53223●

Saving Word Processor Pac Files to Disk

by Bryan Lewis

The following procedure will transfer WP Pac files from cassette to disk for use with Spellbinder. The mechanism is simple: the file is read from cassette, moved down a little in memory, and saved on disk. The only troublesome step is calculating the number of pages of memory to save.

- Power up the Sorcerer with the WP Pac in place.
- COMMAND: X Exit to the Monitor.
- >GO BC00 Cold boot CP/M.
- Reset the Sorcerer to get back to the Pac.
- COMMAND: M Find the memory space available with no text. (If the disk is at BC00, then this is 30360.)
- COMMAND: R Read the cassette file as usual.
- COMMAND: M Find the memory left over now. (Let's use 27913 as an example)
- Calculate the space used by the file, first by taking the difference between the memory readings, e.g.:
 $30360 - 27913 = 2447$
Divide by 256, round up: $2447 / 256 \text{ ---} \rightarrow 10$
- COMMAND: X <cr> Back to the monitor.
- >MO 80F 5800 100 Move the file down to 100H.
- >GO 0 Warm boot CP/M.
- A>SAVE n FNAME Save, with n = result from above (10 in the example).

Note: if the cassette file is very big, there is a risk that it will overlay part of CP/M. The second M command should give a result of at least 10,000 to be safe. ●

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BITS & BYTES

by Jonathan Burnett

In the last issue I mentioned that I would now begin a series of tutorials on the use of the Z80 Assembly language. Since that article was written, I've started receiving mail about this column. Aside from their gracious compliments, (its nice to have fans!), they posed some very good questions who's answers could benefit others if they were published. So, I will answer some member questions for now.

I'd like to start with Julius Loftsson's questions regarding some difficulties he experienced in using the INDEX registers (IX & IY). Here is his example program:

```
START EQU $
      ID IX,1200H ;LOAD 1200H INTO REG IX.
      ID A,(IX) ;LOAD VALUE (POINTED BY IX),
              ;INTO REG A.
      CALL 0E01BH ;PRINT CONTENTS OF REG A ON
              ;THE SORCERER'S VIDEO SCREEN
      RET ;RETURN TO CALLER.
```

He assembled this program, and then typed 'GO' to the program's start address (this forces the Monitor to execute a Z80 CALL to your program). The program ran successfully and then returned control to the caller (the Monitor). So far, so good! However, when he tried the same program, substituting register IY for IX, some very disturbing and (seemingly) mysterious things happened. First of all, the character at location 1200H was properly displayed on the video screen, but then when control returned to the Monitor, the PROMPT character had changed. He also noticed, that the area near 1200H had been corrupted by what appeared to be Monitor commands.

Well that last one was really the clue to it all! Apparently, what is not very well documented, is the fact that the Exidy Monitor ROMS use register IY as a pointer to its WORK AREA (MWA). In this work area, is stored (among other things) the Monitor PROMPT character, and the Monitor's keyboard buffer area (the place where commands are kept until you press RETURN). Monitor release V1.0, assumes (a bad thing to do around computers!) that register IY always points to its MWA. Well, when the Monitor again got control, you can now imagine why it did what it did to the area around 1200H. Though he didn't say in his letter, I'll bet the machine locked up and he had to press the RESET keys to get things going again. The reason? Also contained in the MWA, are the vectors for the keyboard and the video drivers. The Monitor uses the addresses found at those points, just in case you might have setup some other device driver, like a tape drive for input, and a printer for output. Well, what he found at those locations near 1200H, were very probably not addresses of executable routines in the ROMS or anyplace else for that matter! The result: instant catastrophe!!

If you had wondered why the CALL 0E01BH was still able to correctly output register A to the video screen, it was because E01BH is the direct address of the video driver found in the Monitor ROMS. Had Julius CALLED 0E009H, which derives the video driver address from the MWA, he would have met with disaster before his program had ended!

Well you might think that this means you can't use register IY ...Right????...Wrong!!! Actually, you can still use it very easily. You can PUSH it onto your STACK when you first get control, and then POP it back to normal, whenever you return control to the Monitor. Sounds good, but wait! What if you have to call some of the Monitor's routines from your program? That's right, most if not all of the Monitor routines use the MWA, so IY has got to still point to it. The solution is still simple: first before calling the Monitor, save your register IY either on the STACK or wherever it is convenient. Now CALL 0E1A2H. This Monitor routine, will re-determine the location of the MWA, and load it into register IY, and then return control to you. Now you can safely call any Monitor routine, and be assured success! Upon return to your program, you can restore IY back to your own value. Just remember, that before exiting completely to the Monitor, be sure IY points to the MWA.

Another (though not recommended) way of locating the MWA, is by examining locations F000 & F001 HEX. There you will find the top-of-RAM location. The MWA is

located 110 (6E HEX) bytes BELOW this. Provided your program does not modify these locations, you can count on its accuracy. WARNING: If your program does modify this area, then you must not call any Monitor routines. The top-of-RAM is used as a reference in several places within the Monitor. The result will be a total system crash.

Any of you users that have the Monitor ROMS release V1.1 will not experience the problems Julius has had. As published in the SORCERER'S APPRENTICE VOL 2, NO. 4 page 35, a fix was made with these ROMS that stops the Monitor from assuming that register IY is OK. It will, upon return to the Monitor, reset the IY register to point to the MWA.

A letter from Richard Stone relates some troubles he was having with his DEVELOPMENT PAC. He had observed that whenever he used the 'ORG' pseudo-operator, the value used as its operand was being taken (mistakenly he felt), to be in DECIMAL rather than the HEXADECIMAL that he really wanted it to use. He did observe, that by placing the letter 'H' next to the value, the assembler did correctly recognize the value as HEX. Well, this one is easy. On page 49 of my DEVELOPMENT PAC manual, you will find an easily overlooked sentence, that just about says it all. "There are five types of constants, but the default is DECIMAL. A number can be (optionally) denoted as decimal by following it with the letter 'D'. Hexadecimal constants must start with a digit from 0 to 9 and end with the letter 'H'. Octal constants must end with either the letters 'Q' or 'O'. A binary constant must end with a 'B'." Note, that these rules apply to all usages of numeric values as they appear in the assembly source code, not just in regards to the 'ORG' statement.

His other question concerned his inability to get his assembler to properly calculate the values for the RELATIVE JUMP instructions he was attempting (so far without success) to use. To answer his question, no this is not a bug. It is confusing, especially to someone already familiar with other Z80 (usually disk based) assemblers. Again I reference page 50 in my DEVELOPMENT PAC manual, "When using relative addressing, the current value of the program counter must be subtracted from the label if the branch is to be made to that label address. For example,

```
NAME JR NC,LOOP-$
```

will transfer control to the location 'LOOP.' Since he didn't supply me with an example of his procedure, I could only presume he made the error of not subtracting the current location (-\$) from the label you were jumping to. Those of you that have used 'other' Z80 assemblers probably never had to do this. The assembler itself was 'smart' enough to know that a relative jump instruction required this 'customary' calculation, and would do so for you automatically. Likewise, the assembly language source code of programs published in magazines and books, may or may not show the use of the '-\$'. It all depends upon what assembler the author was using. In any case, we as DEVELOPMENT PAC users must use it, in order for the proper offsets in all relative jump instructions (this includes DJNZ), to be calculated correctly.

To both Julius and Richard, thank you for taking the time to write me about my column. This sort of 'feedback' really helps me to direct this column's material, in the directions that will be of most benefit to the readers. So to all of you aspiring (or exasperated!) programmers, keep sending those cards and letters, and I'll try my best to answer them to your full satisfaction in this column. (Any of you that prefer or require a more rapid or private response to your inquiry, please note that in your letter, and supply me with sufficient information as to how to contact you.)

I'll also try to cover the areas of your particular interest. Julius wrote and suggested I spend some time covering the CASSETTE mode of operation within the DEVELOPMENT PAC. Your wish is my command, in the next issue I have prepared some material on the subject, that I hope will adequately cover it. Actually, I find the cassette operations to be the most difficult, so I have written a couple of programs that I think will make things easier whenever you have to use the PAC. If space permits, I'll have the source code in the same issue. I also hope to be able to answer more questions.

So until then.....have FUN! ●

ON-LINE

by Robert Hageman, System Operator

A few announcements:

1. My by-line, DUSTINGS FROM THE LIBRARY, has been changed to ON-LINE. This mirrors my change in post from Librarian and Sysop to System Operator.
2. Bruce Blakeslee, our new Disk Librarian, will handle our Mikropolis CP/M disk library. His address is: 906 Crestwood Rd, Westfield, NJ 07090. Bruce has all the CP/M User Group and SIGM disks. Copies of any of these disks may be ordered by:
 - a. Sending a formatted disk and \$3.00 for each disk ordered... OR
 - b. Send \$8.00 per disk and we'll provide the disks.
3. Jonathan Burnett (by-line, BITS & BYTES) will handle all tape programs. The Tape Librarian may be contacted by writing:

Tape Library
Sorcerer's Apprentice
P.O. Box 33
Madison Heights, MI. 48071

This is a new library. Some of you may remember a program exchange, which was run by Ralph Ruh in Ohio. This program exchange was Ralph's and was not connected to the Sorcerer's Apprentice. As material comes in and is catalogued, we will publish a listing.

+++ +++ +++

Owners and future owners of Gerald Neil's EDOS (Copyrighted by System Software), please take note. There is a better way to modify the Mikropolis controller board to address it to BC00H. Exidy's November 1980 Technical Note No.3 documents a method allowing you to have 47K of RAM in the machine. You do not have to reduce a 48K machine to 32K by pulling out 16K of chips. Just complete the following steps:

1. In the S-100 Expansion Unit:
 - a. Jumper S-100 bus pin 21 to IC 1A-pin11.
 - b. Jumper IC 1A-pin9 to connector J3-pin46.
2. On Mikropolis controller Printed Circuit Board (PCB):
 - a. On PCB component side:
 - i. Remove all jumpers at location D4.
 - ii. Jumper IC D8-pin4 to IC D8-pin8.
 - iii. Jumper IC D8-pin9 to connector J1-n21 (bottom edge connector).
 - b. On PCB circuit side:
 - i. At IC D8, cut trace from pin2 to pin4.
 - c. Boot address is now at BC00H.

