

# SORCERER'S APPRENTICE

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## OPINION

Don Gottwald, who has been serving the Sorcerer's Apprentice Users Group as president, treasurer, fill-in editor, major domo, and chief cook and bottle washer for longer than he cares to remember, called me a while back and asked if I would volunteer to serve as president. He needed some help, he said. My first reaction was to decline. My second reaction was to decline. But Don is nothing if not persuasive, and so I was dragooned into accepting the post, subject to confirmation by the board of directors.

Now what do I do?

"We need some direction," Don said. He's right, of course; since the demise of Exidy Systems, Inc. the Sorcerer's Apprentice remains as the focus of support available to Sorcerer users (certainly the Apprentice was the major support even while ESI was viable, since customer support and service was not the company's strong suit). Direction is definitely needed to insure the survival, if not the growth, of the Apprentice.

Can I supply the needed direction? I don't think so. At best I can help focus the direction of the Apprentice; the real direction must come from all of us in the users group. The Sorcerer's Apprentice Users Group IS the newsletter, period. All other activities of the group are ancillary; the RBBS, tape library, and disk library all center on the newsletter. How did that come to be?

Early-on in the life of the group we held meetings of users from the Southeastern Michigan area. The meetings were fun, interesting, informative; even exciting, to those of us who were novices. We listened to the hardware and software gurus, swapped homebrew software, and shot the breeze. And after a while, no more meetings. Why? Certainly not because of lack of interest; witness the concern of members when an issue of the newsletter is late. The real reason for the demise of meetings in the Detroit area was, and is, manpower.

continued on page 171

# One Saturday in Rotterdam.

By A. S. Marland

Imagine that the BBC had given up any hope of getting a computer out of ACORN in time, and that Liveport had stepped in at a sticky moment with a few thousand Sorcerers at a bulk discount. Something rather like that actually happened in Holland. That's why CompuData are manufacturing Sorcerers, and why half the floor space in the Dutch computer club's September 4th show at Rotterdam was given over to Sorcerer exhibits. Most of the rest was Apple, but lurking in amongst the Apples there was yet another Sorcerer - more about that later.

The Dutch seem to have organised a club on a national scale for all types of computer joined together. Thus the overall organisation is called HCC (Hobby Computer Club), while its Sorcerer branch is called ESGG (Exidy Sorcerer Gebruikers Groep).

ESGG does a series of tapes (C-60s) more or less full of programs at 1200 baud. I bought two of them for some ridiculous sum (I think it was 15 guilders, about \$6.50, but I can't remember if that was each or for the pair) and a Files command worked first time on both without CRC errors. I simply have not had the time to try much of it yet, but even if only 10% is any good, that's still three good cheap programs (and I'll bet more than 10% is good!). ESGG also does a bi-monthly English language periodical called ESGG-periodical with an annual subscription rate of fl. 22.50 for Europe, or fl 27.00 for further off. (Ed. Note: fl = dutch guilders, ask your local bank for current exchange rates)

While still on program libraries, the Dutch CP/M users group has the usual public domain software available in four different

single-sided double-density Sorcerer formats:

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77 track soft sector -25f1 "  
1 disk  
40 track soft sector -30f1 "  
2 disks  
30 track soft sector -40f1 "  
3 disks

Some addresses:

ESGG Chairman: F. Vogelaar, Karmemelksloot 197, 2806 BE Gouda, Netherlands.

Tape librarian: W. Warning, Dotterbloem 32, 8265 HG Kampen, Netherlands.

Periodical: Redaktie ESGG, p.a. Postbus 510, 1000 AM Amsterdam, Netherlands.

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## NOTICE

Sorcery Brews by Howard Arrington is no longer available. No reprints will be offered.

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# DVORAK KEYBOARD FOR THE SORCERER

By Don Ellis

## BACKGROUND:

Having a long-standing dislike for the "QWERTY" keyboard, I was not too surprised to learn that the standard "QWERTY" keyboard was intentionally designed to be awkward and inefficient! This keyboard was created by Christopher Latham Sholes for his type writing machine which was patented in 1878. Since this machine relied on gravity to return the type slugs to their home positions, too fast an operating speed could cause the machine to jam. To overcome this problem, Sholes, with the help of a Pennsylvania school superintendent, designed a keyboard in which the most common letter combinations in English are located as far apart as possible and assigned to the weakest fingers.

Despite numerous attempts by designers in the intervening century to introduce more humane keyboard designs, the Sholes keyboard has remained the standard no doubt because the Sholes keyboard has been commonly available, and people have made a tremendous investment of time and effort in learning to use it.

Feeling that my main investment in the Sholes keyboard is frustration, and since the keyboard on my Sorcerer is the only one I use often, I have been eager to depart from the standard.

Of the alternative keyboard designs which have been developed, the most attractive candidate is the Dvorak Simplified Keyboard. This keyboard which was patented in 1932 was the result of extensive ergonomic, language and design studies by August Dvorak at the University of Washington. Compared to the standard Sholes keyboard, entry of typical English

text via the Dvorak keyboard requires only about 1/20th the linear finger motion!

The basic Dvorak keyboard is illustrated in Figure 1. Obviously adaptation of this design to the Sorcerer requires some additional definitions to accommodate the full character set. In addition, the Dvorak keyboard was designed for a typewriter, not a computer, and it has retained one feature of the standard keyboard which I regard to be acutely vexing for programming applications: placement of some mathematical operators in the shifted character set and some in the unshifted character set.

In defining my adaptation of the Dvorak keyboard for the Sorcerer, I have made use of the fact that the Sorcerer has, in effect, three alpha-numeric keyboards, the unshifted keyboard, the shift lock keyboard, and the shift keyboard. I treat the unshifted keyboard as the primary keyboard for word processor text entry and therefore incorporate in this keyboard the most common text punctuations. Similarly, the shift lock keyboard is the primary keyboard for programming and incorporates mathematical and logical operator symbols for BASIC and FORTH. The shift keyboard is the second keyboard for both text entry and programming. As such, it incorporates special symbols that aren't in the other two keyboards and the remaining punctuation used in FORTH and BASIC programming. Figures 2, 3 and 4 show the resulting keyboard definitions. Besides the Dvorak character arrangement, two changes relative to the original Sorcerer keyboard are especially worth noting: (1) The

period/decimal point occurs in all three keyboards and (2) RUB occurs in both the shift lock and shift keyboards.

### IMPLEMENTATION

While it would be possible to redefine the keyboard by changing its circuitry, the desired redefinition could not be achieved this way because all functions that are assigned to a key in the original design would still be assigned to the same key in the new keyboard. For example, the period and the greater than sign would always be on the same key no matter where that key was located. Fortunately, there is a better and simpler way. The keyboard is defined by a set of tables in the MONITOR ROM and can be redefined by changing these tables.

With the help of the 2716 EPROM

Burner from Ensign Software, creating a new MONITOR with the desired changes was reasonably easy: All that was required was to copy each half of the MONITOR into locations 1000 to 17FF with a MOVE command, insert the changes, and program new EPROMS. (Before the new EPROMS were installed in the Sorcerer, it was necessary to change the connection of pin 21 of the ROM sockets from ground to +5 volts. This change is different from the modification shown in the Sorcerer Technical Manual!!!)

Four tables in the MONITOR ROM need to be changed: The Control Table (CONTBL), the Shift Table (SHITBL), the Shift Lock Table (SLOTBL), and the Unshifted Table (UNSTBL). The new entries for these four tables are listed below (Addresses are monitor 1.0 addresses, rather than work area addresses.):

=====

CONTBL			SHITBL		
Address	Entry	Character	Address	Entry	Character
ECC8	11	CTRL-Q	ED18	51	Q
9	1E	CTRL-CARAT	9	7C	
A	01	CTRL-A	A	41	A
B	3C	<	B	3F	?
C	3D	=	C	21	!
D	0A	CTRL-J	D	4A	J
E	05	CTRL-E	E	45	E
F	0F	CTRL-O	F	4F	O
ECD0	3E	>	ED20	2C	,
1	37	7	1	5C	\
2	15	CTRL-U	2	55	U
3	10	CTRL-P	3	50	P
4	2E	.	4	2E	.
5	33	3	5	26	&
6	35	5	6	27	'
7	18	CTRL-X	7	58	X
8	0B	CTRL-K	8	4B	K
9	09	CTRL-I	9	49	I
A	19	CTRL-Y	A	59	Y
B	31	1	B	25	%
C	0D	CTRL-M	C	4D	M
D	02	CTRL-B	D	42	B
E	04	CTRL-D	E	44	D
F	06	CTRL-F	F	46	F

ECE0	39	9	ED30	24	\$
1	14	CTRL-T	1	54	T
2	03	CTRL-C	2	43	C
3	08	CTRL-H	3	48	H
4	07	CTRL-G	4	47	G
5	30	0	5	23	#
6	17	CTRL-W	6	57	W
7	0E	CTRL-N	7	4E	N
8	12	CTRL-R	8	52	R
9	34	4	9	7E	TILDE
A	32	2	A	40	@
B	1A	CTRL-Z	B	5A	Z
C	16	CTRL-V	C	56	V
D	13	CTRL-S	D	53	S
E	0C	CTRL-L	E	4C	L
F	36	6	F	7B	
ECF0	2D	-	ED40	3B	;
1	2B	+	1	3A	:
2	1C	CTRL-\	2	2F	/
3	00	CTRL-@	3	2A	*
4	3B	8	4	7D	
5	1F	CTRL-	5	7F	RUB
6	0D	RETURN	6	0D	RETURN
7	0A	LINE FEED	7	0A	LINE FEED
8	1D	CTRL-]	8	5D	]
9	1B	CTRL-[	9	5B	[

=====

SLOTBL			UNSTBL		
Address	Entry	Character	Address	Entry	Character
ED68	51	Q	EDB8	71	q
9	5E	CARAT	9	5E	CARAT
A	41	A	A	61	a
B	3C	<	B	3F	?
C	3D	=	C	21	!
D	4A	J	D	6A	j
E	45	E	E	65	e
F	4F	O	F	6F	o
ED70	3E	>	EDC0	2C	,
1	37	7	1	37	7
2	55	U	2	75	u
3	50	P	3	70	p
4	2E	.	4	2E	.
5	33	3	5	33	3
6	35	5	6	35	5
7	58	X	7	78	x
8	4B	K	8	6B	k
9	49	I	9	69	i
A	59	Y	A	79	y
B	31	1	B	31	1
C	4D	M	C	6D	m
D	42	B	D	62	b
E	44	D	E	64	d

F	46	F	F	66	f
ED80	39	9	EDD0	39	9
1	54	T	1	74	t
2	43	C	2	63	c
3	48	H	3	68	h
4	47	G	4	67	g
5	30	O	5	30	O
6	57	W	6	77	w
7	4E	N	7	6E	n
8	52	R	8	72	r
9	34	4	9	34	4
A	32	2	A	32	2
B	5A	Z	B	7A	z
C	56	V	C	76	v
D	53	S	D	73	s
E	4C	L	E	6C	l
F	36	6	F	36	6
ED90	2D	-	EDE0	2D	-
1	2B	+	1	2B	+
2	2F	/	2	2F	/
3	2A	*	3	60	
4	38	8	4	38	8
5	7F	RUB	5	5F	
6	0D	RETURN	6	0D	RETURN
7	22	"	7	22	"
8	29	)	8	29	)
9	28	(	9	28	(

=====

The next step: modifying Roy Mercer's "Touch-Type-Tutor" program into a Dvorak version.

