

The SORCERER'S APPRENTICE



Vol. 1, No. 5
Nov, 1979

MISCELLANEOUS NOTES

Welcome to the fifth issue of our newsletter. It is really picking up now; this issue is the largest yet. Some advertising is included to introduce you to some of the products that have become available for the Sorcerer, and also to help my wallet.

Many of you probably tried to get the additional modifications to the database management program in issue #3 to work without much success. If they worked for you as I had them, then you have a defective computer. The additions should have been as follows:

```
923 : IF RIGHT$(REC$(I),1)="/" THEN 930
925 : INPUT R$:REC$(I)=REC$(I)+RIGHT$(R$,LEN(R$)-1):GOTO 923
```

Sorry about my blunders. Lousy typing strikes again. But that wasn't even all. Jack Catlin brought to my attention that the POKE address for SETting S=XX on an 8K machine as given in the last issue was also in error. The given address was 6143, the correct one should have been 8143. Jack also sent in the following routine which allows the use of reverse characters (black on white instead of the usual white on black). To get reverse characters, run the following:

```
10 FOR I=-1024 TO 0:REM GRAPHIC SPACE
20 POKE I,255-PEEK(I-1024)
30 NEXT I
```

Now hold down SHIFT, or SHIFT & GRAPHIC and type any key. Neat, huh? The letters A-Z (capitals) are found on the keys 2-A, but to get the rest you'll have to experiment.

My eyes are no longer suffering. I finally purchased a 12" CRT. Selectronics (1206 S. Napa Street, Philadelphia, PA 19146) has used Sylvania monitors available for the very reasonable price of \$45. Their turnaround time is excellent- I got mine after only a weeks wait. The plastic cover on the screen has some nasty scratches and the display sits a little bit to the right of center, but for \$45, who cares? Definitely the way to go if your eyes and budget are as poor as mine.

The Sorcerer User Group in Australia (P.O. Box 144, Doncaster, Vic., 3108) has advised me that their subscription prices as given in issue #3 are in Australian dollars, not American. The best way to subscribe to their newsletter is to get a draft for the proper amount in the proper currency at your bank. By the way, you will probably be better off paying \$18 instead of \$10 for the subscription as the former fee pays for airmail postage. This means you will get your issues about 4 weeks quicker.

John Trudeau reports that Compucover (P.O. Box 324, Mary Esther, Florida, 32569) makes a cover for your Sorcerer. It is made from liquid and dust repellent vinyl and does not get in the way of cables or connectors on the back of your Sorcerer. The price is \$10.95 postpaid, and delivery time approximately three weeks.

Time to expand your memory? Ian Electronics (P.O. Box 14079, Austin, Texas, 78761) has 16K upgrade chip sets for only \$69.95 (plus \$2.00 postage and handling). See their ad in the December issue of Kilobaud.

To check if that program you just wrote and CSAVED did so correctly, enter the monitor (BYE), rewind the tape and give the FILES command. If your program is found and you don't get any errors, then you can assume that it will also load at a later date.

Deadline for material to be put in the next issue is December 20, 1979. I will be writing that issue at home over the holidays, and will include information as to the future of this newsletter in that issue. The issue will be done sometime in early January; as soon as the student-run print shop here opens.

The MERGE and RENUMber programs in this issue are modifications to those presented in earlier issues. Tom Bassett of Frankenmouth Michigan has made life easier with these. To merge two or more programs, first load the MERGE program, run it, and do as it says; it is very self-explanatory. To renumber a program, use the MERGE to get the target program and RENUMbering program both in memory, then type RUN 63000, and follow the instructions.

The Sorcerer's Apprentice is published approximately 8 times a year by The Sorcerer User's Group, Dave Bristor, 1530 Washtenaw, Ann Arbor, MI, 48104. For free copies of this newsletter and membership details, send a self-addressed, stamped envelope. Contributions and monetary donations are greatly appreciated. Phone (313)-663-7830

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SORCERER
SOFTWARE BY
STALEY

STALEY'S SORCERER SOFTWARE
22 STAYMAN COURT
LAFAYETTE, IN 47905

KEYBOARD TONES

Keyboard "beeps" can quickly and inexpensively be added to the Sorcerer. To do this, one needs only to follow these three steps:

1. Attach an 8 ohm speaker to pins 16 and 8 (or 16 and 1) of the parallel interface connector.
2. Load the 58 byte machine language program.
3. Type SET I=0000.