This is a little more work than System Software's mod but then you don't have to resort to: "If you have 48K RAM, simply remove or disable the top 16K RAM to change back to 32K."

+++ +++ +++

I received the following on Keith Petersen's system when I sought an answer to a member's question:

1. Bob, I "overheard" your query to Keith regarding printing from MBasic. The file you want is called SETUP.ASM. I am not sure its on Keith's system, but it is certainly on a number of RCPM's. Charlie.
2. Bob, Charlie is right - SETUP.ASM is one good approach. You will find that on hard disk B:. It does have the disadvantage that it must be run beforehand and should never be run more than once. Another approach is to implement the IOBYTE. See NSUSER5Z-ASM on hard disk A:. That's a full implementation of IOBYTE and takes a fair amount of room, but you could strip out the unwanted parts and set it up so that console output would go to console if IOBYTE=01H and to console + line printer if IOBYTE=03H. Keith.

Our member also wanted information on doing the same thing from Mikropolis Basic. Examination of the MDOS ASSIGN function leads me to believe the @DIPORT and @D2PORT addresses can be POKEd to control console output. @DIPORT is at 04EAH (1258 decimal) and @D2PORT is at 04BBH (1259 decimal). Physical console output is controlled by the @DIPORT byte, a value of 1

directs the logical stream to the CRT while a 2 directs the stream to the printer and a 3 will send the output to both printer and CRT. Physical printer output is likewise controlled by the @D2PORT byte. Also found during this examination, location 0511H (1297 decimal) contains NULLS+1 while location 0512H (1298 decimal) contains WIDTH.

Keith was also kind enough to leave the following on RCPM-Sorcerer (Reprinted, with permission, from Mar/Apr 1981 issue of *Microsystems* magazine, Box 1192 Mountain-side, NJ 07092):

BASPRINT.DOC

Choosing Between CRT Output and Printer Output
by Bob Kowitz
1727 N. Jerusalem Rd., East Meadow, NY 11554

Some versions of Basic allow you to specify while running your program whether you want to output to your CRT terminal or to your printer. Unfortunately, one of the most widely used and powerful Basics, Microsoft Basic, does not. If you use the methods proposed in the user's manual, you are told to use the command PRINT to go to the CRT terminal and the command LPRINT when you want to output to your printer.

There is, however, a way you can bypass this deficiency if you are using Microsoft Basic Rev. 5.0 or later, under CP/M. Locations 0000, 0001, and 0002 contain the jump to the BIOS in CP/M. Microsoft Basic uses the data stored at these locations to direct your output as you have chosen with the commands PRINT or LPRINT in your program. Using this same information, you can locate the point in memory that contains your routine to write to the terminal or to the printer.

You can bypass the use of LPRINT by fooling the Microsoft Interpreter. In Microsoft BASIC 5.0 and higher, this data is stored at a location between 16000 and 18000 (decimal), depending on which release you are using. The location changed during the modification of Microsoft Basic to eliminate bugs that were discovered after the original release. By including the following routine within your program, you can redirect the output in either direction at runtime rather than being forced to duplicate the code when writing your program. You cannot poke the data directly into the jump table of CP/M because Microsoft Basic does not use this jump table after finding its location.

Lines 60 to 100 define your variables and prepare your program for further input during your program.

Poke F,OT (line 160) should be inserted before each point at which you may want to change the output. Poke F,C (line 180) should be inserted to get output back to your CRT terminal. Line 180 must appear at the end of your program, otherwise you will be locked into your printer and not your CRT at the end of the program. Your keyboard will still be entering data to your computer but there will be output to the printer and not to the CRT.

```
10 ' *****
20 ' SAMPLE PROGRAM
25 ' *****
27 'To operate the printer, fill F with PRNTBYTE
30 'To operate console, fill F with CONSOLEBYTE
31 BIOSBOTTOM=(PEEK(2)*256+PEEK(1))
32 PRNTBYTELOC=BIOSBOTTOM+13 :
   CONSOLEBYTELOC=BIOSBOTTOM+10
33 PRNTBYTE=PEEK(PRNTBYTELOC) :
   CONSOLEBYTE=PEEK(CONSOLEBYTELOC)
34 C=CONSOLEBYTE 'F is the location within MBasic
   that directs the output to the CRT or printer
35 FOR I=16600 TO 18000
36 IF PEEK(I)=CONSOLEBYTE AND (PEEK(I+1))=PEEK
   (CONSOLEBYTELOC+1) THEN 38
37 NEXT
38 F=I
110 '
120 INPUT "Do you want P(printer) or
   C(console) ";CHOICE$
130 OT=C
140 IF LEFT$(CHOICE$,1)="P" THEN OT=PRNTBYTE
150 '
160 POKE F,OT
170 PRINT "This is a demonstration of print output
   selection"
180 POKE F,C
190 END
```

If you get trapped in printer mode, simply type: POKE F,C,(cr), to regain control and output to the console.●

SAVING BASIC PROGRAMS ON MICROPOLIS DISK

from Jan 1980 S.U.N. by Peter Hunter

(Condensation submitted by Bryan Lewis)

Here are the steps to save RomPac BASIC programs on disk:

Power up with the BASIC RomPac inserted and enter the following:.

```
LOAD          Load the program.
RUN           This sets up BASIC's pointers.
(CTRL-C)     Interrupt it if you wish.
BYE          Exit to Monitor.
MO 3000 4F00 6000 Move the program up in memory.
MO 0000 2FFF 3000
GO BC00      Boot the disk.
LOAD "SAVEBAS" Retrieve the relocating program given below)
DUMP 31B7 31B8 Note the ending address END.
31B7 ENDLL ENHH (It's in reverse-byte order: END=ENHH ENDLL.)
```

Calculate NEWEND=END+3000H (just add 3 to high digit).

```
SAVE "NAME" 2FD0 NEWEND 18 2FD0
```

In the future, you only have to type in the NAME of the program, and it will load, relocate itself, and jump to the RomPac. Just type RUN when you see the READY message.

+++ +++ +++

SAVEBAS - by Peter Hunter

(disassembly by Bob Hageman, SA System Operator)

This routine is only applicable to systems where the disk controller board does not conflict with the RomPac area of memory. Enter and save hex code under MDOS.

```
2FD0 00          NOP
2FD1 00          NOP
2FD2 21 E0 2F    ID HL,2FE0      ;Relocate Relocator in user
2FD5 11 00 FE    ID DE,FE00      ;definable graphics area
2FD8 01 20 00    ID DC,0020
2HDB ED B0      IDIR           ;Do move
2HDD C3 00 FE    JP FE00         ;Go do it!
2FE0 21 00 30    ID HL,3000      ;Relocator
2FE3 11 00 00    ID DE,0000
2FE6 ED 4B B7 31 ID BC,(31B7)   ;Get program length
2FEA ED B0      IDIR           ;Move to low memory
2FEC CD B1 E9    CALL E9B1       ;Have Monitor init. video board
2FEF C3 FA DF    JP DFFA         ;Warm boot to RomPac
```

THE SORCERER'S SPELL

This unique and economical spell-correction system has been improved again. Now it checks files on disk or in memory that have been created either by Exidy Word Processor RomPac or by Spellbinder. To demonstrate its capability, SPELL's performance has recently been compared with that of five spelling-correction programs for CP/M-based systems. Using the test program given by Phil Lemmons in the November, 1981 BYTE, SPELL had the fastest time to identify and make all corrections. And that time included adding new words to its dictionary. In fact, it was over **three times faster** than WORDSEARCH and **1 1/2 times faster** than SPELLGUARD. Moreover, despite the larger dictionary in SPELLGUARD, it found fewer suspect words that were not misspelled. Available on tape so that any Sorcerer owner can load it in and then put it on disk. Requires CP/M and a minimum of 32K. The price is **\$100**, including postage.

STALEY'S SORCERER SOFTWARE
3497 School Rd., Murrysville, PA 15668

**EPSON MX-80 F/T PRINTER DRIVER
FOR EXIDY WORD PROCESSOR PAC**

Copyright by Herman Huni, May 1981

The EPSON line of printers have several operating features and character fonts that are activated by sending the appropriate control bytes to the printer. These special features can be selected when using the machine-language printer-driver program listed below.

To use the program, proceed as follows:

1. Turn on the computer with the Exidy Word Processor Pac in place. Enter Y in the COMMAND MODE and set PRINT DEVICE to 1.
2. Exit the Word Processor and enter the system Monitor. (Enter X in the COMMAND MODE)
3. Load the printer driver program.
4. Type "GO 0" to start the program. You should now be in the EDIT MODE of the Word Processing System.
5. To select a printer function listed in the table below, type the appropriate control letter, move the cursor back over the letter using the cursor left key, type underscore (-) over the letter. The control letter is now shown inverted and will not be printed out.●

MX-80 Printer Function	Control Letter	ASCII Function Code
Double Width on	a	SO
Double Width off	b	DC 4
Condensed Width on	c	SI
Condensed Width off	d	DC 2
Emphasized on	e	ESC E
Emphasized off	f	ESC F
Double Strike on	g	ESC G
Double Strike off	h	ESC H
Line Spacing 1/6 in.	l	ESC 2
Line Spacing 1/8 in.	m	ESC O
Line Spacing 7/72 in.	n	ESC 1
Buzzer on	o	BEL
Buzzer off	p	DC 1
Printer on	q	DC 3
Printer off	r	DC 4
Data if no paper in	u	ESC 8
only if paper in	v	ESC 9
Clear print buffer	w	CAN

ADDR	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000:	21	09	00	22	E7	07	C3	FA	DF	EE	5F	C2	70	DE	21	15
0010:	00	22	E7	07	C9	21	1C	00	22	E7	07	C9	01	11	00	21
0020:	51	00	ED	B9	20	14	CB	21	DD	21	52	00	DD	09	DD	7E
0030:	00	DD	70	DE	DD	7E	01	DD	70	DE	21	09	00	22	E7	07
0040:	C9	61	62	63	64	65	66	67	68	6C	6D	6E	6F	70	71	75
0050:	76	77	0E	01	14	01	0F	01	12	01	1B	45	1B	46	1B	47
0060:	1B	48	1B	32	1B	30	1B	31	07	01	11	01	13	01	1B	38
0070:	1B	39	18	01	00	00										

DUEL - A Dogfight in Space

by Don Gottwald

DUEL is an addictive, competitive game available from Dayspring Computer Enterprises for \$20. In this two-player video encounter, you and your partner duel by each controlling your own space fighter. You can rotate in either direction, accelerate, and fire your gun using four keys for each player.