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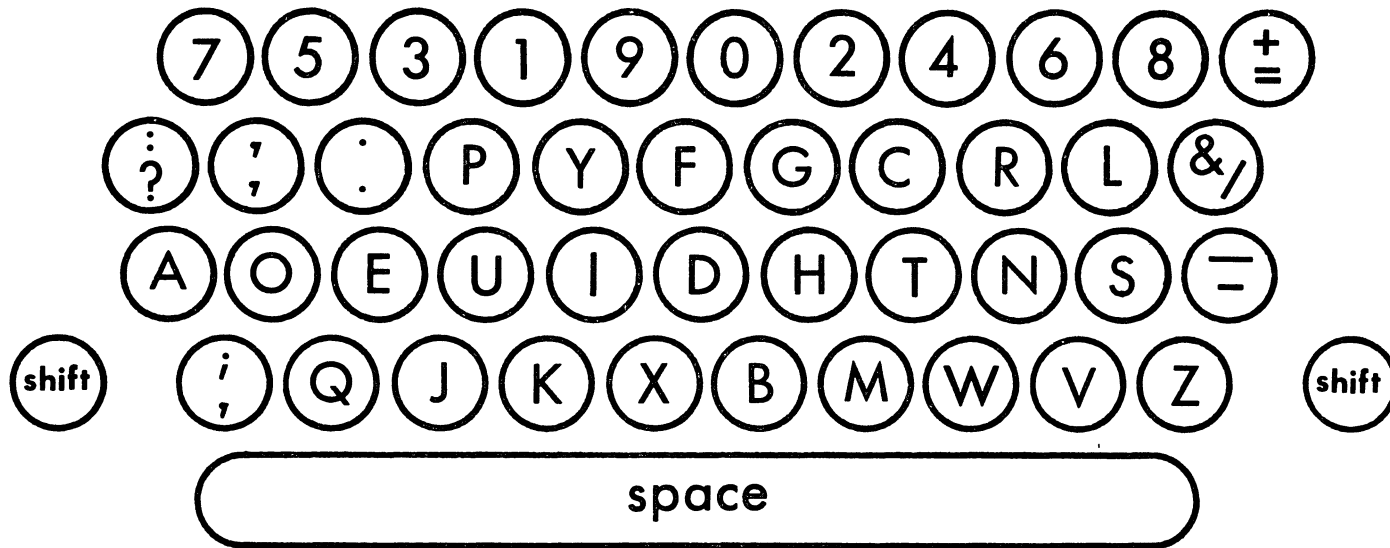


Figure 1: Dvorak Simplified Keyboard (adapted from: "An Incredible Legacy", Electronic Design, May 24, 1979)

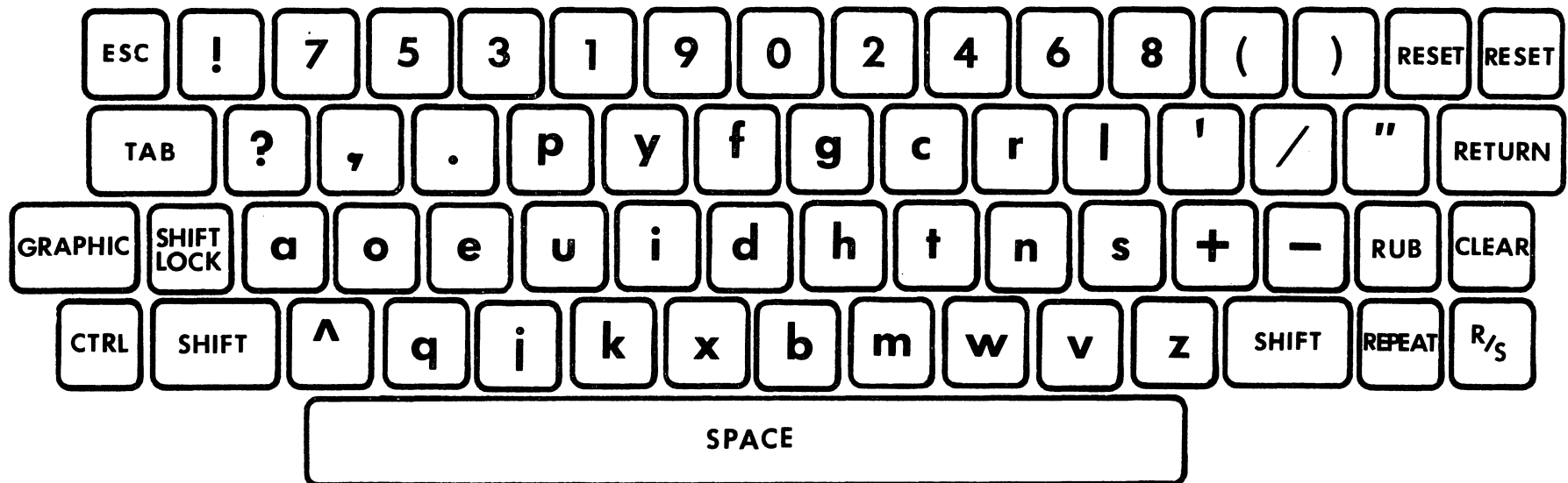


Figure 2: Unshifted Keyboard for the Sorcerer adaptation of the Dvorak Keyboard.



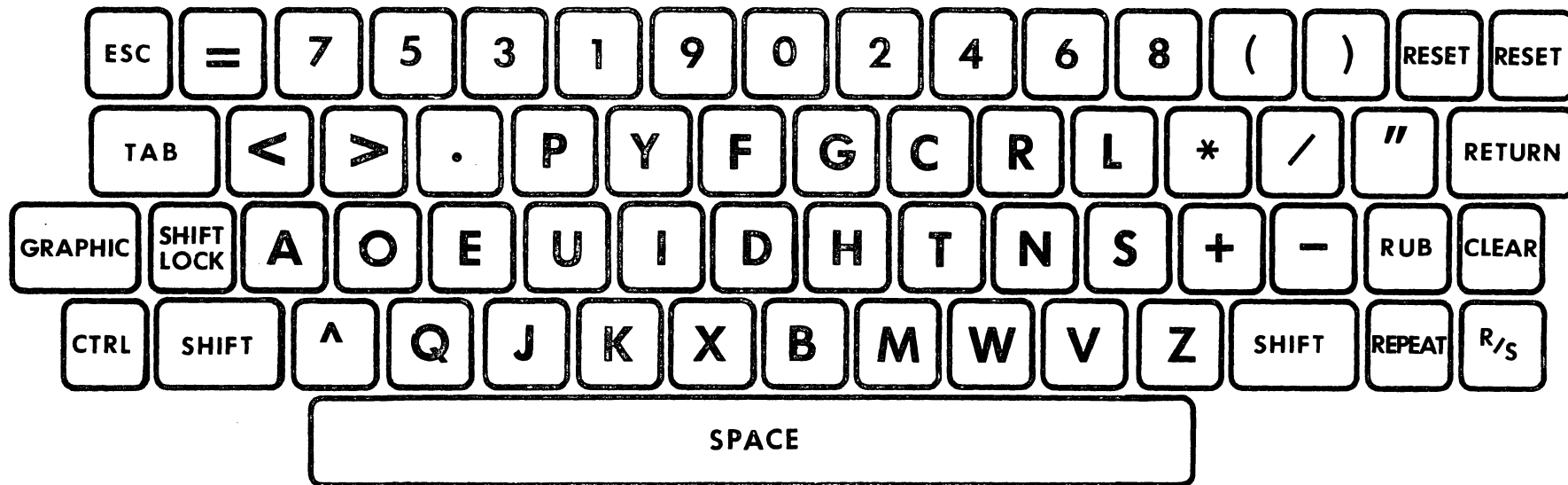


Figure 3: Shift-Lock Keyboard for the Sorcerer adaptation of the Dvorak Keyboard.

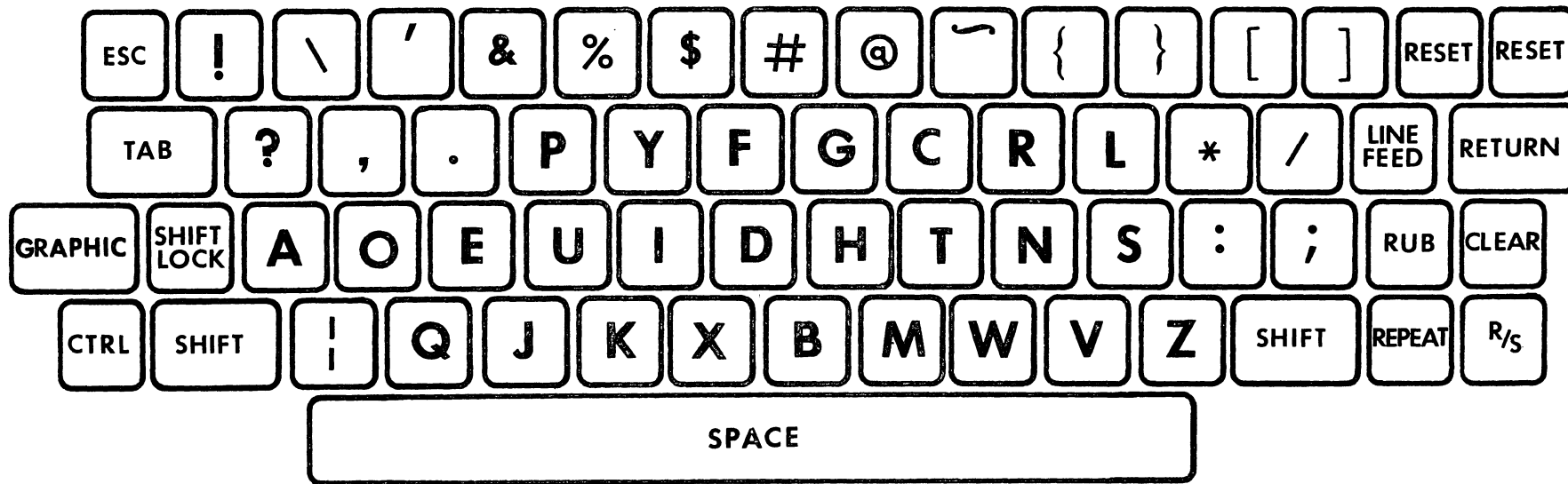


Figure 4: Shift Keyboard for the Sorcerer adaptation of the Dvorak Keyboard.