The program produces three different tones. A high tone is produced for ASCII characters 32 through 255 (including graphic characters). A medium tone is produced for all ASCII characters 0 through 31 except for 13 (RETURN). Note that this warns you that a control key has been hit. Lastly, a low tone signifies that the RETURN key has been hit.

Also note that when a STOP or ESC key is pushed during a BASIC program or listing, it will not continue until another key is hit.

PROGRAM LISTING FOR KEYBOARD TONES

```
ADDR  0  1  2  3  4  5  6  7  8  9  A  B  C  D  E  F
0000:  CD 18 30 28  FB FE 1B C8  F5 32 18 00  06 60 78 D3
0010:  FF CD 19 00  10 F8 F1 C9  00 3A 18 00  FE 20 38 04
0020:  0E 40 18 0A  FE 0D 20 04  0E 90 18 02  0E 60 0D 20
0030:  FD C9 AF 32  D2 7F 32 D3  7F C9
```

TOUCHDOWN is a football simulation that can keep you entertained for hours. Play against the computer's team "The SORCERERS" or against a friend. Either way is lots of fun. The results of the plays that the offense and defense call depend on both skill and chance. For each combination of offensive and defensive plays, there is a most likely result. Other results are possible, however, and they come up often enough to keep the game interesting. The course of play is followed on the gridiron by a moving football which simulates the action of a pass or a run . . . even kicks. (16K) *

STATPLOT is a statistical plotting routine for engineers, scientists, statisticians, and students. It performs linear regression analysis and plots the results to high resolution. The plot of the data is more accurate by an order of magnitude compared to teletype plots. STATPLOT also analyses grouped data and plots a frequency histogram accurate to 0.5% and optionally overlays it with a normal distribution curve which has the same area as the histogram. (16K) *

SUB is an arcade type action game. You control the depth at which depth charges will explode to sink a moving sub. Both the ship and the sub are moving, so it's a real test of skill to time it right. What's more, after ten tries, the speed of the sub changes so you won't get in a rut. Add extra fun by placing an AM radio near the SORCERER. Sound effects are coordinated with the action on the screen. (8K)

X AND O is the old favorite tic-tac-toe. Play against the SORCERER at levels ranging from novice to expert. You play first sometimes, and the SORCERER plays first at others. The board almost fills the screen, and you insert your O by a simple touch on the calculator keypad. (8K)

FAMOUS AMERICANS is an educational game which combines the fun of anagrams with action graphics. The key feature in this program is the figure of Uncle Sam which points to requests for input or to output, nods his head yes when a correct answer is given, and shakes his head no when an incorrect response is input. The object is to unscramble the names of famous Americans both living and dead. Up to three clues are given if the correct answer is not given. In this way, the student gets to know about key people in our nation's history. (16K)

DOODL is a program which converts your SORCERER into a super Etch-a-Sketch. You can DOODL either using the normal white graphics on a black background or with the negative of these characters in a black on white mode. In addition, you can gain access to the SORCERER'S secret graphic characters which are not usually accessible from the keyboard, and can DOODL with them. (8K)

*Starred programs are \$14.95. Others are \$9.95



S O R C E R E R

SOFTWARE BY

STALEY

STALEY'S SORCERER SOFTWARE

22 STAYMAN COURT

LAFAYETTE, IN 47905

Announcing six new releases: SORCERER STARTREK, HOMERUN, SALVO, PRESIDENTS, RABBIT HUNT, and POLYPLOT.

SORCERER STARTREK combines the strategy and chance of time-share versions of this game that has become a classic with the wizardry of SORCERER graphics. Now you can see the photon torpedoes traveling through space. See the phaser energy bolts strike. See the Klingon battle cruisers disintegrate. See the Enterprise move from sector to sector. See the status reporter constantly updated. 32K*

HOMERUN is a real-time baseball simulation in which the players control the pitch and the swing of the bat. On contact, the ball moves across the field. Whether the result is an out or a hit depends on the location of the ball when it was struck and on chance. The players move around the bases in this action game, and the runs, balls, strikes, hits, outs, and errors are output on a scoreboard. 16K*

SALVO is our version of the still popular game, BATTLESHIP. The object is to sink the SORCERER'S fleet of five ships before he sinks yours. The ships are graphically depicted on a 10 X 10 grid, and the exploding shells flash. The record of your hits and misses on the SORCERER'S fleet is constantly updated for you so you can concentrate on your strategy. 32K