At the start of the game, you must choose one of four speeds for the ship speed, rotate speed and missile speed as well as one of four firing rates. The graphics and feel are realistic and captivating.

A newer, updated version was received just prior to publication so, to do this program justice, a more extensive review is being postponed until the next issue.●

USING GRAFTRAX-80 W/ SPELLBINDER

by Leslie M. Zatz, M.D.

I have customized my I/O section for the EPSON MX-80 printer with GRAFTRAX 80 graphic ROM's. This enables one to do underlining using the techniques described in the SPELLBINDER manual. It also provides for printing double spaced or in italics, condensed, expanded, condensed-expanded and emphasized modes by using the ! q-z in-line commands. Here are the modifications to be made to the

IOS file of CP/M 2.2:

a. Collect on one disk DDT, your IOS file (mine is called XIOS8D.ASM), your original SPELLBINDER file (mine is XSB.COM) and KEYBRD.HEX.

b. Rename the IOS file EPSNIO1.ASM and then EDIT it making the changes indicated.

c. Assemble EPSNIO1 and put the HEX file on the disk with DDT described in paragraph (a).

d. Follow the instructions provided to reassemble your complete program. This includes using DDT to load in the SPELLBINDER file, XSB.COM. Overlay the IOS file EPSNIO1.HEX. Then overlay the keyboard file KEYBRD.HEX.

e. Exit DDT and save the new version with - SAVE 85 ESB1.COM. This version will be the unconfigured version. You can then configure it for a precision printer add Y/N help messages and save the configured version for use. I call that version ESB.COM to distinguish it from the non-EPSON version, SB.COM.

Changes in XIOS8D.ASM to convert to EPSNIO1.ASM

The **** numbers refer to the lines in the original XIOS8D.ASM file. Some surrounding lines are given for orientation.●

```

**** 1:
; EPSNIO1.ASM MODIFICATION FOR EPSON 80
; PRINTER BY L.M. ZATZ, DEC.6, 1981. VERS. 1.0
; MODIFIED FROM
; IOS.ASM FILE FOR SPELLBINDER VERSION 5.03
**** 205:
; OUTPUT CHAR IN A REG TO EXIDY MONITOR CENTRONIX
; DRIVER. STRIPS LF'S FROM TEXT
HPOT:  PUSH PSW          ;SAVE NEEDED FOR DRIVER
        DB 0C3H,97H,0E9H; ;JP E997H
;
HPIN:  MVI A,6          ;AUTOMATIC ACK
**** 265:
CPR:   MOV A,C          ;PUT CHAR IN A REG
        ANI 7FH         ;STRIP PARITY
        CPI 5FH         ;UNDERLINE?
        JNZ HPOT        ;NO. GO SEND.
        MVI A,1BH       ;GRAPHICS CN
        CALL HPOT       ; = ESC 'L' 12 0
        MVI A,4CH
        CALL HPOT
        MVI A,0CH
        CALL HPOT
        MVI A,01H       ;GRAPHIC CHARACTER
        PUSH B          ;NEED REGISTER
        MVI B,0CH       ;NEED 12 DOTS
HPOT01: CALL HPOT
        DB 10H,0FBH    ;D JNZ,HPOT01 (Z80 CODE)
        POP B          ;FINISHED
        RET
;
CPMGO: PUSH H          ;ROUTINE TO JUMP TO CPM
DRIVERS
**** 1002:
; PRINTER TABLE TO EXCLAMATION COMMANDS FROM
; SPELLBINDER DEFINED FOR EPSON PRINTER.
PTABLE EQU $
DB 1BH,41H,24          ;"q" = DOUBLE SPACE
DB 1BH,32H,0           ;"r" = SINGLE SPACE
DB 1BH,34H,0           ;"s" = ITALICS CN
DB 1BH,35H,0           ;"t" = ITALICS OFF
DB 0FH,0,0             ;"u" = CONDENSED CN
DB 12H,0,0             ;"v" = CONDENSED OFF
DB 0EH,0,0             ;"w" = EXPANDED CN
DB 14H,0,0             ;"x" = EXPANDED OFF
DB 1BH,45H,0           ;"y" = EMPHASIS CN
DB 1BH,46H,0           ;"z" = EMPHASIS OFF
;
**** 1252:
; TABLES FOR PRECISION PRINTERS
PTLENG EQU 21
HTABLE DB 001H,09FH,001H,09EH,001H,0B6H,0B5H
DB 00AH,08AH,078H,089H,001H,00DH,01BH
DB 01FH,00DH,01BH,01EH,007H,000H,000H
QTABLE DB 002H,09FH,001H,09EH,001H,0B6H,0B5H
DB 00AH,08AH,078H,089H,001H,01EH,01AH
DB 049H,000H,000H,000H,000H,000H,000H
NTABLE DB 003H,0DDH,040H,0DDH,04EH,0BCH,0BH
DB 00AH,0B9H,015H,000H,000H,01BH,03DH
DB 000H,000H,000H,000H,000H,000H,000H
END

```

HARDWARE NOTES

by Russell Frew, Hardware Editor

In this column I want to try and answer some of the letters that I've received that might be of general interest to all Sorcerer users.

Several issues ago, I mentioned that I was trying to implement the S-100 PHANTOM signal in my Expansion Box. Since that time I've received several letters asking about it. There seems to be some confusion on exactly what that signal is for.

Most people write thinking that it will allow them to use multiple banks of 64k RAM. That is not true. The signal is used on system start-up in many computers to disable a bank of memory for disk boot or jump to ROM routines but it is not a stand alone Bank Select signal. It could be used in that manner but other hardware and software is necessary to make that happen. For those of you interested in memory beyond 64K, my next column will cover a method to swap pages of memory beyond the 16-bit addressing limit without giving up A15 as a pointer.

There seems to be many questions on memory up-grades. Here are some reminders. The 16K RAMs are very sensitive to static. If you carelessly handle them, especially during this cold winter when your house has low humidity, you are very likely to blow one or more elements in the memory. The rule is ground yourself to the "unplugged computer" at all times during the installation. Handle the RAM as little as possible and avoid touching the metal legs. Secondly, triple check that the #1 pin is properly oriented. Do not rely on the package numbering! Sometimes they are printed one way, other times it is reversed. Each manufacturer does it differently. Texas Instruments even puts a notch in both ends of some of their parts to make it twice as confusing. Only the dot over the #1 pin tells you for sure. If you reverse it, you not only lose the chip but you may short your power supply too. As you insert the chip, be sure that none of the legs curl under the RAM. I've seen this problem several times. And lastly, don't forget to install the jumper to select the proper row/chip configuration. On the Sorcerer II the jumper has been replaced with a DIP switch however the functions are the same.

Several people have asked how they can make their S-100 box IEEE compatible. First it is important to note that in 95% of the applications this is not necessary. Most of the signals involved deal with multi-processor master/slave bus configurations. If you do have a board that requires one of these signals, it may still be compatible if it does not require the Exidy system to sink 20mA at >.5VDC. When you get it down to that one signal it may be easier to deal with the problem on the board itself rather than the Expansion Box.

To help everyone along in this area, I would be willing to compile a list of all the S-100 boards that members have working in their systems

along with whatever mod's they have had to apply. The SA could then publish this list or make it available to members on request. If you have a working S-100 board, send its ID data to me in care of Sorcerers Apprentice or via The SOURCE Electronic Mail (TCA651).

A quick word about light pens. In my column on video displays I mentioned light pens would be fairly easy to interface to the Sorcerer and this triggered several questions on the subject. Light pens aren't all they are cracked up to be. To use one inexpensively on a raster scan display, every pixel must be flashed so that when the phototransistor inside the light pen is triggered, a software routine can check the video counters and extract the X,Y coordinates of the pen tip. This flashing is very disturbing to the operator. You generally end up with an all white screen, drawing in black. Routines you have surely seen such as polygon dragging and white-on-black displays are all done with radically different display systems.

If you are serious about graphics (and I am) then you should look into one of the graphic digitizing pads that can take your input, create the display you want and do it with far more resolution than any light pen ever could. If anyone is interested in this, we can devote a future column to it.

Speaking of the future, here are some topic areas that I am considering for future columns. If you have a favorite or another idea, drop me a line. For projects to enhance your Sorcerer: A crypto modification to National Bureau of Standards level of encryption; HP bar code reader; Magnetic bubble memory for non-volatile storage; A/D techniques; Sound generators; BSR controllers for the Sorcerer. Some problem areas to be covered include marginal voltage regulation and keyboard debounce.

Please send your ideas/comments to me via the Sorcerers Apprentice or The SOURCE electronic mail at account TCA651.☺

THE WORD PROCESSING CORNER

#18 - by Steven Guralnick

I am sure that some of you have been wondering where I have been for the last two months. I take my annual vacation in December so that explains my being absent from that month's issue.