# PARALLEL TO SERIAL

By Walt Hendrickson  
2313 W 181st Street  
Torrance, CA 90504

Enclosed is a sort machine-language program for using one bit of the parallel I/O port to send and receive serial data. This method of serial transmission offers the advantages of:

- a. operation at any desired baud-rate from 50 to 9600;
- b. baudrate can be fixed or selectable by software;
- c. choice of even, odd or no parity;
- d. independent choice of the number of data bits transmitted and received.

This interface will NOT:

- a. provide FULL DUPLEX operation
- b. provide RS-232C levels (+/- 3 to +/- 25 volts).

The outputs from the parallel port are TTL levels, which in most cases can interface to standard RS-232C devices, such as a CRT or line printer. If your device must have bi-polar voltages of RS-232C, a simple buffer can be connected between the Sorcerer and your device. Two such buffers are shown in figures 1 and 2. The baudrate constants shown at the top of the program listing can be adjusted to suit the user's needs. The program listing is assembled for an 8080A based system where this method of serial I/O has been used for over 6 years.

The constants were adjusted for the Sorcerer's clock time and checked using an oscilloscope and period counter. For baud rates above 1000, the alternate time delay routine shown below should be used to achieve the higher

accuracy needed. The routine shown here in its basic form can easily be modified to provide selectable parity, selectable baud rates, and selectable word size. I have used this routine to interface with an ADM-3 CRT, a ASR-33 TTY, TI-810 printers, etc. Note that it can also be used to transfer data FROM ONE COMPUTER TO ANOTHER with only 3 interconnecting wires! If the distance you are transmitting over is greater than 50 feet, use baud rates below 600 baud or add one of the buffers shown in figures 1 or 2.

Alternate time delay:

```
WHOLE:    CALL HALF
HALF:     MVI B,BAUDRATE
DELAY:    DCR B
          JNZ DELAY
          RET
```

continued on page 147

## ATTENTION

Cary Stewart's home was broken into while he was away on vacation and his computer system was taken. Please be on the lookout for anyone attempting to sell a Sorcerer Model II, 48k, revision B board internally, jumpered to C4 configuration, with a set of 2716 EPROM's for the monitor ROM's; an Exidy S-100 Expansion Box, containing a revision B board and an ECN sticker dated December 1980; a Micropolis 1053 Mod. II disk system. The persons responsible for the theft left all the software behind, so when they try to sell the system, they undoubtedly will not have any software to offer. Anyone having any information regarding the above - please contact the Burbank, CA police and/or Cary Stewart at (213) 843-1101.

```

ASSM 100
0100      0010 *-----*
0100      0020 * SORCERER READ AND PRINT ROUTINE *
0100      0030 * USING 1 BIT OF THE PARALLEL I/O *
0100      0040 * PORTS. 1/30/81 W. HENDRICKSON *
0100      0050 *   BAUD RATE CONSTANTS ARE:   *
0100      0060 *                               *
0100      0070 *   BAUD RATE   CONSTANT   *
0100      0080 *   110   -----0B6H   *
0100      0090 *   300   ----- 42H   *
0100      0100 *   500   ----- 28H   *
0100      0110 *   600   ----- 20H   *
0100      0120 *   1200  ----- 38H $   *
0100      0130 *   2400  ----- 19H $   *
0100      0140 *   4800  ----- 09H $   *
0100      0150 * $ = ALTERNATE DELAY CIRCUIT *
0100      0160 *-----*
0100      0170 *
0100      0180 *---- READ AND ECHO ROUTINE ----*
0100      0190 *
0100      C5      0200 RDPK:      PUSH   B      WE USE THESE
0101      D5      0210      PUSH   D
0102      DB FF   0220 RDPK1:    IN     OFFH   GET INPUT BIT (BIT 0)
0104      0F      0230      RRD    *      PUT INTI CARRY
0105      DA 02 01 0240      JC     RDPK1  NO START BIT YET
0108      CD 5D 01 0250      CALL   HALF  DELAY 1/2 BIT TIME
010B      3E 00   0260      MVI    A,0    ECHO START
010D      D3 FF   0270      OUT   OFFH
010F      16 80   0280      MVI    D,80H  SET FLAG BIT
0111      CD 5A 01 0290 RDPK2:    CALL   WHOLE  DELAY 1 BIT TIME
0114      DB FF   0300      IN     OFFH   SAMPLE INPUT
0116      E6 01   0310      ANI   01H   MASK FOR BIT 1
0118      D3 FF   0320      OUT   OFFH   ECHO
011A      1F      0330      RAR
011B      7A      0340      MOV   A,D   GET DATA
011C      1F      0350      RAR    *    ROTATE FOR NEXT BIT
011D      57      0360      MOV   D,A   SAVE NEW PATTERN
011E      D2 11 01 0370      JNC   RDPK2  LOOP FOR 8 BITS
0121      CD 5A 01 0380 THEEND:  CALL   WHOLE  LAST BIT
0124      3E 01   0390      MVI   A,01H SET STOP BIT
012      D3 FF   0400      OUT   OFFH
0128      CD 5A 01 0410      CALL   WHOLE  SEND 1 STOP
012B      7A      0420      MOV   A,D   DATA TO REG A
012C      D1      0430      POP   D
012D      C1      0440      POP   B
012E      C9      0450      RET    *    ASCII DATA IN REG A
012F      0460 *
012F      0470 *---- SEND ASCII DATA IN REG A ----*
012F      0480 *
012F      C5      0490 PRINT:    PUSH   B      WE USE THESE
0130      D5      0500      PUSH   D
0131      F5      0510      PUSH   PSW
0132      57      0520      MOV   D,A   SAVE DATA IN D
0133      3E 00   0530      MVI   A,0

```

continued on page 149

FIGURE 1

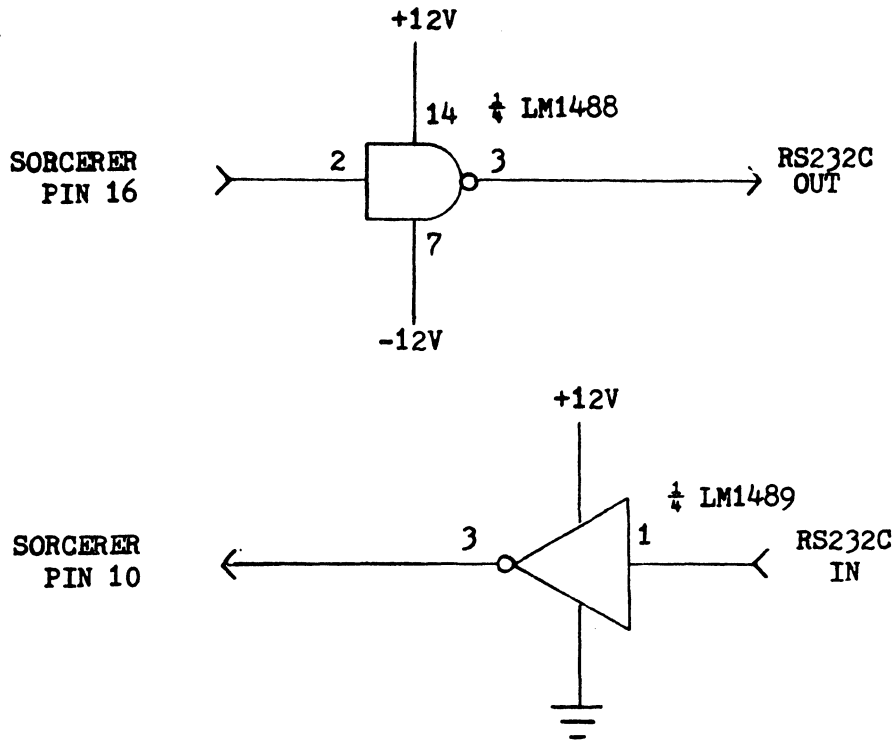
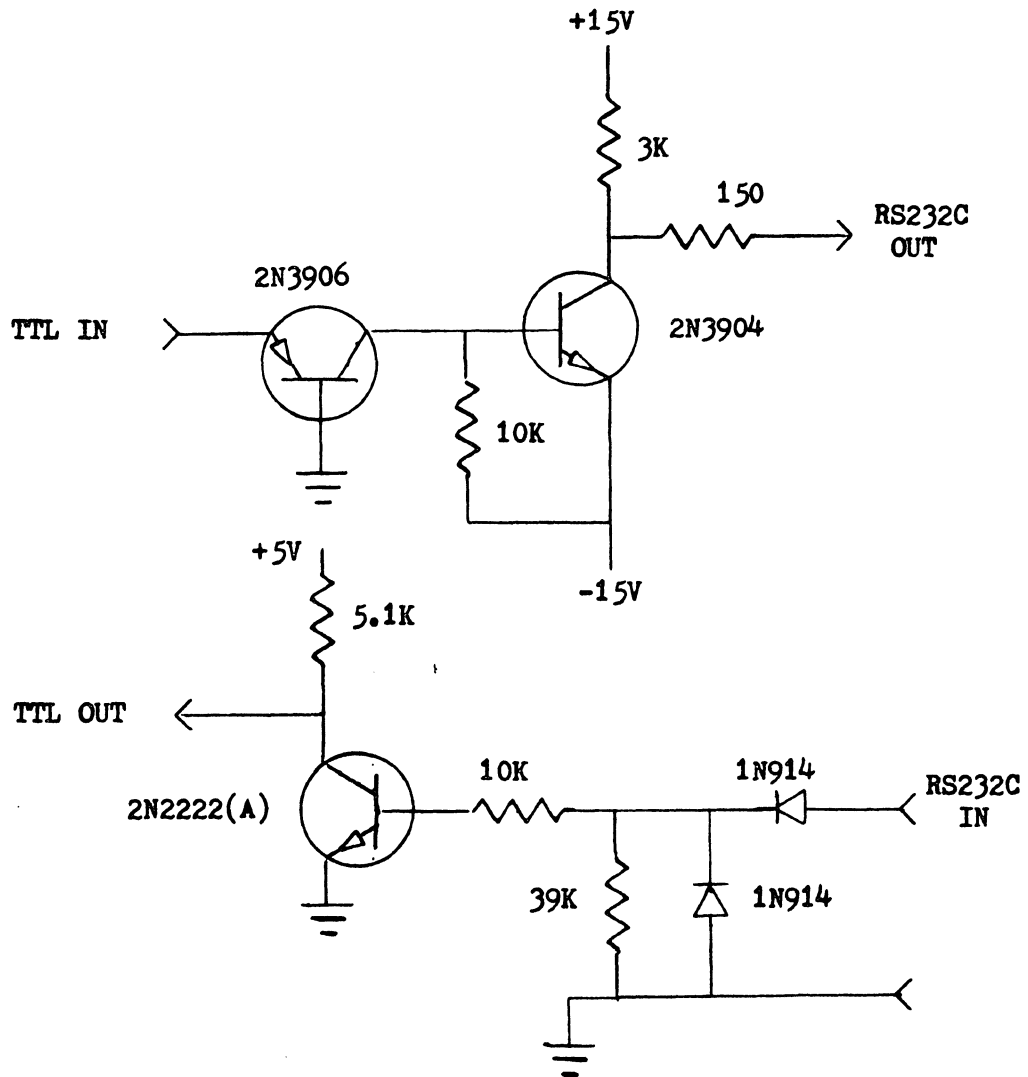