PRESIDENTS is an educational game. The players learn the names of the U.S. Presidents, the order in which they become president, and three facts about each one. They are stimulated to learn by the challenge of unscrambling names and by the animation made possible by SORCERER graphics. 16K

RABBIT HUNT is a strategy game which makes use of the user-defined graphics capability of your SORCERER. The object is to catch a rabbit by directing the paths of three dogs. Your opponent is the SORCERER who directs the path of the rabbit. What sets this game apart from all others of its type is the animation. In our version, the dogs are constantly leaping while the rabbit frantically scampers, looking for the best path. The degree of difficulty in catching the rabbit depends in part on the first move, so you are challenged to try all opening moves. 16K.

POLYPLOT is a successor to our STATPLOT. STATPLOT performs linear regression analyses and plots the straight line of the equation and the data points. POLYPLOT performs polynomial regression analysis and plots the best curve and the data points. In addition, a table of observed and predicted results is output on command, and predicted values are output for any input value. The program is organized for easy data input and correction. 16K*

KIDDO is a lot of fun for youngsters. In Mode 1, the child can type giant block letters from the keyboard. This in itself is entertaining to the younger set. In Mode 2, he or she can use the computer as a calculator. The advantage over regular calculators is the larger numbers (1 inch) and the automatic formatting into the manner used in the elementary grades. Even division problems are automatically formatted, and remainders are noted. No decimals are used. (8K)

BLACKJACK allows you to play against the computer alone or with up to six friends. You start with a bankroll and try to increase it. This program features face cards drawn in detail using SORCERER graphics characters. (16K)

U.S.MAP plots a map of the United States, then either gives a state capital quiz or gives the capital when the state is input. In either case, the outline of the state is plotted, and the official two letter abbreviation is also plotted. When the capital is given, its approximate location is also plotted. The resolution is far superior to that of other USMAP games. This program encourages learning by being a lot of fun. (16K)

FUNCTION PLOT will plot just about any function in either cartesian or polar coordinates. The resolution is far superior to that of personal computers and of teletype plots from time-share computers. What's more, the function doesn't have to be entered in BASIC. A built-in interpreter translates any function that is entered in standard algebraic format. It also outputs what the BASIC function is so the student learns painlessly. (16K)

ATOM is a deductive reasoning game. It challenges you to locate "atoms" which the computer hides in a black box. You do this by observing whether rays which you send into the black box are either absorbed, reflected, or deflected. You choose how many atoms go in the box and where the rays enter the box. (16K)

BIO has been called the best biorhythm program available for a home computer. It allows you to determine quickly in which months you'll have those super days when everything goes right and those days when you may decide to stay in bed. The metabolic cycles are plotted along with the curve which is the average of these three curves. The plots are super resolution and use special graphics characters. (8K)

PERSONALITY TEST is based on the hypothesis that personalities can be classified according to the extent that they exhibit aggressive and emotional traits. The results of the test are plotted on a grid, and an analysis of the personality is given. (16K)

COMPUCARDS tells your fortune based on your response to simple questions. The fortune is revealed as the SORCERER turns over playing cards. Over 200,000 fortunes are possible because the phrases which make up the fortunes can be combined in many ways. (16K)

*Starred programs are \$14.95 - others are \$9.95.

GREGORY L. WHITE
2411 Farrier's Bend Dr.
Friendswood, TX 77546

SOFTWARE INTERNALS MANUAL
FOR
THE SORCERER

A REVIEW

If you really want to get familiar with your Sorcerer's insides, this is the book for you. The Software Internals Manual for the Sorcerer, by Vic Tolomei of Quality Software, seems to answer those nagging little questions that the Exidy manuals don't mention. Curious about the format of the cassette storage; it's in here. Ever wonder how your Basic stores statements, numbers, and variables; it's in here too.

Like most things, however, there is some bad mixed in with the good. The book --the same size and type of binding as the Exidy manuals - consists of seven chapters. Chapter One -- Introduction to Machine Language -- is probably the weakest. If you are into computers enough to want(or need) this book, you probably already know how to convert between hex, binary, and decimal, the meaning of byte and "K", the difference between RAM and ROM, and the difference between static and dynamic memory.