With respect to January, I decided I would do some soul searching about this column and its future. What precipitated this was the happening of two events, within a few days of each other. The first was the announcement of the imminent release of Version 5.10 of SPELLBINDER. This new version has incorporated some wonderful enhancements, including a considerably simplified method of setting the parameters for printing. That meant that I would have to stop my series on how to print with SPELLBINDER and start all over again. It also meant that I have to devote at least six months of articles to the changes brought about by the new version.

The second event was a telephone call by one of the editors of the Sorcerer's Apprentice. During the conversation, I was given to understand that some of you have been complaining that my column was devoted entirely to SPELLBINDER, at least insofar as discussion of word-processing software was concerned. The fact of the matter is that this is the wordprocessor with which I feel sufficiently familiar to hold myself out as an expert. Although I have extended invitations for "guest columns", no one has ever responded. Therefore, I find myself in a "no-win" situation. I either talk about SPELLBINDER or I spend the same two and one-half years that I have already spent and learn some other wordprocessor.

When I measure these two events against the fact that our office is increasingly busy, it becomes painfully obvious to me that I cannot continue to write this column any longer. Accordingly, this is the last "Word Processing Corner". I depart this particular journalistic scene with much regret. When I first started these columns in SA, David Bristor had just started it and my contribution was a major one. Now, I do not believe that it is. Also, Roger Hagan has now been assigned to a business section of this newsletter and I can send material to him for inclusion in his column. This I will certainly do, from time to time.

Also, I am still very much available to anyone who needs some assistance with SPELLBINDER. You may call me at my office (415) 992-9200 at any time between 9:00 and 5:00 PST. If I am too busy, or if it is not convenient for you to call then, you are welcome to call me at home (415-991-0155) in the evening or on weekends. Many of you have called and written ad you are certainly welcome to continue to do so.

Word processing has become to this generation of business users what cotton gin first was to its users. It is a magnificent tool which can enhance the life of anyone who uses it. I am dedicated to the idea that it has unlimited potential. As a result, I will always be deep in this business ad what I know I will be happy to share with others. At least, those of you who are interested.

Kindest regards and my very best wishes to all of you.☺

Steven Guralnick
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=====

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=====

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ASTRO ATTACKER

ASTRO ATTACKER is similar to the arcade game called "ASTRO BLASTER". This action game for the Sorcerer is far superior to all other Sorcerer games because of its high resolution graphics, sound, variety and playability. Astro Fighter's graphics are extremely advanced. The display is of the console inside your astro fighter craft. In your console window you see the enemy ships placed against a background of continuously moving stars. Gauges also indicate the amount of fuel remaining and the temperature of your lazer cannons. If you fire too frequently you can overheat the lazars, or if you move recklessly you may run out of fuel. Your challenge is to survive and destroy the Spinners, the Lazer Ships, the Rockets, the Flame Throwers, and the Meteor shower. Docking with the mother ship is crucial to survival as this restores your shield strength and fuel, and cools your lazer cannon. With each succeeding level of play, survival becomes more difficult as the enemy ships attack with greater frequency and quickness. Superb sound too.

SUPER ASTEROIDS

We now have an arrangement whereby we can bring you SUPER ASTEROIDS from System Software at a price below what it would cost you to order it from Australia. Asteroids indeed has smooth movement and real time animation. It is an excellent program modeled after the popular arcade game. We have the program in stock, so save time and money by buying from us.

MAZE KILLER

Have you secretly wanted to wander down the hallways of a maze in search of the exit? Now you can with this machine language program that instantly shows the 3-D perspective view of the hallways. The program includes a maze editor that is used to create your own mazes. The mazes can be saved and loaded on cassette tape. I guess I should explain why it is called MAZE KILLER. Well, there is the catch of a hungry monster roaming the maze in search of dinner . . . you!

EXEC--A--SKETCH

EXEC-A-SKETCH is a powerful utility that transforms the Sorcerer's display into a video sketchpad. Pictures are easily drawn and can be intermixed with text. Portions of the display can be moved to different locations. Completed sketches may be saved on or recalled from cassette. Screen images can be dumped on a Paper Tiger graphic printer.

Medium and fine point drawing modes are available for drawing pictures on the display. These modes are best understood by envisioning use of an imaginary pen to draw on the screen. Drawing is accomplished by moving the blinking pen point. The pen can be raised from the paper and moved without affecting the existing sketch. One end of the pen is the ink and the other is the eraser. In medium point drawing mode the screen is divided into 128 horizontal by 60 vertical pen positions. 15 of the Sorcerer's user-definable graphic characters are used for medium point drawing. Fine point drawing mode divides the screen into 512 horizontal by 240 vertical pen positions. 112 graphic characters are dynamically defined and reused in fine point drawing.

VOTRAX TYPE--N--TALK

The Votrax unit is a marvelous piece of hardware that gives your Sorcerer speech. We provide additional instructions to help you connect the device to your serial port and cause it to talk from your Basic programs. We have prepared an excellent demonstration program that you will enjoy. Using it is as simple as: PRINT "I CAN SAY THIS SENTENCE".

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We will send a free catalog to other Sorcerer owners if you will provide us their addresses. Thank you.

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KEY: B-Basic M-Machine code U-Utility G-Game S-Sound J-Joystick or keyboard H-Hardware E-Education F-Music File

CADAS

Reviewed by Mike Patterson

One of the more important reasons for having a computer is to provide a method of keeping lists that are easy to maintain and won't leave scraps of paper laying all over the house. One way to do this is to write a dedicated program for each list you want to keep. The other is to get a database management program.

Such a program allows you to keep an unlimited number of lists, called files. Each file can have any number of items (records) up to the limit of either your memory size or the array size of the program, whichever is smaller. The records will have a certain number of lines (fields). You specify the number and the title of each field. Most programs have a limit of between 5 and 10 fields and a limit of around 6 characters in the title.

Standard features of a database management program are to add, delete, sort, edit, and list records as well as to save and load the files to and from cassette or disk (not necessarily both). Most programs can also sum the numbers in a specified field, for example to find the amount you've spent at a certain store. Many programs have other features and/or enhancements to those above.

If you were to look over some of the ads in the magazines for these programs, you may quickly conclude that they were intended solely for the Rockefellers. That's why it's a blessing to have someone like Howard Arrington around. At \$29.95, Arrington Software Service's CADAS 2.0 is a bargain compared, at least, to those high-priced ads. I doubt that you could find as capable a program elsewhere at anything close to this price.

CADAS is written by R.J.V. Stafford. It will handle up to 750 records of up to 9 fields with as many 56 characters each. It is written in machine language, so its sort and summing routines are fast. Its files can be saved either on cassette or CP/M disk, and you can specify the drive. The program is shipped on cassette, so it can be used with any CP/M and disk drive. These items alone are worth the price to someone like me who previously had a program that was written in BASIC, with its S L O W sorting, and was limited to saving files on cassette, also S L O W.

But R.J.V. threw in some more stuff. This program can MERGE separate files into one, format your listing with the REPORT command, specify the PRINTER driver you want, check the amount of memory SPACE left and the size of your file, and set TABs for your listing. When you're through, it will exit either to CP/M or the Monitor. The documentation tells you how to re-enter the program from the Monitor without losing the file data.

With the DELETE, EDIT, LIST, REPORT, and TOTAL (summing) commands, you can operate on ALL, any ONE, or a RANGE of files. Or

the program will search for a certain set of characters in a specified field to compare for a match or mismatch, partially or fully, all to your specifications.

The file can also be SORTed with the fields having the order of precedence you specify. For example, a list of addresses could be sorted first by zip code, then by city, then by last name, etc. The program accepts commas, colons and quote marks as data, something my old program wouldn't do.

The REPORT command allows the file listing to be formatted in a variety of ways. You can specify: the number of records or fields across the page, whether or not to print a given field, whether to print it on the same line, next line, or line after next, the number of lines between records, number of records per page, number of carriage returns at the end of the page, and whether to stop at end of the page. In addition, a heading can be printed at the top of each page. Whew!

CADAS is a very good program, but it does have some problems. The first command level will recognize lower case letters, but the other commands won't. This is extremely frustrating, since I am constantly forgetting to press the shift lock, and consequently getting something I didn't want when the program defaults to a standard command.

The LIST command will print the record number and the titles of the fields, but the REPORT command won't. The LIST command cannot be formatted like the REPORT command. It prints only in one vertical column. So a choice has to be made.

The SORT command apparently gives precedence to upper case letters. Therefore, it will list all A's, B's, etc., then all a's, b's, etc. Also, it sorts only in ascending order.

Although not a bug, it would also be nice if there was a command to allow the titles of the fields to be changed after the file is established, and to add new fields. It is maddening to get most of the way through typing in a long, new file, only to discover that there was another piece of information that needs to be included. As it is now, the only answer is to start over, or to waste memory by adding extra fields to begin with.

The above gripes are irritating, but they are easily overshadowed by the features that are offered, the price, and Howard Arrington's demonstrated willingness to help a customer with any problems concerning his programs. I recommend CADAS highly. ●

PASCAL PORT

by Daniel Conde

Good news! Exidy Systems has announced a Pascal for the Sorcerer. It is MT Microsystem" Pascal/MT version 3.0, costing about \$300.00.

With this news, I would like to take a break from discussing features of Pascal, and devote more time to the techniques of translating Basic programs to Pascal.

Pascal is not as radically different from Basic as other languages like LISP and APL, so a majority of Basic programs may be adapted to Pascal without major restructuring. Certain precautions, however, are necessary to make good translations and to take advantage of Pascal's features.