FIGURE 2



```

0135 D3 FF      0540      OUT      OFFH      SEND START BIT
0137 0E 08      0550      MVI      C,B      BIT COUNTER
0139 CD 5A 01    0560 PRINT1:    CALL     WHOLE     WAIT 1 BIT TIME
013C 3E 01      0570      MVI      A,01H
013E A2          0580      ANA      D      MASK DATA
013F D3 FF      0590      OUT      OFFH      SEND DATA BIT (BIT 0)
0141 1F          0600      RAR
0142 7A          0610      MOV      A,D      GET NEXT BIT READY
0143 1F          0620      RAR
0144 57          0630      MOV      D,A      SAVE NEW DATA
0145 0D          0640      DCR      C      DEC COUNTER
0146 C2 39 01    0650      JNZ      PRINT1   LOOP FOR 8 BITS
0149 CD 5A 01    0660      CALL     WHOLE
014C 3E 01      0670      MVI      A,01
014E D3 FF      0680      OUT      OFFH      STOP BIT
0150 CD 57 01    0690      CALL     TWOBIT   SEND 2 STOPS
0153 F1          0700      POP      PSW
0154 D1          0710      POP      D
0155 C1          0720      POP      B
0156 C9          0730      RET      *      DONE!
0157          0740      *
0157          0750      *---- DELAY ROUTINE ----*
0157          0760      *
0157 CD 5A 01    0770 TWOBIT:    CALL     WHOLE
015A CD 5D 01    0780 WHOLE:    CALL     HALF
015D 06 42      0790 HALF:    MVI      B,BAUDRATE BAUD RATE CONSTANT
015F E3          0800 DELAY:    XTHL
0160 E3          0810      XTHL
0161 05          0820      DCR      B
0162 C2 5F 01    0830      JNZ      DELAY
0165 C9          0840      RET
0166          0850      *
0166          0860 BAUDRATE  EQU      42H

```

SYMB 2

```

RDPK      0100 : RDPK1      0102 : RDPK2      0111
THEEND    0121 : PRINT     012F : PRINT1     0139
TWOBIT    0157 : WHOLE     015A : HALF        015D
DELAY     015F : BAUDRATE  0042

```

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*****
*                                     *
*           FOR SALE                 *
*                                     *
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# THE PERSONAL ACCOUNTS PAYABLE SYSTEM

By Tom Bassett

I hate to pay bills.

It's not so much that I mind spending money. And I don't begrudge the money (LOTS of money) that the rest of the family spends. It's just that I hate to pay bills, keep a checkbook, make arithmetic mistakes, address envelopes, write checks, and balance with the %&&\$! bank each month.

So I wrote a program to do it all for me. After all, what's a computer for?

The program is the Personal Accounts Payable System -- PAPS. It's really several separate programs, so I call it a "system". The Sorcerer's Apprentice Users Group is selling the system to Sorcerer users. This article is a description of PAPS and what you can expect for \$50.00.

## Accounts Payable

In the business world, most companies have computerized their accounting functions, among which the accounts payable module is a major part. Accounts payable is just a list of the bills the company owes. These business systems interface payables with purchasing, cost accounting, and general ledger functions, among others.

The average working stiff does not need all this sophistication. But he does need something that most business systems don't have -- a means of interfacing his bank accounts with his bill-paying, and a means of balancing and reconciling those accounts. This is what PAPS is designed to do. As a business system it's not much use. But for maintaining a personal checking account -- well, I don't know what I'd do without it. Of

course, I'm prejudiced.

## Requirements

The system requires a 48K Sorcerer I or II with two disk drives of at least 296K capacity each (such as Micropolis Mod II or Exidy drives), and a printer of at least 80-column width. A "walk-through" documentation is provided as a disk file, and leads the user through the installation, configuration and initialization procedures, as well as day-by-day use of the system.

I'll attempt to describe the functions of the system. It's difficult to do so in a logical order, since many of the functions are interrelated.

## A File of Bills

With PAPS, bills from various charge accounts, charge cards, etc., are "posted", or input, to the system as they are received. The bills accumulate in an accounts payable file. At bill-paying time, a payment-processing program allows you to select, from among the posted bills, the ones you want to pay -- or all of them, if you wish (and have the money). You can also pay a bill directly, without going through the bill-posting procedure. This is handy for the one-time payment to a payee you'll probably never write a check to again.

Once you have selected the bills to pay, a "cash requirements" report is printed. This lists the selected payments, and the cash required to be on deposit in the bank to cover the total of the payments.

continued on page 151

## Print the Checks

If you have enough cash on deposit, you are allowed to proceed with printing checks on continuous-form blank checks. If there's not enough cash in the bank to cover your selections, the check printing is inhibited until you either delete payment selections (to reduce cash requirements) or deposit cash to cover the requirements. Once the checks are printed satisfactorily (there's a reprint option), you are required to print a check register.

## Registers

Notice that "required" in the last paragraph. This is a feature of PAPS that will be appreciated by those who tend -- as I do -- to be a bit sloppy about record-keeping. You MUST print the register; the program won't allow you not to. And, the register is numbered; each register has a sequential number, incremented automatically upon update of the "outstanding check" file. This is also true of a couple of other registers. What's the purpose? Simply to provide you with a valid "audit trail". An audit trail is a history of every transaction within a system. If there's a foul-up somewhere along the line, you can refer to your registers to trace the transactions that caused it. The numbered registers provide the means to do this.

Once checks and register are printed, it remains for you to sign the checks and stuff them into window envelopes. Since the name and address of the payee are on the face of the check, no more envelope addressing.

## Standing Data Files

Back to the bills. To make input easier, the system carries a file of "vendors", or businesses and individuals to whom you often

write checks. Up to 200 of these vendors can be carried on file, complete with names, addresses, customer numbers, etc. So to specify the payee of a bill, you simply type his vendor number and his data is pulled from a disk file. Saves a lot of typing. Year-to-date payments are accumulated for each vendor, and a listing of all vendors and amounts can be printed.

This vendor file is one of several "standing" data files in the system. Another is the "expense account" file. You may carry up to 200 expense accounts such as gas and electricity, newspapers, state sales tax, etc. When posting your bills, you must "distribute" -- or assign -- the amount of the bill to one or more expense accounts. These accounts accumulate, and you thereby have a record of where the money went.

## Budgets

If you want to budget your money, you can assign a yearly budget amount to each expense account. At any time you can print a listing of expense accounts and the year-to-date expenses for each. This listing will also include a year-to-date projected budget amount. For example if your yearly budget for "galoshes" is \$100, and you print the report at the end of March, your projected YTD budget amount would be \$25, since March marks the end of the first quarter of the year. You can compare this to the actual expenditure-to-date for galoshes and see how you're doing. Very revealing, I've found.

Another data file is the "income account" file. This carries one or more income sources, so that as you post deposits to your bank account you can indicate where the income came from.

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## Up To Three Banks

The last standing data file is the "bank account" file. Here you are allowed to keep up to three bank accounts. As you operate the system, one bank account is the "active" account and all transactions are made for that account. Active accounts may be switched at will. And, bills from the accounts payable file may be paid from any bank account.

These standing data files are established and maintained by separate maintenance programs, allowing full access to the data. If a vendor's address changes, just update that record in the vendor file. Other working data files are created and erased as needed within the system.

## Handwritten Checks

What about the checks your spouse writes to the grocery store? No problem. The system incorporates a "manual check" processing program that allows you to post these checks (in batches if you wish) and update that bank account balance. As with bill posting, these checks are posted to either a vendor carried in your file, or to an unlisted payee. Also, as with bill posting, the check amount is distributed to expense accounts. And, as with the computer-generated check routine, a check register MUST be printed, giving you your audit trail.

One feature must be noted here. As all these check transactions are being carried on, and registers are being printed, everything is posted to temporary work files. The permanent "outstanding check" file is not updated until the registers are printed and you have indicated that they are satisfactory. Then the file is updated and the temporary work file erased. This also allows corrections to be made if a register contains an error.

But once the outstanding check file is updated, it may NOT be corrected. The only means of correcting an error is to post a correcting transaction, which will appear in a register and preserve the integrity of the audit trail.

## Deposits

A deposit-posting program allows you to input deposits to each bank account, and updates the bank account file. Here you specify the income source of the deposit, the amount of the income item, and the deposit amount. If the income amount is greater than the deposit amount, then you must distribute the difference to one or more expense accounts. Thus, if you choose, you may maintain an accurate record of income, the sources of the income, and the expenditure of the income.

## Convenience

To save typing when distributing amounts to expense accounts the programs incorporate a default entry. It works like this. Say you are posting a bill or a manual check for \$100, and you want to distribute \$35.78 to one expense account and \$64.22 to another. When prompted to do so by the program, you enter the account number of the first expense account, and then the amount, \$35.78. Then enter the number of the second expense account, and, rather than using your calculator to find the remainder of \$64.22, just hit return. The remainder of \$64.22 is posted to the chosen account, and you've saved some calculating and typing. If you're posting to only one expense account, just hit return at the amount prompt and you're finished.

## Are You Sure?

I've mentioned prompts and responses. As you respond to the

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various prompts for entry of account numbers and the like, the program will read the account file and display the account name corresponding to that number, just to make you more sure in your mind that this is indeed the account you want.

And, when you've finished entering data for a transaction, you are asked "Is this data correct? (Y/N)". Hitting an "N" allows you to clear the data you've just entered and start over.

### Balancing

Every month we all get those thick envelopes from the bank, containing returned checks and a statement of our account. I have always hated to sit down with a calculator and a ream of scratch paper and attempt to reconcile the bank's arithmetic with mine. There's usually a conflict in the figures, and usually the bank wins. With PAPS the returned checks are input by number to a returned check program, a register is printed, and the outstanding check file is updated.

Then comes the moment of truth. A balancing and reconciliation program lets you input the balance from the bank statement, any uncredited deposits, any interest earned on a NOW (interest-bearing) account, and any services charges. Then, in a flash, you are told if you're in-balance or out-of-balance; and, if out-of-balance, by what amount and in which direction.

In the year or so that I've been using PAPS I've been out-of-balance just once. An examination of my registers quickly located the error (I'd posted a manual check of \$25.13 as \$25.00). I made corrections (posted a \$.13 check with a dummy number and immediately returned it), and rebalanced and all was well. And, although it might look silly on the registers,

that posting for a \$.13 check preserved my audit trail.