Chapter Two -- Sorcerer Devices and Ports -- covers the parallel and serial ports and gives some hints on interfacing printers, modems, etc. with the Sorcerer. A good chapter, but not a great chapter.

In Chapter three -- Sorcerer Monitor -- you really get into some good stuff. This chapter contains hex and decimal addresses for an expanded memory map, a table listing the address and description of the Monitor workareas in RAM, and lastly, the hex-decimal addresses and description of all the sub-routines in the ROM Monitor. One interesting fact you might notice in this chapter is that the CPU uses RAM addresses 0000H to 0100H for restart space.

Those of you who like to start those machine language routines at 0000H and then wonder why they occasionally crash, take note(Don't ask me how I know all about this).

Chapter Four -- Sorcerer Cassette Interface -- is short but sweet. It gives the low-down on the cassette data storage format, some tips on loading and saving files and finally, a breakdown on the CRC method of error detection. But buried in the middle of this chapter is a nugget that may make the entire book pay for itself. Remember how, after typing in that 500 line program and dumping it to tape, you began to wonder...were you off the leader before you started recording?...is this that cassette that gave you trouble once before?...do you wish that Exidy Basic had a VERIFY command? Well, it does. Except Exidy calls it a FILE command and it is in the Monitor. After dumping to tape, rewind it and go into the Monitor. Now type FI(Return) and start the tape. Allow enough time for the entire program to be checked. As the FI command does not automatically terminate at the end of the program, you must stop it with CTRL-C. As the FI command reads the header, it also checks the CRC byte on the header and compares it to the CRC bytes in the data. Thus a complete CRC error check is done on the tape without disturbing the original program in RAM.

Sorcerer Basic Internals -- Chapter Five -- covers the storage format of floating point numbers, program statements, numeric variables and arrays, and string variables and arrays. Also included is a table listing the hex-decimal addresses of the Basic Control Area memory map, and finally, the format for calling assembly language routines from Basic.

Chapter Six -- Sorcerer Video and Graphics -- will probably get the most use. It is a table listing all 256 character codes, their hex and decimal

continued on page 5

THE WORD PROCESSING CORNER

I am back again. It seems that enough of you liked the idea of a column about the word processor to justify its continuance, at least for the time being.

Two of you have asked for help about interfacing printers to the serial port. I am not very knowledgeable in hardware but I know enough to say this: there are some real problems with running printers on the serial port and I urge caution before committing yourself to the purchase of serial printer. (Both our high-speed printer and our typewriter interface run on the parallel port.) You wouldn't buy a car without at least driving it around the block, so atleast try the printer out before you buy it. O.K.?

My face is a little red because I left something out in my remarks about tape verification. A line should be added after the phrase "...type 'l00 r5/d20' and then CR". What was left out is this: "the program will ask you for a file name. Just press CR again. Turn on the tape..." etc., etc.

We had an interesting experience with the computer the other day that I will pass on. For the first time, we did a partial read of a tape. This is done by typing "rn" where "n" equals the number of lines to be read. At the end of a partial read "WPF" stays on the screen and the command cursor blinks in normal fashion. However, because the file has not been read to its conclusion, no close of file mark gets read by the computer. Everything seems to operate normally until you try to do another read and then the system locks up. The way to avoid the problem is to type "cl" at the command line and press CR. That will allow the computer to internally close the file. If you have forgotten to do this and the system has locked up on you, it is possible to unlock it by using the following method, which I urge you to read carefully as it must be followed precisely. Press the ESC key and hold it down for about five seconds. With the ESC key still depressed, press the two power-on RESET buttons gently. Let go of the RESET buttons, still keeping the ESC key depressed. A few seconds later control of the text should return to you and, when it does, let go of the ESC key. On our word processor, you are in the edit mode and you will get a few backward question marks. These can be deleted and the remaining text should be examined to make sure that it has not been damaged. It probably won't be. Be sure to keep the ESC key depressed at all times until you have

re-acquired control. Otherwise, you will reset the computer and lose everything.

After you have re-acquired control, then type, in the command mode, "cl" and press CR and that should eliminate the problem of an unclosed file.

Be sure and write and tell me what you want in the next issue. Otherwise, you get pot luck!

Steven Guralnick
15 Southgate Avenue
Daly City, California 94015
Telephone: (415) 992-9200

continued from page 4

addresses, their positions on the keyboard, their video character, and the corresponding Basic reserved word, if any. Also listed are the control codes and their functions and information on non-destructive cursor positioning.