First of all, Basic is a very permissive language, not requiring variables to be TYPED as integers, reals, etc. or to be declared prior to their use. Some Basic's such as the Microsoft Disk Basic allows declarations by special declaration characters, such as using '%' after a variable name to declare it as an integer (i.e. LIMIT%). It is analogous to the '\$' used for strings. The DEF statements may be used to declare variables beginning with certain letters to be of integer, string, etc. type. Thus when translating Basic programs to Pascal, it is useful to make a list of all variables used, along with their type declarations, either explicitly defined or derived from their implicit use.

Certain implicit declarations are easy to spot. For example, a loop index variable, such as 'COUNT' in FOR COUNT=1 TO 20, is easy to recognize as an integer as long as the STEP value is also an integer and not a REAL TYPE. Much harder to recognize are variables that may be used as an integer in one part of the program, but used in assignments with REAL's in another. Careful consultation with the Pascal manual regarding type conversions and mismatches are required. Strings may be tricky, since they may change their lengths dynamically. Most Pascals offer extensions from the standard, such as strings, which make translation easier, but restrict portability of the program, because most extensions are specific to a particular implementation. After you have made a list of all the variables in the Basic program along with your guess of the eventual Pascal type declarations, it is worthwhile to group them according to similar functions. For example, your program may have this line:

```
DIM S(12), P(12)
```

Where the arrays may refer to SALES and PROFITS for the 12 months of the year. With Pascal, a single array of RECORDS, each with a SALES and PROFITS field may be desirable. With RECORDS being used, program maintenance will be easier, since changes, such as making the array size different, will require you to change only one declaration.

Many of the changes, such as the RECORDS change in the above example, are not necessary for translation. Pascal supports GOTO's, so Basic-like Pascal programs are possible. It is best to make as many modifications to the Basic source file on paper as possible, concentrating more on the proper Pascal structure and worry about the fine details later. Once the proper structure for the Pascal version is made, the rest of the program can be written using the structure as a guide. Thus, before attempting a conversion from Basic to Pascal, it is helpful to be familiar with the various data types available in Pascal and how they may correspond to Basic types. ●

4th TIP

by Tim Huang, Forth Editor

The Screen Editor Part 3

One phenomenon which really fascinated me when I arrived in this country was the vast variety of tools available. These ranged from the simple can opener to powered tools. A good percentage of these (e.g. the egg slicer) were designed for only one simple purpose. Simple but very effective (at least much faster than a piece of thread, with one end held in the mouth, the other end in one hand while another hand holds the egg). Nevertheless, both methods work.

Most people in this country take these tools for granted and thus miss a very important philosophical point; mankind invents and creates these tools to facilitate his work in fulfilling his needs. FORTH is also such a tool. We don't get a luxuriously furnished house, but a liveable shack along with the tools to convert it into a palace.

In the last issue we discussed two of the most important of these tools, the D-chart and Case. We can now proceed to draw our blueprint. In this issue I'll discuss some desirable things in the Command mode, and in the next issue the Editing mode.

In the beginning we don't have to cram the Command side with a lot of extra things. If we write this and any other part in a modular fashion, any changes can easily be accommodated later. Modularity allows us to make the necessary changes within the module without tearing the whole program apart and rebuilding again and again. I hope this concept will be clearer later.

```
:COMMAND
COM-INST
BEGIN
KEY
CASE
09 OF TAB 0 ENDOF (ctrl-I)
13 OF COPY 0 ENDOF (ctrl-S)
10 OF PRINTER 0 ENDOF (ctrl-P)
11 OF QUITTING 1 ENDOF (ctrl-Q)
BELL 0
ENDCASE
UNTIL ;
```

The COM-INST is straightforward. It is nice to clear the screen first and display the instruction messages. The TAB function can be implemented as a simple TAB (jump n characters from cursor position) or a more elaborate, typewriter-style variable TAB.

A simple TAB can be constructed this way:

```
08 VARIABLE TAB. (default Tab
value, but changeable)
: !TAB (n --- ) TAB. ! ; (for
Tab changes)
: TAB ( --- ) GET.# AB ;
(change to new value)
```

With these words in the Command mode, we laid the foundation for tabbing. When the Edit mode is in control, we can use it to move the cursor either n places from the current position or the next fixed column position (the 8th, 16th, 24th,...

Copy functions can be copied from fig-FORTH line Editor's COPY or others such as :

1. Copying parts of screen A, parts of screen B, ... to screen X.
2. Copying a screen from a screen file to another screen file. (A screen file may contain a series of screens)
3. Combination of 1 and 2.

As the copying functions become more elaborate, so does the complexity of the program. Just think of the complexity required in a word-processing program and you will then appreciate these copy functions. Only with FORTH can you do this -- start with very simple functions and later expand to very complicated ones. The PRINTER may contain the driver routine parameters all set up (right justification, multiple column printing, etc.), or a simple TRIAD which will print 3 screens to a page.

QUITTING is the way out of the Command mode, since the command mode is in fact a BEGIN....UNTIL loop. If none of the above keys (function) were pressed, the CASE statement should be implemented in such a way as to give some sort of warning. This is the function of the BELL. The Sorcerer does not have a noise maker, so we have to settle for a silent warning, but I know someone will come up with a way to flash a warning on the screen.

We'll continue with the Editor in the next issue. Until then, may FORTH be with you.●

RECONFIGURING LIFEBOAT CP/M

(Version 1.42 for Micropolis)

by R.D. Haun, Jr.

1. First FORMAT a blank disk on drive B.
2. Start with a copy of the original Lifeboat Master CP/M disk. CP/M is configured for 22K on this disk and there is a file called SORCUSER.ASM which needs to be modified to provide the I/O routines for the Sorcerer when the size of the CP/M configuration is changed. You can check the size of the CP/M and whether it is the Lifeboat version by observing the sign-on message when CP/M is first booted up. Lifeboat CP/M version 1.42 will be configured 2K less than the amount of memory which it requires. Another version of CP/M, which is sold by Exidy, is designated as 1.42/3 when it signs on and it is configured for the size of memory which it requires. The instructions which follow apply only to the Lifeboat 1.42 version.

3. Use MOVECPM XX * followed by SAVE 40 CP/MXX.COM to create a file on the source disk which can later be loaded by DDT in the correct memory locations. (xx is the size of the configuration to be created, e.g. 30 if you want to create a 30K configuration for use in 32K of RAM). The DDT commands will be used to modify it as described below before it is written onto the new disk.

4. ED SORCUSER.ASM followed by #A loads the SORCUSER file into the Editor buffer.

5. The 24th line of the file is the one which needs to be changed. You what to change it from:

```
MSIZE EQU 22
to:
MSIZE EQU xx
```

Use the nC command to move the cursor n spaces to the desired point and then use the Ixx(cr) command to insert the desired size xx of the configuration.

6. After you have checked the new file, use #W to write the new version of the file, and finally use E to get out of the Editor.

7. Then do ASM SORCUSER.EFG to make a HEX file. (The values of e,f, and g should be as follows: e=designation of source drive, A in this case, f=designation of destination drive for HEX file, also A in this case, g=X if you only want to display the assembled file on the screen without storing it.)

8. Now enter DDT CPMxx.COM to load the partially reconfigured CP/M file into DDT.

9. Now while still in DDT enter:

```
-ISORCUSER.HEX
```

This prepares the SORCUSER I/O file to be loaded into the portion of memory which will overwrite the I/O routines for the change from 22K to the new xxK configuration.

10. While still in DDT enter either:

```
-RC580 for a 24K configuration, OR
-RBD80 for a 30K configuration, OR
-RA580 for a 32K configuration.
```

(Other configurations can be produced by using other appropriate hex values in place of C580.)

11. Type CONTROL-C to get out of DDT.

12. Enter:

```
SYSGEN
```

and when prompted with:

```
SOURCE DRIVE NAME (OR RETURN TO SKIP)
```

press the RETURN key.

This sets the reconfigured CP/M to be used as the source for the final writing operation which is next carried out.

13. Respond to DESTINATION DRIVE NAME with the name of the drive on which the new CP/M system is to be written, which is B: in this case.

REFERENCES:

1. S-100 Microsystems, July/Aug 1980 (Vol. 1, No. 4) page 32.
2. Lifeboat CP/M on Micropolis Manual, especially CP/M on Exidy Sorcerer User's Notes, page 14, but also the sections on the Editor, ASM, and DDT.●

RANDOM SEED FOR (RND) FUNCTION

by Art Schneider

You may be interested in a little Z80 Language BASIC utility Subroutine that returns a Random Seed for the RND function. The RND requires a negative 'seed' to start a good sequence. The Z80 R (refresh) register can be used to provide that seed. Essentially the sub provides the action for the RANDOMIZE function of larger BASICs. The user instructions follow:

```

1000 REM to call 'SEED' Sub for RND
1010 POKE 260,99 : POKE 261,0 : XX = USR(0)
1020 SEED = -(PEEK(1)*128 + PEEK(2)*128 + PEEK(3))
1030 SQ = RND(SEED) : REM Rnd now seeded with Random
1040 X = RND(1) : REM repeat this line as needed for
random number sequence
    
```