If a check must be voided, the returned check program is used with a "void" option. The amount of the voided check is then immediately added back to the bank balance, and the voided notation is carried in the register.

### Who Pulled the Plug?

So what happens if, while all this is going on, your number three son pulls the plug and blows a file update? What happens to the kid is up to you, but here's what happens with PAPS.

The system uses a "grandfather-father-son" data disk backup routine. You will always use the most current disk for data transactions; then, when finished with your session, you may call up a backup routine that copies the current data disk to the oldest data disk. In other words, the grandfather disk becomes the son, the son becomes the father, and the father becomes the grandfather. The disks are used in this rotation so that when the plug is pulled you have lost only the current data you were entering when that disk was bombed.

Now, with three data disks floating around it would be easy to become confused and use an obsolete data disk as a current data disk, really botching up your files. It would be easy except that PAPS won't let you do it. When you call in the system, it insists on the proper data disk (the current one). And, when backing up data disks, it insists on the disks being used in the correct rotation.

However, if you're forced to use the father disk because the son disk was sat on by the dog, the program will inform you of your

continued on page 154

"error" but allow you to override the trap, thus setting the father disk to current status.

All this backup protocol sounds like a lot of hassle, but it will save the day when it's needed.

#### Where's That Check?

We have all experienced the frustration of searching for a check we wrote six months ago -- or was it seven? -- by paging through a check register. PAPS maintains a year-to-date check file for each bank account. If you have to find an old check, you can search the file by vendor number, or by a range of dates, and extract and print a listing of only those checks. Or you can print the whole year-to-date file for a permanent record of the year's activity.

#### Archives

Do you know where your checking account records from last year are? PAPS incorporates an Archive Subsystem that keeps a permanent disk record of each year's account activity, including a file of the year's checks. These checks can be sorted and listed by vendor number or date as with the current year-to-date file, if desired. The Archive subsystem is on a separate disk; when that disk fills, a new one can be started for subsequent years.

Once the year's data is archived, PAPS allows you to zero all account activity in preparation for beginning another year. But current activity (the outstanding check file and deposit file) are not zeroed.

#### Is It Deductible?

If you establish some expense accounts to keep track of tax-deductible expenses PAPS provides one feature that differs greatly from business systems. A business

usually operates on the "accrual" basis, which in the case of a payable means that the expense is "recognized" -- is tax-deductible, in other words -- in the year in which the expense is posted to accounts payable, even though the bill is not paid until a later year. But an individual usually is taxed on the "cash" basis, in which the expense is deductible in the year in which it is actually paid, regardless of when the bill is received.

With PAPS the amount of the bill is posted to the expense account only after the check has been written. So if a bill is received this year, posted this year, but not paid 'till next year, then it will be in next year's expenses and not this year's. Thus your expense account accumulations can be, if you choose to go into that detail, an accurate record of tax deductions for your tax year.

Ahem!

PAPS has other features, but I'm running out of space to describe the details. As I said earlier, I don't know what I'd do without the system; I've come to depend on it. And, perhaps of major importance is this feature: when asked by a friend "What do you do with your computer?" I can answer casually "Well, for one thing I keep my entire accounts payable on the machine. I seldom write checks by hand anymore."

#### Editors Note:

We would like to find someone who can transfer this program to the Exidy Soft Sector format and the Vista 10 sector hard format. - OR- if someone can transfer this program to 8" disks for subsequent sale by Sorcerer's Apprentice. This program is NOT in the public domain. It is available for Sorcerer owners from Sorcerer's Apprentice.

---

\*\*\* EXMON2 \*\*\*

Exidy Enhanced Monitor  
Version 2.8.7

All new routines copyright (c) 1982  
Walter S. Blady

This monitor includes the following features that are required by many popular application programs.

- 1) Direct cursor positioning
- 2) Clear to end of line
- 3) Clear to end of screen
- 4) Clear entire line
- 5) Generate reverse ASCII set
- 6) Set highlight on
- 7) Set highlight off

These additional features give you even more flexibility.

- \* Serial port that works properly - for modems etc.
- \* Reserve any number of lines at the top of screen.
- \* Search memory for HEX or ASCII string - up to 48 characters.
- \* Fill memory with hex byte.
- \* TWO Parallel printer drivers - with or without linefeeds
- \* TWO Serial printer drivers - with or without linefeeds.
- \* F-A-S-T keyboard status checking routine - CP/M compatible.
- \* Greatly expanded jump table to the most often used monitor routines.
- \* Plus numerous fixes and enhancements to the monitor.

Two printer drivers are included: Parallel and Serial. Both are used with the Exidy parallel and serial connectors. Each driver has two jump vectors - allow or disallow linefeeds. The serial

driver has a reserved byte in the MWA 'waitn', for a delay value used after a Carriage Return. This is used for printers with slow carriages. The value must be poked in.

Two useful commands have been added to help those interested in fiddling with hex code.

- 1) Fill memory with a byte

- 2) Search memory for a byte or word - location address is printed to the output device.

A fast keyboard status check routine has been added. When called, OFFh is returned in 'A' and the ZERO flag reset when a key has been pressed. 00h is returned in 'A' and the ZERO flag set if no key has been pressed.

A more comprehensive jump table has been set up to include the most often used Exidy routines.

The top of screen may be defined. Any number of lines may be reserved at the top of screen, and scrolling or cursor movements will not interfere with this area. The only way to access this area is through direct cursor positioning. Other additions are outlined below.

NEW SET OUTPUT COMMANDS:

SET 0 =

V...VIDEO  
P...PARALLEL  
S...OUTAPE  
N...CENTR. DRIVER, NO LINFEEDS

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M...CENTR. DRIVER, LINE FEEDS  
X...SERIAL DRIVER, NO LINEFEEDS  
Y...SERIAL DRIVER, LINE FEEDS  
E063h ..Special serial output

Set I=

E060h ..Special serial input  
E057h ..External keyboard input

**NEW SET COMMANDS:**

Set H=n.....SET TOP OF SCREEN  
(n must be in hex)

The top of screen can also be set by calling 'highsc' with the number of reserved lines desired, in register 'E'.

The cursor character may be changed by putting the value in register 'A' and calling 'cursor'. Or the value can be poked directly into the proper MWA location.

**NEW SCREEN EDITING COMMANDS:**

'ESC' = Ln Cn.DIRECT CURSOR POS.  
'ESC' 1...CLEAR TO END LINE  
'ESC' 2...CLEAR TO END SCREEN  
'ESC' 3...CLEAR LINE  
'ESC' 4...HIGHLIGHT ASCII ON  
'ESC' 5...HIGHLIGHT ASCII OFF  
'ESC' 6...LOAD REVERSE ASCII SET (destroys all user graphics)  
'ESC' 7...RESTORE USER GRAPHICS

**NEW COMMANDS:**

FL (fill)...(from address) (to address) (byte)  
SR (search)...(from address) (to address) (byte '/' word)

**NEW (MWA) STORAGE:**

CRSFLG..ESCAPE SEQUENCE FLAGS (5 low order bits used)

SCRTOP..OFFSET TO TOP OF SCREEN (n \* 64)

WAITN..NULL VALUE FOR SERIAL PRINTERS WITH SLOW 'CR'

CRSCHR..CURSOR CHARACTER

Three original routines have been sacrificed to make room for these new features. They were considered by most to be of limited value.

- 1) Memory test <GONE>
- 2) Batch mode <GONE>
- 3) Files command <GONE>

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**NOTICE**

B. J. Freeman's 'Hackers Manual' is not yet available. Please contact B.J. as to availability before sending any money.

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\*\*\*\*\*  
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\*\*\*\*\*

48k Sorcerer Model II with Exidy Dual Disks, GE Tape Deck and VT100 Monitor. Word Processor and BASIC ROMPACs. Exidy CP/M, EXBASIC, Z80 Software Dev & BASCONVRT Disk Utility. Spellbinder, Plot, Exidy Manuals & all Sorcerer Apprentice Volumes as well. A complete system ready to go. A DTC 381 Printer can also be included. Make an offer.

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\*\*\*\*\*

## Further Glimpses at EXMON2

By: H.A. Lautenbach

Many are wondering about what's so special about the new Monitor revision by Walter Blady. For many it will be like breathing new life into your Sorcerer and also your own programming style.

It has not been mentioned before, but another feature this Monitor has, that is a real treat, is that the serial port now becomes a true serial port for 300 or 1200 baud modems and also the SMODEMX program. The toggling of that Bit associated with the keyboard scan routine no longer poses any problem. We are getting many phone calls (long distance no less) asking some more complex questions. I would like to take some time to answer some of these in this newsletter.

Questions =====	Answers =====
Availability?	: No, not though PORT FE.
From whom if not PORT FE?	: H.A. Lautenbach same P.O. Box as PORT FE
How much does it cost?	: \$65.00 + 5.00 Postage U.S. Funds
Is it compatible with the WPP ROM PAC?	: No, direct monitor calls made by WPP ROM PAC
What happens to the old Monitor chips?	: You can pass them on to never neverland OR you can stack the NEW Monitor EPROMS on top of the old ones and have both monitors.
Is it compatible with the ROM PAC BASIC?	: Yes fully, no bugs detected.
What terminal does it emulate?	: None specific
With the reverse character set do I still have my graphics?	: Yes some of them (not all)
Is the Monitor Jump table compatible with the old Monitor jump table?	: Yes fully (1st 16 are identical) plus 18 more added.
What have I lost in the Monitor?	: Batch, Test & Files commands
Is it CP/M compatible?	: YES (completely, with keyboard status check routine for CP/M)
Will my speed increase?	: Depends on how efficient your present CP/M status check is.

continued on page 158

Lifeboat CP/M 1.4 and 2.2 are definitely improved (if original) Also Micropolis CP/M can be improved.

- Will all software that requires cursor positioning work? : Yes, as far as we can determine. As long as it has an install program or system parameter file.
- Was anything else changed? : YES many BUGS have been corrected, some not even mentioned ever before.
- Has a CP/M boot been provided? : No, There are too many boot addresses that could and are being used on different disk systems. We thought it wiser not to include this function.
- How did you get it all into the monitor? : With a lot of squeezing and making certain that the routines more efficient.
- Can I control the Sorcerer from a remote ASCII terminal? : Yes, from both the Sorcerer and the keyboard or from a remote ASCII terminal that is hooked up via the serial port on the Sorcerer. (300 or 1200baud)
- Can I control it via a modem at 300 baud? : Yes, even at 1200 if you have the modems.
- Are all the new jump vectors new routines? : It's about 50/50, some of the jump vectors were brought out to be more accessible to the user.
- Is it compatible with MP/M? : We don't know, should be.
- Can I use all my graphics if I want to? : Yes if you want. Reverse ASCII would be overwritten though and would have to be recalled.
- Is the reverse ASCII under keyboard control? : Yes, you use the ESC key and a number.
- What about updates. What if there are still bugs? : 'If' there are any, only a small handling charge will get you revised EPROMS.
- Are there discounts for user groups? : Yes group purchases will be given discounts. 5 to 9 sets 15%, 10 or more 20%

There are probably some that I've missed, but if any of you have more questions, please direct all inquiries to me personally. Most of your questions are answered with the documentation that comes with the EPROMS.

continued on page 159

# EXMON2

## A NEW MONITOR FOR THE SORCERER

At last, here's a revised version of Exidy's operating system that has full terminal functions. EXMON2 will increase the flexibility of your Sorcerer computer and open the door to many excellent software applications that require special terminal features.