The last chapter -- Seven -- covers the Sorcerer Keyboard and obtaining keyboard input without hitting Return.

Finally, Quality Software included something that Exidy left out of their manuals -- a real live index.

Quality Software has done an excellent job on this manual and I think you will find it well worth the \$14.95. It is available by mail postpaid from

Quality Software
6660 Reseda Blvd.
Suite 103
Reseda CA 91335
(213) 344-6599

Also ask for their catalog. They have a great Z-80 disassembler, some games, and graphics plotting programs that I think you will also find very interesting.

The Sorcerer's Voice

The model SU-100 is a self-contained sound device that may be used to generate tones, musical notes, and sound effects.

With it's built in speaker and power from the Sorcerer just plug the Voice into the parallel output port and you're ready to create many exciting sounds..

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P. O. Box 3755
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previously RMP Enterprises

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| <input type="checkbox"/> Stereo option (SU-100) | \$14.95 |
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| <input type="checkbox"/> Las Vegas | \$4.95 |
| <input type="checkbox"/> Super StarTrek | \$12.95 |
| <input type="checkbox"/> Galactic Battle | \$7.95 |
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| <input type="checkbox"/> Demonstration Audio cassette (refunded w/order | \$1.00 |

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My Sorcerer is 8K 16K 32K S-100

Please allow 3 weeks for personal checks to clear. Post office boxes add \$1.50 for postage. Foreign orders must be drawn on U.S banks in U.S dollars only....
Foreign orders > add \$5.00 for AirParcel Post
> add \$2.00 for Surface Mail



Dale G. Flaming
9 Palmdale Ave.
Daly City CA. 94015

Dear Dave:

Along with several other people here I have an Exidy and a Micropolis disk system. I have CPM running in it and am quite happy with the system. One thing I wanted to be able to do was to store all the programs I had for the Exidy BASIC on the disk instead of loading them from the cassette each time. There may be a better way of doing it then the one I worked out, but it seems to work well on my system and on two others we tried it on.

1. It is recommended that the Sorcerer have at least 32k of memory installed so that long programs and the CPM operating system may be simultaneously accommodated.
2. Using your CPM operating manuals reconfigure the CPM operating system to 3k less than the total memory in your computer. The extra 1k of space at the top of memory is for the Exidy BASIC stack. This is now the correct CPM system to save Exidy BASIC programs.
3. Plug-in the Exidy BASIC PAC and bring-up the Sorcerer under BASIC.
4. Type "BYE" and enter the Exidy monitor. Type "GO 9000" (or whatever starting address your Micropolis disk system is strapped) to bring-up your disk system under CPM. CPM will now

sign-on.

5. Depress the Sorcerer's RESET keys and bring the computer back up under the BASIC PAC.
6. Perform a CLOAD of your cassette program into the Sorcerer's memory. Note the number of bytes of memory used which is the first number shown in the header when the program is loaded. This number is in hex and must be converted to decimal and divided by 256 to tell CPM how many blocks of disk space your program will need. When you do the division always round up and then add one extra block to the number you get. This is the number of blocks that you must give CPM when you do a memory to disk save.
7. Type "BYE" to return to the monitor. Now type "GO 0" this will bring CPM back up and you are now ready to save your program on the disk. Type "SAVE xx FILENAME.COM" where xx is the number of blocks of memory your program uses.
8. To run your disk program have the Exidy BASIC PAC in place and then bring up CPM with your disk in drive A, when the system comes up just type the filename of the program you wish to run. The Exidy will come back with READY then type "RUN" and that's it.
9. This system works because CPM .COM programs all start at 100 hex and Exidy BASIC places a warm jump into the ROM PAC at 100 hex.