Prior to use in a BASIC program the routine must be loaded into memory starting 0063H Hex per the following listing:

```

0094 *****
0095 * #8 2-RND SEEDS FROM REFRESH (R) - OMIT 0, FF, FE *
0096 * POKE 260, STARTS8 (RND Seeds in 1,2 & 3) *
0097 *****
'0063 210100' 0098 STARTS LD HL,RND1 ;ADDRESS FPR SEEDS
'0066 1602 0099 LD D,2 ;FOR ORIG. TRIAL SEED
'0068 0602 0100 RESTR8 LD B,2 ;FOR TWO SEEDS
'006A CD7A00' 0101 YY8 CALL LOOP8 ;GET SEED FROM R
'006D 05 0102 DEC B ; SEED COUNTER
'006E 2803 0103 JR Z,XX8-§ ; TO 'OR' TEST
'0070 4F 0104 LD C,A ;STORE 1ST SEED
'0071 18F7 0105 JR YY8-§ ;GET 2ND SEED
'0073 B1 0106 XX8 OR C ;TEST FOR = SEED
'0074 2861 0107 JR Z,START8 ;OMIT IF BOTH ARE=
'0076 CD7A00' 0108 CALL LOOP8 ;GET 3RD SEED
'0079 C9 0109 END8 RET ;TO BASIC
'007A ED5F 0110 LOOP8 LD A,R ;REFRESH TRIAL SEED
'007C 28FC 0111 JR Z,LOOP8-§ ;OMIT 0
'007E C601 0112 ADD A,1 ;0 = FF+1 ?
'0080 28F8 0113 JR Z,LOOP8-§ ;OMIT FF
'0082 C601 0114 ADD A,1 ;0 = FE+2 ?
'0084 28F4 0115 JR Z,LOOP8-§ ;OMIT FE
'0086 92 0116 SUB D ;ORIGINAL TRIAL SEED
'0087 77 0117 LD (HL),A ;STORE SEED
'0088 23 0118 INC HL ;NEXT SCORE LOC.
'0089 C9 0119 LPDONE RET
0120 *****
0121 * #9 REVERSE CHARACTER LOAD inverse ASCII to graphic*
0122 * POKE 260, NEG then 'print' ASCII+128 *
0123 *****
'008A 2100F8 0124 NEG ID HL,0F800H ;ASCII ROM START
'008D 1100FC 0125 ID DE,SGRAPH ;STD. GRAPHICS RAM
'0090 010004 0126 LD BC,1024 ;TOTAL GRAPHIC BYTES
'0093 7E 0127 LOOP9 LD A,(HL) ;GET ASCII ROW BITS
'0094 EEFF 0128 XOR 0FFH ;REVERSE BITS IN ROW
'0096 12 0129 ID (DE),A ;STORE IN GRAPHICS
'0097 13 0130 INC DE ;BUMP GRAPHICS POINTER
'0098 EDA1 0131 CPI ;ADJ. COUNTERS & TEST
'009A E0 0132 END9 RET PO ;TO BASIC ON PO TEST
'009B 18F6 0133 JR LOOP9-§ ;CONT. REVERSE
0134 *****
    
```

Art Schneider, 8 Melanie Ln., Matt, MA 02739

ASTRO ATTACKER

Reviewed by Ralph LaFlamme

Astro Attacker carries on the excellence that we have come to expect of Global Software Network programs (Arrington Software Service). This \$21.95 program is a take-off on the popular arcade game, **Astro Blaster**. Its detailed graphics and sound rival that of **CHOMP** and its action, variety and intensity leave **GALAXIANS** behind in the dust.

To start this game, you dock with the mother ship (very tricky). Later you must again dock to restore shield strength and fuel as well as to cool your lazer cannon.

The display is that from the inside of your astro fighter looking out into the void of space as the backdrop of moving stars is broken by the advance of the various forces that assault you. The challenge is to survive and destroy the Spinners, the Lazer Ships, the Rockets, the Flame Throwers, and the Meteor shower. Each succeeding level of play becomes more difficult as the enemy ships attack with greater frequency and quickness.

Your gauges are also displayed so that you may constantly monitor your fuel level and the temperature of your lazer cannon. If you are careless in your movements, you may run out fuel or if your fire too frequently, you'll overheat your cannons.

I did not receive this program in time to do it justice in its trials. I saw enough of it, however, to be reassured that here again is another Arrington winner. There will be a more extensive review in the next issue. ☺

GRAPHICS FOR THE MX80

by Richard Nygard

To have all 8 bits of data available for the Epson MX-80 printer, change the cable between the Epson MX-80 and the Sorcerer parallel port as follows:

1. Take the wire that currently connects to Pin 4 (output bit 7) of the Sorcerer parallel port and switch it to the parallel port's pin 3 (output data available).

2. Add a wire from pin 4 (Output bit 7) of the parallel port to pin 9 (DATA 8) of the Epson printer.

Now you must relocate the printer driver as follows:

- Enter the Monitor
- MOve E993 E9B0 0 <cr>
- EN 0 <cr>
- D3 FF F1 C9 / <cr>
- SEt O=0

You are now in business with a full 8 bits for the Epson. You can now access the TRS-80 type graphics.

NOTE: If the AUTO LINEFEED SWITCH in the Epson MX-80 is set to OFF, re-enter the Monitor: EN 5 and input 0 / . ☺

THE HAGAN SPREADSHEET Copyright c 1981 by Roger Hagan Associates, 1019 Belmont Pl. E., Seattle, WA 98102 USA

COMMENTED SOURCE CODE ON THE ROMPAC BASIC VERSION OF THE HAGAN SPREADSHEET. TO CLEAR OUT COMMENTS, SEARCH FOR *** AND DELETE 1 LINE (200S/***/DI/I/). MAIN PROGRAM STARTS AT 905.

Adjustments for machine RAM size are required; cf. line 6 note.

The "OUT x,y" command is used as an equivalent for EXBASIC's CURSOR x,y command or Level II's PRINT AT x,y in conjunction with a machine language kluge -- see Poke Data section.

Not all variables have same name as in disk version, since RomPac Basic recognizes only two letters. In this program, the following are significant variable names:

BU = address of Monitor command line buffer in MWA (Size dependent)
J = Expand mode flag (2= double spacing)
CC = Cursor column on screen (0-63)
CR = Cursor row on screen (0-29)
C = Column on sheet (0-13)
R = Row on sheet (1-40)
SC = Starting column for a rewrite of the sheet
SR = Starting row for a rewrite of the sheet
CH = Row in which to place cursor after screen rewritten
COLS = Number of columns in this sheet
ROWS = Number of rows in this sheet
REL = Number of relationships defined so far in this sheet
CN(rel,stage) = Constant entered as part of relationship
V(C,R) = Value in a cell in the sheet
OC(rel) = Column for destination cell of a calculation
OW(rel) = Row for destination cell of a calculation
CN\$(n) = Column name
RN\$(n) = Row name
FUNC\$(rel, stage) = Name of a function (as a symbol, as "**")
CO\$(rel,stage) = Name of constant
EX = Number of a rows to be excluded from addition
SEC = Number of subtotal section in column to be added
XC(n) = Row to be excluded from addition
FRA(sec) = First row to be added
LRA(sec) = Last row to be added
DJ(rel) = Column of data to be the first operand
DK(rel) = Row of data to be the first operand
DC(rel,stage) = Column of data used with operator
DR(rel,stage) = Row of data used with operator
EI(rel,stage) = Entry or intermediate value flag
ST(sec) = Subtotal for this section of column
VA(n) = Array made from certain sheet parameters for saving
P = print hard copy flag
PN = Tab position
IN\$ = General input holder for commands or data
SN\$ = Tave save sheet name

*** ** ** ** **

```
0 CLEAR 3000:PRINT CHR$(12)
1 BX$="The Hagan Spreadsheet c1981 by Roger Hagan Assoc. Seattle"
2 T=0:GOSUB 210: REM Print the above in a box ***
3 PRINT:PRINT
*** Ian MacMillan's dollar formatter, used only in hard copy ***
*** as a replacement for Print Using ***
4 DEFFNJ (D)=(X=0)-(ABS(D)<1)-LEN(STR$(INT(D)))
5 FOR N=1TO52:DT$=DT$+"":NEXT: REM Line of dots for graph ***
***
*** Location of the Monitor's command line input buffer must be
*** set for the size Sorcerer we use. Variable BU is set to
*** suit the machine. This is used by tape save routine. ***
*** There is another machine size adjustment needed at 13000
***
6 BU=-16495:REM BF91H = -16495 for 48K. For 32K make this
7 REM +32657 and change the 191s in the DATA statements to 127s.
8 GOTO 905: REM Jump to initialization section ***
***
*** -----Command Jump Table----- ***
***
9 BX$="ERRONEOUS ENTRY - ???":T=30:GOSUB 210:INPUT IN$
10 REM ---- First entry points are for probable data ----
100 IF IN$=""THEN RETURN
110 IF ASC(IN$)<58 THEN V(C,R)=VAL(IN$):RETURN
114 IF IN$="" THEN IN$="W"
115 REM A, B, C, D, E, F, G, H, I, J
120 ON ASC(IN$)-64 GOTO1070,3100,270,9,625,14000,180,2895,9,200
,22000,570,2030,600,9,12950,250,20000,30150,12000,9,30500,3200
,160,9,9
121 REM K, L, M, N, O, P, Q, R, S, T, U, V, W
```

(continued on next page)

SORCHRY BREWS

Reviewed by Robert Hageman

"In promulgating your esoteric cognitions, or articulating your superficial sentimentalities and amicable, philosophical or psychological observations, beware of platitudinous ponderosity." This begins the forward to Howard Arrington's Sorcery Brews. Never fear, he follows that advice throughout his collection of useful and interesting tips and routines. Indeed, there are times when a little more text might have been appreciated. Times when he "falls into" a routine before explaining exactly what he is trying to do. Thankfully, later comments usually explain what's happening.

In all, there are 138 tips, hints, routines, and opinions. The selection includes material in Basic and in machine language, material on keyboard, video, joystick, sound, printer, modem and cassette routines. There are items dealing with the Basic, Word Processor, and Development Pacs and with CP/M.

You may have seen some of this material before, but you can't remember where. Howard has collected a great many of those tips, once seen and often forgotten. He has also added a lot of original material; joystick and sound routines, and a Basic program with machine language subroutine to time Pine Wood Derby races.

I have to give this book an A+. It is technically accurate and useful. There is something for every programmer, beginner through expert. The only suggestion I have for Howard is to keep collecting and publish a Volume II, III, etc. ●

CALL WAITING FIX

by Doug Blair

The "Call Waiting" feature available on some home telephone lines may cause you to be disconnected if a second call arrives and beeps while you are on-line with another computer system.