These New EXMON2 routines can be used directly from your Sorcerer keyboard and are easy to use in BASIC programs:

- Direct cursor positioning
- Clear to end of line
- Clear to end of screen
- Delete line
- Text highlight on/off
- Reverse ASCII characters

EXMON2 has many additional features that give your Exidy Sorcerer even greater flexibility:

- Define and reserve top of screen
- Search memory for hex or ASCII string
- Parallel and serial printer drivers with or without line feeds
- A properly working serial port (for modems, etc.)
- A f-a-s-t keyboard status routine that's CP/M compatible
- And there's more ...

Each EXMON2 set comes complete with two burnt-in, fully-tested Eproms and an accompanying user's manual with easy-to-understand installation instructions.

1 set (2 Eproms & manual) ... \$65.00 U.S. + postage\*  
 Group } (5 to 9 sets) ... \$55.25 U.S. + postage\*  
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\*Add \$5.00 U.S. with the first set, \$3.50 U.S. with each additional set for postage and handling.

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### TO ORDER EXMON2:

Please send more information on EXMON2.  
 I have enclosed my certified cheque/money order for \$ \_\_\_\_\_; please send me \_\_\_\_\_ EXMON2 set(s).  
 Company/Club \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

For most of you there is a hardware change requiring you to change the ROM/EPROM jumpers to that of the standard 2716 EPROMS and that's all there is to it. In my personal opinion (BIASED OF COURSE) I really think it's the best thing that has happened to the Sorcerer since it was first sold.

I do recommend that everyone needs this capability. I'm sure that most of you have done without long enough. The added frills are nice.

```

*****
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### Best Offer

48k Dynasty smart-ALEC (Mfg-Exidy), 12" Zenith ZVM-121 Video Monitor, Epson MX-80 III F/T, GRAFTRAX, Lexicon LEX-11 Modem, BASIC ROMPAC, Word Processor PAC, 12 Cassette based programs.

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48K Sorcerer - \$450.00 or best offer. Four (4) 32k Sorcerers, \$300.00 or best. Two (2) Leedex Monitors, \$4.00 each or best. One (1) Teco Monitor, \$65.00. Comprint electrostatic printer (200 CPS) brand new, \$250.00. Five (5) Exidy Word Processor PACs, \$30.00 each. Two (2) IBM Selectrics with Escon interfaces to Exidy parallel ports, \$600.00 each.

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## SPELLBINDER / WORDPROCESSOR PAC.....&.....EXMON2

We have found the necessary addresses in the WORDPROCESSOR PAC that need to be changed. For some of you that are running the PAC either relocated for disk operation or the actual PAC itself. In the PAC the last PROM/EPROM is the only one affected. The following are the addresses that have to be changed:

	add:		was/is	Change to:
WORD PROCESSOR	DF21 - LD HL,	EC6E	----->	GRATBL: ED4C
=====	DF3F - LD HL,	ECBE	----->	CONTBL: ED9C
	DF48 - LD HL,	ED0E	----->	SHITBL: EDEC
PAC CHANGES	DF51 - LD HL,	ED5E	----->	SLOTBL: EE3C
=====	DF56 - LD HL,	EDAE	----->	UNSTBL: EE8C

As for the SPELLBINDER file, there may be several versions in use, however many versions there are, will not affect 'what you must change' only the addresses where you find them may differ from version to version. After having changed the file it works just the same with EXMON2 as it did with the old monitor. memory bound --- unfortunately.

	add		was/is	Change to:
SPELLBINDER	45EC - LD HL,	EC6E	----->	GRATBL: ED4C
=====	460A - LD HL,	ECBE	----->	CONTBL: ED9C
	4613 - LD HL,	ED0E	----->	SHITBL: EDEC
Ver. xx CHANGES	461C - LD HL,	ED5E	----->	SLOTBL: EE3C
=====	4621 - LD HL,	EDAE	----->	UNSTBL: EE8C

FOR SPELLBINDER - SAVE 89 SPELLM2.COM or SAVE 78SPELLM2.COM  
(Installed version)

Those are the only things that need to be changed to make it compatible with EXMON2.

=====

## EXBASIC & EXMON2

The following changes make EXBASIC compatible with EXMON2.

The first part contains the changes to standard EXBASIC. The second part are the additional code changes for EXBASVC- (EXBASIC installed with the full Screen Editor).

Part one:

Address:	Old code:	New code:
3934H	CALL E1A2H	CALL E045H
39A0H	CALL E1A2H	CALL E045H
39A4H	CALL E9E8H	CALL E04EH
39B8H	CALL E9CCH	CALL E04BH

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Part two:

(EXBASIC installed with Full Screen Editor)

5917H	CALL E018H	(SAME)
591BH	CALL E9D6H	CALL E051H
597DH	LD HL,E018H	(SAME)
59ACH	JP E9F0H	JP E01BH
5A07H	CALL E9B1H	CALL E048H
5A6CH	CALL E045H	CALL E00CH
5A73H	CALL E205H	CALL E1F8H
5D11H	LD DE,E01BH	(SAME)

As you may gather from the information regarding changes above, most programs require very little change. EXMON2 is proving to be quite the handy tool.

We shall try to keep you updated on all programs and their changes as they become available. If you have anything to add to the expanding list of modified programs, please write in and let us know what they are so that others may benefit.

\*\*\*\*\*

## CASSETTE RECORDING HINTS

By Frank Voss

For those Sorcerer owners who are still using cassette program and file storage, the following hints may be helpful.

Much has been written about achieving the proper output level and waveforms for reading by the Sorcerer's cassette interface. Meters, oscilloscopes and various "black boxes" have been utilized to increase tape loading reliability. One aspect of the tape cassette system seems to have been neglected. This is the alignment of the tape recorder's record/playback head with respect to the magnetic tape and is referred to as the "azimuth".

I became aware of the effect of the head azimuth on loading reliability several months ago when my recorder (a General Electric model 3-5155A), which I had been using for almost three years, began failing to feed programs to the computer successfully. Prior to the

onset of this problem, I estimate a loading success rate in excess of 99%.

Examination and testing of my recorder revealed no electrical or mechanical breakdown. Several test programs were made and found to vary from one to another. The problem was then determined to be the head azimuth.

Tape heads are usually mounted in a manner that permits an adjustment screw opposed by a spring to alter the tape gap's angle to the recording tape's direction of travel. (See Figure 1.) If this angle should change, either by adjustment of the screw or because of other factors, the characteristics of the output from the recorder can change significantly also. Thus a previously good tape may not load anymore.

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In my situation, repeated movement of the platform on which the record/playback head, erase head, capstan, etc., are mounted, caused the head to shift and altered the azimuth angle.

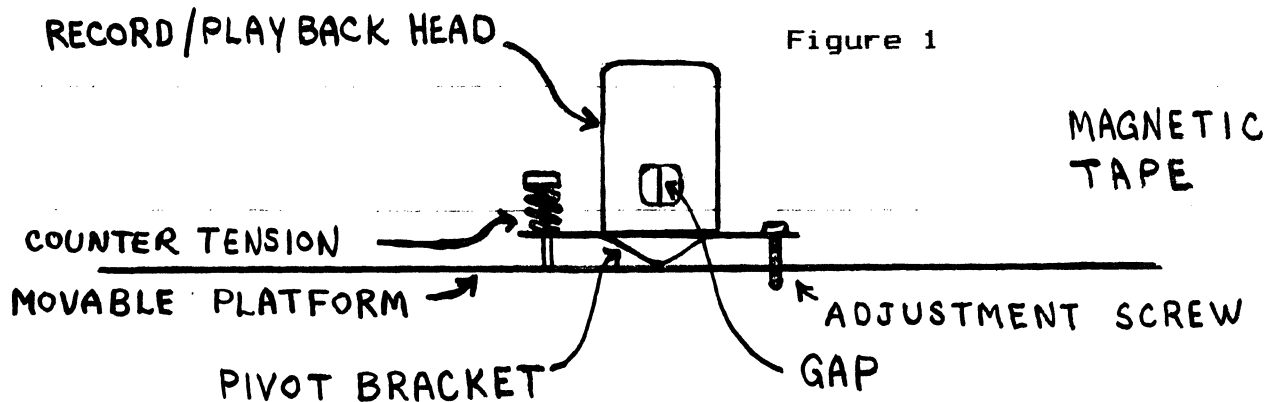
Readjustment can be best done with instruments but I have done so easily by listening to the problem tape. The azimuth is adjusted so that the sound is at its loudest level and has a clear, crisp character as opposed to a dull or muffled quality. The volume control is set to the proper level and the tape should load successfully.

Fortunately the design of my model recorder permits access to the azimuth adjustment screw while a tape is being played. Other recorders may require the case to be opened or a top cover removed. If you wish to have easy access to the adjustment screw at a future time, locate the position of the screw while the recorder is in a play function and then carefully drill a 1/8th hole in the case above the screw so that a small screwdriver may be inserted for adjustment purposes.

To minimize adjustments, after a problem tape has been loaded into the computer, the tape head is adjusted to a reference tape and the program in the computer is

resaved. The reference tape is created by the user. The tape recorder head is adjusted so that as many of the user's tapes as possible load successfully. A short, clean, good quality tape is now used to record the carrier tone that is normally available from the MIC jack on the back of the computer. Whenever it becomes necessary to check or readjust the head alignment, it is done with respect to this tape. Adjustment should be so that the volume is at a maximum for a given volume setting. This reference tape can also serve to give a rough indication of the tape movement. If the tape speed is erratic or fluctuating, the tone will reveal this. If the tone is steady and constant, then tape movement is OK.

When loading programs from one recorder to different computers, difficulties can be overcome by adjustments of the volume control. When loading tapes created on different machines to the same cassette recorder/computer system, the problem is more likely to be overcome by adjustment of the head azimuth. In either case, if you live in a cold climate and your computer is in a cool room, allow your system to warm up by letting it set powered up for a time to increase the reliability of operation. Cold seems to be a real curse to the Sorcerer!



### TYPICAL HEAD MOUNTING

# SETMX

By Irv Hoff

## PRESETTING EPSON MX-80 PRINTER OPTIONS

This simple program allows EPSON MX-80 users to preset a number of options. The printer can then be satisfactorily used with the TYPE command (via CTL-P) or other normal listing programs. These options include: 10 or 16.5 chars. per inch, 6 or 8 vertical lines per inch, single strike or double strike emphasized print, and reset to normal default values.

To use, turn on the Epson printer and then call up SETMX.COM. It will display various options on its menu. Several selections can be made at the same time or a number reentered if mis-typed. If RET is immediately typed it defaults to a standard configuration.

Default is: 10 characters per inch, 6 vertical lines per inch, single strike print. After the appropriate answers have been typed, hit RET to leave the program (or CTL-C). The printer now has the options you selected. The TYPE command (via CTL-P) may then be used or any other LIST routine desired.

Obviously some options were not included. The SETMX.ASM file can be edited and then reassembled. (ASM.COM works fine for this purpose.) Even if the operator is not too familiar with using source code, there are enough examples already included to make the job of adding some additional feature fairly simple.