THE SORCERER'S SOFTWARE EXCHANGE
RALPH G. RUH, 623 MEDILL AVE., LANCASTER, OH 43130

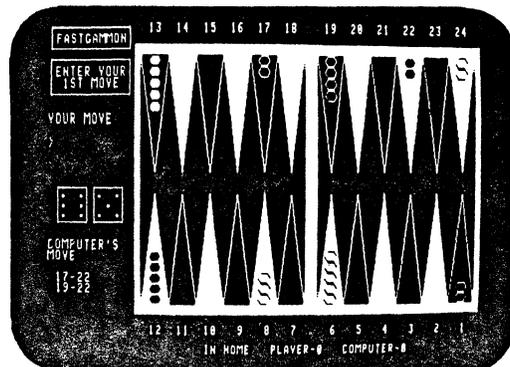
CATALOG #	PROGRAM NAME	FILE NAME	AUTHOR	DESCRIPTION
S001	AMLOG	AMLOG	RALPH RUH	AMATEUR RADIO LOGGING PROGRAM
S002	ZAP	ZAP		ROBOT EVASION GAME WITH SOME GRAPHICS
S003	EXPENSES	XPENS	RALPH RUH	HOUSEHOLD EXPENSE RETENTION
S004	BILLIARDS	BLRDS	RALPH RUH	BUMPER POOL GAME
S005	ALIEN	ALIEN	*RALPH RUH	CAPTURE THE ALIEN GAME
S006	WAMPUS	WAMPS	*RALPH RUH	SHOOT AT THE WAMPUS GAME
S007	HORSERACE	HRACE	RALPH RUH	AT THE RACETRACK GAME
S008	JOUST	JOUST	*RALPH RUH	MEDEIVEL JOUSTING GAME
S009	LUNAR	LUNAR	BOB BACHMAN	LAND YOUR SPACESHIP SAFELY ON THE MOON
S010	GET	GET	DAVE BRISTOR	DEMO PROGRAM ILLUSTRATING USR FUNCTION
S011	CRAPS	CRAPS	DAVE BRISTOR	GAME OF CRAPS
S012	DBASE	DBASE	DAVE BRISTOR	DATABASE MANAGEMENT
S013	DATA	DATA	TOM BASSETT	ENHANCED VERSION OF DBASE
S014	MASTERMIND	MMIND	EM BRISTOR	TWO LEVEL GUESSING GAME
S015	AMORTIZATION	AMORT	TOM BASSETT	LOAN AMORTIZATION PROGRAM - VERY GOOD
S016	CHECKING	CHECK	TOM BASSETT	CHECKBOOK BALANCE AND RECORDING
S017	PATTERN	PATRN	JOHN PALEVICH	GENERATES PATTERNS BASED ON INPUT STRINGS

* programs adapted for Sorcerer

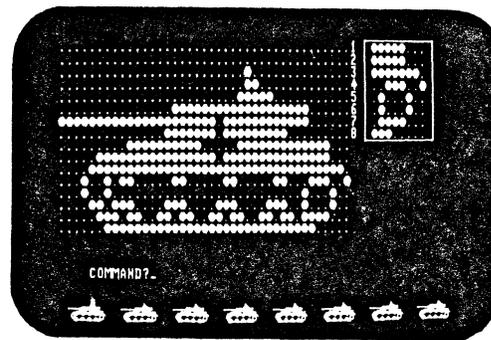
Programs may be exchanged on a 1 for 1 basis (cassettes only) or may be bought: \$2 for the first program and \$1 for each additional program on the same tape (minimum-4, maximum-6). Order from above address.

SORCERER* SOFTWARE!

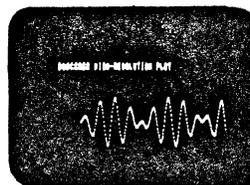
All programs on cassette
Only 8k of memory required.



FASTGAMMON™ by Christiansen. Thousands of people are already playing FAST-GAMMON on TRS-80 Apple. Now it is ready for SORCERER, with the sharpest graphics ever! Backgammon players love this machine language program that provides a skillful opponent. Eight page instruction manual includes rules of backgammon. \$19.95



SHAPE MAKER™ by Don Ursem. Construct special characters and fancy shapes with ease using this on-screen character editor. Detailed 12-page instruction booklet includes example applications. \$14.95



PLOT by Vic Tolomei. Now Apple owners will be envious of how easy you can get good graphics on your SORCERER. PLOT includes both a super high resolution mode and a quick low resolution mode. Both are accessible from your BASIC programs using simple commands. Hi-res & lo-res examples included on tape. \$14.95

DEBUG by Bob Pierce. Debug machine language programs by stepping through one instruction at a time. Relocatable. Several display options. Multiple break points. Modify memory and registers. \$14.95