I have learned that you may avoid this (--IF-- you also have "Three-Way Calling") with the following procedure:

- 1) Place a call to a number you know is busy or unattended or to your own number. Place this call on hold.
- 2) Then place a call to your host computer on your remaining line.

Any incoming calls will be diverted to the busy signal and will not 'BEEP' you off hook. People at Telco repair board say that with new ESS central offices dialing your own number will not "time out". I have been using this technique to call CBBS and similar systems for some time and it works! ●

(SPREADSHEET continued from page 41)

```

*** -----"X" Expand sheet display toggle -----***
***
160 IF J=2 THEN SZ=20:J=1:GOTO 2030
170 IF J=1 THEN SZ=10:J=2:GOTO 2030
***
*** -----"G" Goto a specific cell -----***
***
180 OUT CC+12,CR+19:INPUT "Column, Row";NC,NR
185 SC=NC:SR=NR
192 CC=20
195 C=SC:R=SR:CH=2+J-1:GOSUB 10000:GOTO 2100
***
*** -----"J" Jump to amortization calculation ----***
***
*** First clear the lower third of the screen, position cursor
***
200 GOSUB 14000:OUT 0,22:GOTO 30050
***
*** ----- Boxing subroutine -----
***
*** Set T to column to start in, BX$ the words to be boxed.
***
210 BX$=CHR$(182)+BX$+CHR$(183)
212 PRINT TAB(T)CHR$(186);
215 FOR I=2 TO LEN(BX$):PRINT CHR$(186);:NEXT:PRINT
220 PRINT TAB(T)BX$
222 PRINT TAB(T)CHR$(179);
225 FOR I=2 TO LEN(BX$):PRINT CHR$(179);:NEXT:PRINT
230 RETURN
***
*** -----"Q" Toggle to set "moves" to 2 cols not 4
***
250 IF FG=0 THEN FG=1:GOTO 10215
260 FG=0:GOTO 10215
***
*** -----"C" Return cursor to next cell w/out rewrite
***
270 GOTO 2100
***
*** ----- Sheet calculation subroutine -----
***
*** (result, destination, in form Value(Col,Row))
*** Format: V(OC(REL),OW(REL))=
*** V(DJ(REL),DK(REL))+V(DC(REL,STAGE),DR(REL,STAGE))
*** (1st operand) (operator) (second operand)
***
300 Y=0:Z=0
301 FOR A=1 TO REL
310 FOR B=1 TO 5 :REM FAC1 will be second operand
320 IF CN(A,B)<>0 THEN FAC1=CN(A,B):GOTO 345
330 FAC1=V(DC(A,B)+C,DR(A,B))
345 Z=V(DJ(A)+C,DK(A)) :REM Z becomes first operand
347 IF EI(A,B-1)=1 THEN Z=Y :REM Z will carry intermediate
360 IF FUNC$(A,B)="*" THEN 420
370 IF FUNC$(A,B)="/" THEN 430
380 IF FUNC$(A,B)="/" THEN 440
390 IF FUNC$(A,B)="-" THEN 450
410 INPUT"Redo the function entry carefully.";FUNC$(A,B)
415 GOTO 360
420 Y=Z*FAC1:GOTO 453
430 Y=Z/FAC1:GOTO 453
440 Y=Z+FAC1:GOTO 453
450 Y=Z-FAC1:GOTO 453
453 IF EI(A,B)=0 THEN V(OC(A)+C,OW(A))=Y:GOTO 480
460 NEXT B
480 NEXT A
***
*** ----- Column addition subroutine -----
***
500 V(C+1,STT(SEC))=0
505 FOR R=FRA(SEC) TO LRA(SEC)
510 FOR XE=0 TO EX
520 IF XC(XE)=R THEN 550
530 NEXT XE
540 V(C+1,STT(SEC))=V(C+1,STT(SEC))+V(C+1,R)
550 NEXT R
560 RETURN
***
*** -----"L" Return to last previous column -----
***
570 IF C=1 THEN IN$="H":GOTO 120
572 C=C-1:R=1:CH=2+J-1
575 IF (SR>1)AND(CC>20) THEN SR=1:CC=CC-10:GOSUB10000:RETURN
580 IF CC=20 THEN SR=1:SC=SC-1:GOSUB 10000:RETURN
585 CC=CC-10
590 RETURN
***

```

(continued on page 44)

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by Don Gottwald

```

*** -----"N" Advance to next column -----
***
600 IF C>=COLS OR SR<1 THEN IN$="H":GOTO 120
605 MF=0:IF SR<>1 THEN MF=1
610 C=C+1:R=1:CC=CC+10:CH=2+J-1:RH=0:SR=1
615 IF C=SC+4 THEN CC=20:SC=SC+4:GOSUB 10000:GOTO 2100
617 IF MF=1 THEN GOSUB 10000
620 RETURN
***
*** -----"E" Extend last value ent'd to all remaining columns-----
***
625 R=R-1:FOR CE=C+1 TO COLS:V(CE,R)=V(C,R):NEXT:CH=CH-J
630 GOSUB 10000
635 RETURN
***
*** ----- Formula display subroutines -----
***
700 IF CN(A,B)<>0 THEN FAC$=COS(A,B)+STR$(CN(A,B)):RETURN
710 FAC$="V("+STR$(DC(A,B))+","+STR$(DR(A,B))+)":RETURN
730 PRINT A". V("OC(A) CHR$(1)","OW(A) CHR$(1)") = V("DJ(A);
735 PRINT CHR$(1)","DK(A) CHR$(1)")"FUNC$(A,B) FAC$;:RETURN
***
*** ----- Plotting subroutines: connecting lines ---
***
*** {In lines 850 and 895 the '+'null' should be typed '+
*** Graphic 1' or '+ CHR$(128)'. This non-printing character
*** is used in screen plot, replaced by a | in hard copy.}
***
800 JD$=""
810 IFRD(N)-RC(N)=0THENJAS$=CHR$(95):JB$=JAS$:JCS$="":JD$="":
  JES$=JAS$:RETURN
820 IFRD(N)-RC(N)=-1THENJAS$=CHR$(95):JB$="/":JCS$="":JD$="":
  JES$=CHR$(23)+CHR$(95):RETURN
830 IFRD(N)-RC(N)=-2THENJAS$=CHR$(95):JB$="/":JCS$="":JD$="":
  JES$=CHR$(23)+"/":RETURN
840 IFRD(N)-RC(N)=-3THENJAS$="/":JB$=CHR$(23)+"/":JCS$="":
  JD$="":JES$=CHR$(23)+"/":RETURN
850 IF RD(N)-RC(N)<-3THENJAS$="/":JB$=CHR$(23)+"/":JCS$=CHR$(23)+":
  FORX=1TOABS(RD(N)-RC(N)+4):JD$=JD$+CHR$(23)+CHR$(1)+":NEXT
852 IFLEN(JD$)=3AND RD(N)-RC(N)=-4THENJD$=""
855 IF RD(N)-RC(N)<-3THENJES$=CHR$(23)+CHR$(1)+"/":RETURN
870 IFRD(N)-RC(N)=1THENJAS$=CHR$(95):JB$=CHR$(26)+"\":JCS$="":
  JD$="":JES$=CHR$(95):RETURN
880 IFRD(N)-RC(N)=2THENJAS$=CHR$(95):JB$=CHR$(26)+"\":JCS$="":
  JD$="":JES$=CHR$(26)+"\":RETURN
890 IFRD(N)-RC(N)=3THENJAS$=CHR$(26)+"\":JB$=JAS$:JCS$="":JD$="":
  JES$=JAS$:RETURN
895 IFRD(N)-RC(N)>3THENJAS$=CHR$(26)+"\":JB$=JAS$:JCS$=CHR$(26)+"":
  FORX=1TORD(RD(N)-RC(N)-4):JD$=JD$+CHR$(26)+CHR$(1)+":NEXT
896 IFLEN(JD$)=3ANDRD(N)-RC(N)=4THENJD$=""
897 IF RD(N)-RC(N)>3THENJES$=CHR$(26)+CHR$(1)+":RETURN
***
*** ----- Start main program: Initialization -----
***
905 DIM V(13,40),RN$(40),CN$(13),RC(13),RD(13)
910 DIM OC(20),OW(20),DJ(20),DK(20),CN(20,5),COS(20,5)
911 DIM DC(20,5),DR(20,5),FRA(3),LRA(3),XC(11),VA(6)
915 DIM FUNC$(20,5),EI(20,5),FUNC(20,5),STT(3)
920 RN$(0)="" : CN$(0)="" : Q$="" : F$="" : DM$=""
921 REL=1:CR=2
925 SZ=20:J=1
930 FOR I=0 TO 190:READ A:POKE I,A:NEXT
*** ----- Cursor addressing -----
933 DATA 229,71,205,232,233,175,253,119,107,203,24
934 DATA 31,203,24,31,253,119,104,253,112,105,58,63,1
936 DATA 253,119,106,225,209,201
*** ----- Serial printer driver ---- (Bytes 4-6 are video echo)
940 DATA 197,245,245,205,27,224,62,128,211,254,241,205,18,224
942 DATA 219,253,203,71,40,250,1,0,8,11,121,183,32,251,120
945 DATA 183,32,247,241,193,201
*** ----- String save on -----(SE O=tape out)
950 DATA 17,18,224,253,115,63,253,114,64,201
*** ----- String save off -----(SE O=video)
955 DATA 17,27,224,253,115,63,253,114,64,201
*** ----- String load on -----(SE I=serial in)
960 DATA 17,15,224,253,115,65,253,114,66,201
*** ----- String load off -----(SE I=keyboard)
965 DATA 17,24,224,253,115,65,253,114,66,201
***
*** ----- Paul Grimshaw's trick with the OUT parameter -----
***
969 POKE 262,199:REM Inst of out, "OUT" jumps to RST 0, so to 0
***
970 REM SRLDVR=30 STRSVON=65 STRSVOFF=75 STRLDCN=85 STRLDOFF=95
***

```

Bill Corse of P.O. Box 125, New Freedom, PA 17349 is looking for members in his area who are interested in investments. Even if you don't have a Sorcerer but are into investing - he'd like to hear from you.