```
; SETMX v1.0      EPSON MX-80 PRINTER UTILITY      10/10/82
;
;               by
;               IRVIN M. HOFF
;               LOS ALTOS HILLS, CA 94022
;
; This program sets the EPSON MX-80 printer to various
; configurations such as:
;
;               10 CPI or 16.5 CPI
;               Normal or Double Strike
;               6 or 8 vertical lines per inch
;               Emphasized print
;
; There are numerous other selections that could be added.
; This program should give you the background to include
; other options, if desired, yourself. These seemed the
; most important.
;
; COMMAND CHARACTERS FOR THE EPSON PRINTER:
;
;      17          CTL-Q          Enable printer to receive data
;      27,'O'      ESC O          8 vertical lines per inch
;      27,'2'      ESC 2          6 vertical lines per inch (Normal)
;      27,'E'      ESC E          Emphasized print
;      27,'F'      ESC F          Non-emphasized print      (Normal)
;      27,'G'      ESC G          Double-strike print
;      27,'H'      ESC H          Single-strike print      (Normal)
;      27,14      ESC CTL-N      Double-width print on
```

continued on page 164

```

;          27,20      ESC CTL-T   Double-width print off   (Normal)
;   15 or 27,15      ESC CTL-O   16.5 Characters per inch (Compressed)
;   18 or 27,18      ESC CTL-R   10 characters per inch   (Normal)
;
;          ORG      100H
;          JMP      START          ;JUMP INTO PROGRAM
;
; GENERAL EQU'S
;
BDOS      EQU      5              ;SYSTEM CALL ENTRY POINT
CONIN     EQU      1              ;GET KEYBOARD CHARACTER
CR        EQU      0DH           ;CONTROL-M FOR CARRIAGE RETURN
CONOUT    EQU      2              ;CRT OUTPUT ROUTINE
CTLC      EQU      3              ;CONTROL-C TO TERMINATE
ESC       EQU      1BH          ;ESCAPE CHARACTER
LF        EQU      0AH          ;CONTROL-J FOR LINE FEED
LIST      EQU      5              ;LIST DEVICE OUTPUT
STRING    EQU      9              ;PRINT STRING ON CONSOLE
TAB       EQU      09H          ;CONTROL-I FOR HORIZONTAL TAB
;
; DATA STRINGS TO CONTROL EPSON PRINTER
;
CD:        DB      15,ESC,'F',ESC,'G',ESC,'2',0      ;16.5 CPI, DOUBLE STRIKE
CN:        DB      15,ESC,'F',ESC,'H',ESC,'2',0      ;16.5 CPI, NORMAL
DEFLT:    DB      17,18,ESC,'F',ESC,'H',ESC,'2',0    ;DEFAULT PARAMETERS
EMPH:     DB      ESC,'E',0                          ;EMPHASIZED
UCD:      DB      18,ESC,'F',ESC,'G',ESC,'2',0      ;10 CPI, DOUBLE STRIKE
UCN:      DB      18,ESC,'F',ESC,'H',ESC,'2',0      ;10 CPI, NORMAL
EIGHT:    DB      ESC,'0',0                          ;8 LINES PER INCH
TURNUP:   DB      CR,LF,'$'
;
; SIGN-ON MESSAGE
;
SOM:      DB      CR,LF,LF,LF,LF,LF,LF,LF
          DB      TAB,TAB,'MX-80 Printer options v1.0 10/11/82'
          DB      CR,LF,LF,TAB,TAB,'0 = Reset to default parameters'
          DB      CR,LF,LF,TAB,TAB,'1 = 10   CPI, Normal'
          DB      CR,LF,TAB,TAB,'2 = 10   CPI, Double Strike'
          DB      CR,LF,TAB,TAB,'3 = 16.5 CPI, Normal'
          DB      CR,LF,TAB,TAB,'4 = 16.5 CPI, Double Strike'
          DB      CR,LF,LF,TAB,TAB,'5 = Emphasized'
          DB      CR,LF,TAB,TAB,'8 = vertical lines per inch'
          DB      CR,LF,LF,LF,LF,LF,LF,TAB,'Select: '
          DB      '$'
;
;          * * * * * PROGRAM STARTS HERE * * * * *
;
START:    POP      H              ;RETURN ADDRESS TO 'CCP'
          SHLD     EXIT1+1        ;STORE
          LXI     SP,STACK        ;SET UP STACK
          LXI     D,SOM           ;SIGNON MESSAGE
          CALL    DSTRNG          ;SHOW ON THE CRT
          LXI     H,DEFLT         ;SET THE PRINTER TO NORMAL CONDITIONS
          JMP     PSTRNG
;
SELECT:   CALL    INPUT          ;GET A CHAR.

```

continued on page 165

```

CPI      '0'                ;RESET TO DEFAULT PARAMETERS
LXI      H,DEFLT
JZ       PSTRNG
CPI      '1'
LXI      H,UCN              ;10 CPI, NORMAL
JZ       PSTRNG
CPI      '2'
LXI      H,UCD              ;10 CPI, DOUBLE STRIKE
JZ       PSTRNG
CPI      '3'
LXI      H,CN               ;16.5 CPI, NORMAL
JZ       PSTRNG
CPI      '4'
LXI      H,CD               ;16.5 CPI, DOUBLE STRIKE
JZ       PSTRNG
CPI      '5'
LXI      H,EMPH             ;EMPHASIZED
JZ       PSTRNG
CPI      '8'
LXI      H,EIGHT           ;GO TO 8 VERTICAL LINES PER INCH
JZ       PSTRNG
JMP      SELECT            ;IF NONE OF THESE, ASK AGAIN

;
;      = = = = = ROUTINES START HERE = = = = =
;
EXIT:    LXI      D,TURNUP   ;TURN UP SOME EXTRA LINES
        CALL     DSTRNG     ;DISPLAY ON THE CRT
EXIT1:   JMP      0         ;FILLED BY 'START' FOR RETURN TO 'CCP'
; GET A KEYBOARD CHARACTER
INPUT:   MVI      C,CONIN   ;KEYBOARD ROUTINE
        CALL     BDOS
        ANI      7FH       ;STRIP AWAY ANY PARITY
        CPI      CTLC      ;CONTROL-C?
        JZ       EXIT      ;IF YES, ALL FINISHED
        CPI      CR        ;CONTROL-M FOR RETURN?
        JZ       EXIT      ;IF YES, ALL FINISHED
        RET

;
; DISPLAY A STRING ON THE CRT
DSTRNG: MVI      C,STRING   ;CONSOLE STRING ROUTINE
        JMP      BDOS      ;SEND TO THE CRT

;
; PRINT A STRING OF CHARS. ON THE EPSON MX-80
;
PSTRNG: MOV      A,M        ;GET THE CHARACTER IN THE STRING
        ORA      A         ;SEE IF FINISHED YET
        JZ       SELECT    ;GET ANOTHER ANSWER IF FINISHED
        PUSH    H          ;SAVE THE ADDRESS IN THE STRING
        MVI     C,LIST     ;PRINTER ROUTINE
        MOV     E,A        ;PUT THE CHAR. INTO 'E' REG.
        CALL    BDOS      ;SEND TO THE PRINTER
        POP     H          ;BACK TO THE STRING ADDRESS
        INX     H          ;NEXT LOCATION
        JMP     PSTRNG     ;DO THE NEXT ONE

;
STACK   DS       20H      ;ALLOW SPACE FOR STACK
        DS       0
END

```

## Entering Assembly Without an Assembler

by Ernest E. Bergmann  
Physics, Building #16, Bethlehem, PA 18015

Here is the way to use assembly language programs in your Sorcerer without using an assembler. The technique I shall describe works for 8080 and Z-80 assembly programs. Figure 1 is the assembly listing of a sort demonstration program that will fill the Exidy Sorcerer screen with whatever character has been typed last. Control-C forces a return to the monitor. Keying in graphic characters can especially be fun.

When I created this program, I typed in, with the aid of an editor, the SOURCE STATEMENTS which appear on the right-hand side. The assembler took what I had typed and it created this listing by supplying the three leftmost columns, labelled: "ADDR", "CODE", and "STMT". The third of these, STMT, is simply a numbering of the original SOURCE STATEMENTS. This numbering is convenient for describing lines. For example, statements 2 through 9 are "comments" because their first column contains a '\*'. (Ed. Note: or ';' ). "Comments" in assembly are like "REM" in BASIC, however they take no space at all in the assembled program. The code that the Z-80 understands is found in the second column. This is what we must enter into the computer's memory by hand using the monitor if we do not have the DEVELOPMENT PAC or its equivalent.

The first code that is to be entered is seen beside statement 15. We see in the first ("ADDR") column the starting address for the code is 0100h; all numbers in the first two columns are in fact hexadecimal. So we start entering the code with the command to the monitor:

```
>EN 100 <cr>
```

It responds with:

```
100:
```

```
We enter the first line of code:  
CD 09 E0 <cr>
```

The monitor should respond now:  
103:

```
We now enter the next line of  
code:
```

```
CA 00 01 <cr>
```

In a similar manner we enter the remainder of the code; and finally end with:

```
125: C9 / <cr>
```

At this point it is good policy to save the code on tape PRIOR to trying it out! Sometimes a trial destroys the code and then we would have to reenter it. Being optimistic, we could record it with the proper "GO" address. The program appears to be started at address 0100 hex (statement 15 was labelled "BEGIN"). The last address we might use is 0126 hex so we enter the commands (and run the cassette recorder):

```
>SET X=0100 <cr>
```

```
>SAVE DEMO 0100 0126 <cr>
```

If we find we need to make changes in the code we could name the next saved program code "DEMO2", etc. We can verify the contents of memory with command:

```
>DUMP 100 126 <cr>
```

To try the code that is already sitting in memory (assuming it should start at 100) we type:

```
>GO 100 <cr>
```

With some experience, you will be able to make a few changes in many programs originally written for Z-80 or for 8080 machines (not necessarily for the Sorcerer), and run them on your own machine. You will probably need to learn more about assembly code than I have touched on here. A characteristic about assembly programs is that they will appear much longer than BASIC, but the actual code will be shorter (unless you are doing only "number crunching").

continued on page 167