Z-80 DISASSEMBLER by Vic Tolomei. Decode machine language programs, including SORCERER'S monitor and ROM-PACs, with this Z-80 Disassembler written in BASIC. Instruction mode prints out machine code and Zilog mnemonics in standard format. Or use the ASCII mode which converts machine code to ASCII. \$14.95

MAGIC MAZE™ by Vic Tolomei. A challenging maze game. Ten levels of play. Holding your lantern, you wander through a maze trying to stay on the right path and avoid pitfalls. Automatic scoring tells you how good a pathfinder you are. \$11.95

SOFTWARE INTERNALS MANUAL FOR THE SORCERER by Vic Tolomei. A must for anyone writing software for the SORCERER. Seven chapters: Intro to Machine Language, Devices & Ports, The Monitor, Cassette Interface, BASIC structure, Video & Graphics, The Keyboard. Indexed. Includes diagrams and software routines. 64 pages. \$14.95

QS QUALITY SOFTWARE
6660 Reseda Blvd., Suite 103, Reseda, CA. 91335
Telephone 24 hours, seven days a week: (213) 344-6599

WHERE TO GET IT: Ask your nearest Sorcerer dealer to see *Quality Software's Sorcerer* programs. Or, if you prefer, you may order directly from us. MasterCard and Visa cardholders may telephone their orders and we will deduct \$1 from orders over \$19 to compensate for phone charges. Or mail your order to the address above. California residents add 6% sales tax. Orders outside North America add \$5 for registered airmail, pay in U.S. currency.
* The name "SORCERER" has been trademarked by Exidy, Inc.

QUALITY SOFTWARE, INDEED!

A review of Quality Software's PLOT and Z80 DISASSEMBLER programs.
By Dave Bristor

PLOT: This program gives your Sorcerer the ability to plot virtually any function you can come up with, as long as you write a driver program. The PLOT cassette, which is accompanied by a very nice manual, actually has 4 programs on it: LORES, a low resolution plotting machine language subroutine, DEMOL, a demonstration program to be used with LORES, HIRES, a high resolution subroutine, and DEMOH, the high resolution analogy of DEMOL. When used properly, these programs give your Sorcerer the plotting ability of an APPLE II. The manual is extremely clear as to what you have to do to use the machine language subroutines. LORES allows the plotting of points, vertical and horizontal lines in a "window" of any size desired by the user. The USR function is used to access the subroutines, and the actual plotting is extremely fast. A line need only be defined by its two endpoints and a horizontal or vertical position. HIRES is somewhat different. It really brings out the best of the Sorcerer's user programmable graphics. The HIRES screen is 512 dots across by 240 dots down. To plot a given function, two arrays, PX and PY are filled with the appropriate x and y coordinates, then the machine subroutines are called and presto! what a sight. The DEMOH is very impressive and shows the user exactly how to use the subroutines. I have written a program using HIRES that will plot cartesian and polar equations which has proven quite useful for some of my classes. My only regret is that Quality Software did not include a source listing of their subroutines, but this does make sense from a copyright standpoint. In short, if you need high speed low resolution graphics or a high resolution plotter and don't mind writing the driver programs, PLOT could be what you need.

Z80 DISASSEMBLER: Here is a great way to get an introduction to assembly language programming, or to see how a subroutine (such as the subroutines in PLOT above) work. This program is written in BASIC, and is not hard to follow. After the program is CLOADED and ran, the user need only enter the beginning and ending addresses (in hex) of the program he/she wishes to disassemble. Output can be in ASCII or in instruction format. The ASCII format is useful to look at blocks of test, while the instruction format makes reading machine language

subroutines a breeze. This mode prints out not only the Zilog mnemonics, but the address being decoded, the opcode in hex, possible ASCII conversion, and in the case of relative addressing instructions, the absolute address is also printed. Obviously, this program is not going to make life any easier for you if you don't understand assembly language, but if you do, and you would like to know what goes on inside the monitor, or inside BASIC, or inside any other program, then Quality Software's Z80 DISASSEMBLER is for you.