Charles Boone is a contact person for the "Exidy Sorcerer Gebruikers Groep" (ESGG) which has several hundred members from Holland and Belgium. His address is: Stationsplein 26, B-9100 Lokeren, Belgium. ESGG has come up with a way to print the Exidy graphics characters on a Microline-80 printer. Available are an Eprom with the Exidy graphics characters, the Eprom addresses with all relevant information, the output routine, schematic for the cable connections, a summary of the possible character sets of the printer by means of jumper connections, and an instruction manual. The price quoted was about US \$21.00.

Ken Grimes of QSUG has been dissecting BASIC and is interested in exchanging listings with other people who have disassembled parts of BASIC. You can contact Ken by writing to the editor of the Australian or European Sorcerer Users Groups.

We are getting many requests for information on how to convert the Sorcerer screen to an 80 column by 24 line display. According to a source at Exidy Systems, a prototype board has been working on a Sorcerer Model II, but due to the complexity of retrofitting, it will not be made available to the general public. If anyone knows of an inexpensive way to accomplish this, please let us know and we'll pass the information on via the Newsletter. There are several S-100 boards available in the \$400 - \$500 price range, but they require the keyboard hooked up to them and the Monitor must be either resident on the S-100 board or the one in the Sorcerer must be replaced.

Here is what some members are looking for:

- a. A graphics package that is compatible with the Sorcerer and CP/M.
- b. A controller board for inexpensive 8" Caldisk 110 disk drives - perhaps without going through the S-100 box. Will share source for drives to interested parties.
- c. Several requests have come in for information on Income Tax preparation programs that do not require an 80 by 24 screen, 56K or more of RAM or cursor addressing. If you know of any programs that will run on the Sorcerer, please call or write right away, before the Tax season ends.
- d. R.D. Haun asks if anyone knows how to modify Exidy CP/M 1.42/3 from Micropolis Mod I to Mod II? By changing address 0123EH in MOVCPM from 47H to 9BH and changing address 01B4H in FORMAT from 26H to 4EH, he has accomplished most of the change. What does he need to modify to get CP/M to write the whole disk?●

(continued in next issue)

SORCERER'S APPRENTICE
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DISK NOTES

by Bryan Lewis, CP/M Editor

This month I want to bring to your attention some good public domain software. Most of it comes from the CP/M User Group or the SIG/M Group; some of them I wrote or revised for the Sorcerer. There's so much stuff available from the user groups that it's hard to keep track of what's good and what works for us. I've sent all of the programs to the Apprentice for posting on the Bulletin Board. There's a lot of it, though; you might prefer to send a formatted disk to the Apprentice Disk Librarian, instead of using the phone. (See the ON-LINE column in this issue for details.)

First four games, taken from the CP/M Group Volume 48, which is a sampler of the BDS C language. (The COM files don't require C to run.) They don't use a lot of graphics, but they're well written versions of some classics. I'm borrowing the comments from those on the disk by Ward Christensen.

1. MM.COM: So you want to play a simple game of letter guessing, eh? Try this one. But watch your ego: it can be deflated. MasterMind is a "simple" game, that makes you think. The computer generates a random "word" consisting of 4 letters from A-F. You simply "guess" 4 letters at a time, and MM tells you how many are "hits" i.e. the right letter in the right spot, and how many are misses. Thus you deduce the missing pattern. The game goes a bit slow, however (at least at 2MHz). Why? MM is computing how many possibilities are left, based on the clues it has given you. When this number reaches "1", it says: "You should have it by now". It becomes a real challenge to see how few times you can keep that message from coming out, and is a "real thrill" to "beat it" - especially a couple times in a row. However, having it "know" YOU should "know", but you "missed" catching on for, say 5 turns, makes you feel like a real dummy.

2. OTHELLO.COM: Have you the patience to beat this one?

3. STONE.COM: You get to specify how "hard" the computer works to beat you, and if you let it work a while, it's nearly un-beatable.

4. TTT.COM: Hmm, what could be new in a Tic Tac Toe game? Well, brains, and wit for two things. Ex: it puts its "X", you put your "o", it thinks a while, and says "I've got ya". If it thinks for a while, and after several pieces are on the board, doesn't say "I've got ya", then you MAY be on your way to a rare win, or more likely a "cat" game. Play it and see.

5. TABIFY.COM. A non-game from the same disk. A nice utility to delete spaces from a file, inserting tabs where appropriate, based on the CP/M convention. This is handy for compacting a Spellbinder file, since Spellbinder expands all tabs to strings of 8 spaces. That can mean a significant expansion in the size of

an ASM source file. (NOTE: You can also use Spellbinder's commands /1/2 to 'tabify' a file, see Application Notes in your manual. Sysop)

6. LIFE.COM and LIFE.DOC. This one came from Joseph R. Power; the assembler code was published in his Tsunami newsletter. I entered it, revised the shape of the little men, and saved it on disk. It's the old game of Life, first published in Scientific American in 1970. The Sorcerer allows full-screen editing for setting up the positions, and a lot higher speed than pencil and paper. See LIFE.DOC for rules.

7. SEARCH.COM is my utility to search through memory for an arbitrary sequence of bytes. After you run SEARCH, you will be asked to enter the sequence; enter hexadecimal values, up to 16 of them, with a question mark for any byte that you don't care about (a wild card). The source was published in the Apprentice of October 1980. This one is ready to run, with a couple of bugs fixed. Note: this doesn't need disks to run.

8. ASCIIIFY.WPM is a word processing macro for Spellbinder. I wrote it so I could print out C programs. C uses a lot of characters that mean special things to Spellbinder, like curly braces and vertical lines. Hence a simple Print command won't work quite right. This macro goes through the text and enhances all those characters, so that Spellbinder doesn't recognize them as special. It will work for any file (C or not) that uses the reserved symbols.

9. SURVEY.ASM and SURVEY.COM are a neat little program to report the usage of your system's assets. It will display how much space is used and left over on your disk, which I/O ports are active, and how each kilobyte of your memory is used:

RAM for the transient program area, RAM occupied by CP/M, ROM, or unused RAM -- it thinks the Sorcerer's video and graphics RAM are unused. This kind of information might even be useful to you if you're a dealer, configuring software for many different machines.

10. MSPEED1.COM and MSPEED2-.COM are the CP/M Group's SPEED-.COM, modified by me for Micropolis. MSPEED1 is for CP/M version 1.4, while MSPEED2 is for 2.2. But what's SPEED, did you say? It modifies CP/M's disk access routines, to buffer a whole track at a time in memory, not just 128 or 256 bytes. If you're doing something that involves a lot of disk activity, like assembling or compiling, this will save you LOTS of time, since writing a whole track to disk is faster than several sectors writes. I measured a factor of two speed-up, when doing assemblies. The disadvantage is a loss of memory: storing a track from a Micropolis disk can eat up 4K. If you specify all the options (buffered seeks, reads, and writes), you can use up 13K. That's not usually a serious loss when you're assembling or compiling, though. It sure is neat to give a DIR command and see an instant response without the disk clicking. (The directory is in memory!)

To use it, just type MSPEED1 (or SORCERER'S APPRENTICE, March 1, 1982

2), and you're set. For the rest of the instructions, read the two manuals, SMAN.PRT and FMAN.PRT (Note: from SYSOP, these two manuals are provided as one file named MSPEED-.DOC). (Note: the first time you use MSPEED2, you may get a BAD SECTOR message (I don't know why), but just press CTRL-B and you'll be okay.)

11. MENU.COM and MENUASM are an automatic menu generation utility for CP/M. Just type MENU, and you'll get a numbered table of the COM files on the disk. Just enter one of the numbers, and that file will be executed. This was written up in Creative Computing in December 1979, but I had to massage it to make it work on the Sorcerer. It will also create a menu of BASIC files, if you change a couple of options in MENUASM.

Study the source code if you want to see how to poke commands into CP/M's command buffer for automatic execution.

12. MODEM7.COM (and MODEM7-.DOC for instructions) is the latest and greatest of the CP/M modem programs. You can do everything that you could with PLINK or any of the other modem-like programs, but more easily. For example, you can capture incoming characters onto disk, without leaving the program or even leaving terminal mode; just type CTRL-Y while you're on line. Similarly, you can start sending a file from disk just by pressing CTRL-T while you're on line.

Other niceties: you can display the disk directory without leaving the program. You can send multiple files to another computer, using a batch transmission mode, without having to sit and type in each new name.

You don't have to modify the source code to use this one; I've already done it. It should run as is, on a Sorcerer with a "fixed" serial port, i.e., one with a hardwired port, or Version 1.1 ROM's. You also don't have to use the SETMODEM and SETTAPE commands (see the December Apprentice, pp. 169-170); I've put the port initialization into the program.

The revisions are for an acoustic modem on the Sorcerer's serial port. If you have a PMMI modem board (you lucky devil), then get the original program, which came configured for the PMMI. It allows dialing, changing baud rates, and disconnecting, all from the keyboard. I've labelled that file M7PMMI.COM.

If you want to see how I made the revisions, or just want to learn how the program works, look at MODEM7-.ASM and MODEM7.SET.

Correction: one feature MODEM7 doesn't have is the trigger character capability of EXLINK. I've never needed that feature, but Bob Hageman has found it useful for sending bulletin board messages. (NOTE: A number of people have found a use for that feature. MiniCBBSs, RBBSs, and the Source work well with the trigger character option. Sysop.)

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