```

ADDR      CODE      STMT SOURCE STATEMENT
0001
0002 *****
0003 * DEMONSTRATIN FOR THE EXIDY *
0004 *   OCTOBER 18, 1982           *
0005 *   by E. E. Bergmann        *
0006 *   Physics, Building #16    *
0007 *   Lehigh University        *
0008 *   Bethlehem, PA 18015     *
0009 *****
>E009      0010 RECEIVE EQU      0E009H;  ADDRS IN EXIDY
>E003      0011 WSTART EQU      0E003H
>F080      0012 SCREEN EQU      0F080H
>0780      0013 SCRSIZE EQU     1920    ; # OF SCREEN CHRS
>0100      0014 ORG             100H    ; WHERE PROG STARTS
?0100      CD09E0   0015 BEGIN   CALL      RECEIVE
?0103      CA0001   0016         JP        Z,BEGIN
?0106      FE03     0017         CP        3          ;CONTROL-C?
?0108      CA1101?  0018         JP        Z,FINISH
?0108      CD1901   0019         CALL     SCRFILL
?010E      C30001   0020         JP        BEGIN
?0111      3E20     0021 FINISH LD        A,' '
?0113      CD1901?  0022         CALL     SCRFILL
?0116      C303E0   0023         JP        WSTART
0024 * FILLS SCREEN WITH CHAR PASSED IN A:
?0119      2180F0   0025 SCRFILL LD        HL,SCREEN
?011C      77       0026         LD        (HL),A
?011D      1181F0   0027         LD        DE,SCREEN+1
?0120      017F07   0028         LD        BC,SCRSIZE-1
?0123      EDB0     0029         LDIR                    ;BLOCK MOVE
?0125      C9       0030         RET
0031         END

```

Figure 1: Assembly listing.

---



---

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---



---

# SOFTPAC EATS POWER DOT

By Don Lloyd  
Box 159, Pt. Reyes, CA 94956  
(415) 663-1795, MNet 70655,161

Like many Sorcerer users with S-100 expansion I have an 8k RAM board occupying the memory addresses formerly occupied by the various Rompacs and I normally operate with a 56k CP/M system. Once in a while there is a use for one of the cassette BASIC programs that either hasn't been converted to disk or that, because of its specific usage of memory, is 'hostile' to CP/M. To make these occasional visits to cassetland as convenient as possible, I have set aside a few disks sysgened with 48k CP/M and built a self-relocating 'softpac' image of the original Exidy Basic.

The first step in creating a PAC image is to, before powering up, disable or remove the 8k board and insert the Basic Rompac, then boot 48k cp/m. Use DDT or ZSID to copy the PAC code into your TPA, and save it on disk.

```
A0>zsid
SID VERS 1.4
#mc000 DFFF 100
#g0
```

```
A0>save 32 baspac.org
```

Naturally the first few times I tried to use the softpac it crashed. The initialization routine at the start of the Basic code first sets up the Basic work area then tests, byte by byte, for the end of contiguous RAM in order to report 'BYTES FREE'. It then proceeds to set up it's own stack and string space in the middle of the softpac image. The trick here is to bypass the RAM test and supply the interpreter with a RAM end of your own choice. Since my 48k CP/M BDOS starts on page A800H, I chose A700H for RAM end in order to leave the BDOS intact. Further along in the Basic code I came

across three routines that perform writes within the boundaries of the PAC. As long as the Basic code is in ROM, these writes are ineffectual, but the softpac self-modifies and crashes. Whether these are remnants of debugging or little traps left in by Microsoft I can't tell, but the solution is to use NOP's. There may be other instances like these lurking in some seldom used function. If you come across one, I would appreciate hearing about it.

```
zsid baspac.org
SID VERS 1.4
NEXT PC END
2100 0100 A5FF
#s11d
011D 21
011E 38 00
011F 02 a7
0120 23 c3
0121 7C 30
0122 B5 C0
0123 CA .
#sd0b
0D0B 32 00
0D0C 79 00
0D0D C3 00
0D0E 32 .
#s1171
1171 22 00
1172 90 00
1173 C6 00
1174 01 .
#s11c0
11C0 02 00
11C1 C5 .
#g0
A0>save 32 baspac.new
```

Even though you may be running 48k CP/M, the Sorcerer Monitor, which runs its own test for RAM end, knows about the 8k board and has put it's stack and work area on page DF00H. Again using DDT or ZSID, we can create a .COM file which will both persuade the Sor-

continued on page 169



cerer to run in 48k mode (stack and work area on page BF00H) and relocate the softpac image to it's proper domain.

```
A0>zsid
SID VERS 1.4
#f100 1ff 0
#a100
0100 LD      BC,80
0103 LD      DE,0BF80
0106 LD      HL,0DF80
0109 LDIR
010B LD      HL,0BFFF
010E LD      (0F000),HL
0111 LD      BC,2000
0114 LD      DE,0c000
0117 LD      HL,200
011A LDIR
011C RET
011D .
#ibaspac.new
#r100
NEXT PC END
2200 0100 A5FF
#g0
A0>save 33 baspac.com
```

Obviously this .COM file should be run only once as the Monitor stack and work area at DF80H have been overwritten by the softpac, and running BASPAC.COM a second time (without a system reset) would clobber the current Monitor stack and work area at BF80H with the tail end of the relocated softpac. However, once the softpac is installed in RAM, all that's needed to get to it from CP/M is a jump. The code at C000H builds the Basic work area then warm starts Basic.

```
A0>zsid
SID VERS 1.4
#f100 1FF 0
#a100
0100 JP      0C000
0103 .
#g0
A0>save 1 run.com
```

It would seem that this version of Basic was developed on a CP/M system, since its work area has a jump to warm start at 100H. The work area contains all the poin-

ters for memory allocation associated with the current program, so all that's needed to convert a tape program to a disk program is to save the program along with the initialized work area.

```
A0>baspac
A0>run
EXIDY STANDARD BASIC VER 1.0
COPYRIGHT (C) 1978 BY EXIDY INC.
41961 BYTES FREE
READY
CLOAD TANK
FOUND - TANK      *      1A38 01D5
0000
LOADING -
NAME  FILE BLCK ADDR GOADDRS
TANK  *   1A38 01D5 0000
READY
BYE
>GO 0
A0>save 28 tank.com
```

As long as the Basic program doesn't use the reserved portions of page 0, Pacbasic and CP/M can coexist peacefully. Close to 1k toward the end of the Rompac code appears to be unused - plenty of room for customization.

---

```
*****
*                                     *
*           H I N T                   *
*                                     *
*****
```

By Bill Viets

If the Sorcerer screen develops a dark band across it, slowly traveling up or down, you may want to check the 8000mfd capacitor in the 5V power supply. I couldn't find that capacity in the proper case size, so I clip-leaded a 10000mfd across it. It took the band out and the oscilloscope indicated almost pure DC.

```
*****
```

SORCERER'S APPRENTICE  
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\*\*\*\*\*

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SORCERER'S APPRENTICE.

The small number of Michigan activists became increasingly involved in publishing a quality newsletter. A great many man-days are necessary to put together a newsletter issue; time was not available for the organization and conduct of group meetings. Volunteers were requested; they did not step forward. And so, no more meetings. The problem we are facing today is, again, one of manpower. Continued publication of a quality newsletter demands the time and interest of those directly involved. But people tend to wear out. New people are needed to assume some of the duties and tasks. Will they step forward?

On that question hinges the direction of the Sorcerers Apprentice Users Group and its newsletter. Will the newsletter go the way of the Detroit meetings? It will, unless volunteers make themselves available. In short, the Apprentice needs direction and help. I can help by relieving Don of the burden he's been carrying as president. Other officers of the group can help by continuing in their duties as system operator, librarian, secretary, and all the other nitty-gritty functions that are necessary for continued publication of the Apprentice. Contributing editors can help by continuing their columns. Readers can help by submitting articles for publication.

But what about direction? Where do we go from here? More to the point, just where are we as a users group? If industry sales figures are to be believed, subscribers to the Sorcerer's Apprentice number less than a tenth of the Sorcerer buyers in the United States, not to mention the rest of the world. Even if we assume that a majority of the Sorcerers sold are languishing unused in closets somewhere, which is proba-

bly an exaggeration, it's quite evident that the newsletter is reaching a minority of active Sorcerer users.

This member base of the Apprentice is not broad enough to support the newsletter in its current form. The income from memberships won't defray all the expenses of publication. Support from advertisers is declining, and will probably continue to do so because of the lack of prospects of further sales of the computer. So we seem to be at a crisis point; not enough manpower available to publish and too few members to support a quality newsletter. Where do we go from here? I'll leave that as a question to be answered by Apprentice members. I want your direction; I consider it absolutely necessary. Write me at this address:

Tom Bassett  
253 Franconian Dr. W.  
Frankenmuth, MI 48734.

A few months ago InfoWorld, a microcomputer industry weekly tabloid, published a news release sent to them by the Sorcerer's Apprentice Users Group (this is one method we have used to solicit new members). The published release began:

"The Sorcerer is alive and well and living in Michigan."

I hope we can continue to say that the Sorcerer is alive and well, no matter where it lives.

\*\*\*\*\*

R E N E W  
N O W  
FOR  
VOLUME 5

The Sorcerer's Apprentice Newsletter is published eight times per year by the Sorcerer's Apprentice Users Group. A Computer Bulletin Board Service is available, courtesy of Robert Hageman. To access the CBBS just call (313)535-9186.

Membership Rates are \$18.00/Volume (Bulk Mail USA only). \$24.00/Volume USA, Canada and Mexico (First Class Mail). All others \$32.00/Volume (Air Mail).

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C/PMUG and SIGM disks are available from Bruce Blakeslee, 906 Crestwood Rd., Westfield, NJ 07090, on Micropolis Mod II format only. Send a formatted disk and \$3.00 plus \$1.50 for mailing, or send \$8.00 plus \$1.50 for mailing, for any disk. Make checks or moneyorder payable to Bruce Blakeslee.

STS, the Sorcerer Telecommunications Software on cassette, is available from Jonathan Burnett, 5422 Missouri Ave., Jacksonville, FL 32205, for \$30.00 plus \$1.50 for mailing. Make checks or money-order payable to Jonathan Burnett.

PAPS, the Personal Accounts Payable System is available from Sorcerer's Apprentice, P.O. Box 33, Madison Heights, MI 48071 for \$50.00 plus \$1.50 for mailing. You'll receive three diskettes (Micropolis Mod II format only). Make checks or moneyorder payable to Sorcerer's Apprentice.

All members are encouraged to submit articles, programs and/or newsworthy items for publication. Material may be submitted on hardcopy, wordprocessor files on cassette (please record both at 300 and 1200 baud), Micropolis Mod II diskette (Wordstar or Spellbinder), or uploaded to the CBBS (313-535-9186). When sending magnetic media, be sure to protect it adequately to prevent shipping damage. Also include a hardcopy, in case the information on the magnetic media is unreadable. Cassette and Disks will be returned, hardcopy only if requested and accompanied by a SASE.

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