The Exidy Monitor by Dave Bristor

This will be a several part article. Hopefully, it will take up where the Exidy manual left off and actually teach you how to program in machine language. The manual tells how to use the various commands in the monitor, but gives no indication of why anyone would want to use them. There are several reasons why you, Joe Average, may want to write a machine language subroutine and interface it to BASIC. Lets say, for example, that you want to write a Star Wars game with fast interactive graphics such as found in arcades. You will need to point your "spaceship" up, down, right, and left to follow your enemy's efforts to escape. The numeric pad looks convenient, 2 is down, 4 is left, 6 is right, and 8 is up. But wait a minute. If the user is going to be interacting continuously with the game, then we don't want the computer to stop each time we change direction, we want to do it all the time. We need to sense when a key is depressed and act accordingly. PET BASIC has such a function; they called it a GET. The function scans the keyboard and returns the value of the key pressed at that moment, or returns a null if all keys are up. Does this mean that I bought the wrong computer? Hardly. We can make our own GET statement (and in fact we already have one in issue #1) This article will show you how to write a GET subroutine in machine language for your Sorcerer which can be used with any number of games and will also jazz up some of your other programs. There is one requirement: familiarity with the Z80 instruction set. There are quite a few books out now on this subject; the one from Adam Osborne got quite a good review in Kilobaud (I think) recently. I have Zilog's assembly language manual which is a real steal for about \$7.50. It gives a complete description of each of the Z80's instructions, their mnemonics and their opcodes as well. Hopefully you will get ahold of one of these and of issue #1, and we'll continue next month.

	STR\$	VAL	AEC	CHR\$	LEFT\$	RIGHT\$	MID\$	(note3)	G.	F4	K	5	H
	1	2	3	4	5	6	7	8	9	∅	:	-	^
	JO	Mr	J	L	HP	HO	HD	I	J	Fa	H	(note3)	
	q	w	e	r	l	y	u	i	o	p	L	J	line feed
Graphic	H	7	H	GV	R&	TH	G \	R	0	Wh	I5	G	F
	a	s	d	f	ε	h	j	k	l	:	@	\	—
Shift	E	HA	S	I	R	Dy	"	Wy	*	5/	shift	repeat	reset/slip
	z	x	e	v	b	u	m	.	.	/			

j	7	8	9
-			
XP	(note2)	LP	
	4	5	6
/	(note1)	Ck	@
x	1	2	3
C	e	G	S
+	∅	.	"

Note 1: LNF\$NRGODFCOVOMULFCDD/∅1DTMO:BL\$STCNUEMO
 Note 2: Put cursor home
 Note 3: Nothing underneath



#10

```

100 : REM PROGRAM MERGING IN BASIC
110 : REM WRITTEN BY TOM BASSETT -- OCTOBER 1979
120 :
130 :
140 TM=256*PEEK(-4095)+PEEK(-4096)
150 IF TM=32767 THEN POKE440,125:POKE442,125:POKE444,125
160 IF TM=16343 THEN POKE440,61:POKE442,61:POKE444,61
170 IF TM=8191 THEN POKE440,29:POKE442,29:POKE444,29
180 POKE 439,0:POKE 441,0:POKE 443,0
190 DIM X$(16)
200 FOR I=0 TO 15:READ X$(I):NEXT
210 DATA 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F
220 MVA=256*PEEK(-4095)+PEEK(-4096)
230 IF MVA>32767 THEN MVA=MVA-65536
240 MVA=MVA-110
250 A=469:C=10
260 :
300 A=A+PEEK(MVA+94)+(256*PEEK(MVA+95))-C
310 FOR I=0 TO 1000
320 AA=PEEK(A+1):AB=PEEK(A+1):AC=PEEK(A+1+2)
330 IF(AA=0)AND(AB=0)AND(AC=0)THEN 350
340 NEXT I:PRINT"Can't find program end.":A=A-10:GOTO 310
350 AD=A+1:A=AD:IF B=0 THEN EN=AD+1
360 IF E=1 THEN 540
370 :
400 PRINTCHR$(12):PRINTTAB(12);"BASIC MERGE CALCULATION AND ";
410 PRINT"INSTRUCTION":PRINTTAB(12);" ";
420 PRINT" "
430 PRINT"At the program BREAK, exit BASIC (BYE)."

```

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A last minute note: if you are having problems with your serial printer and the Sorcerer's serial port, get a copy of the August issue of Kilobaud Microcomputing. An article therein by Ken Barbier explains how he hooked up a teletype to his Sorcerer through the parallel port and a parallel-to-serial converter. The techniques can probably applied to any serial device. A previous article by Ken in the June issue of KB has some thoughts on EPROMming your own pac and using the parallel port.

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63000 : REM RENUMBER PROGRAM WRITTEN BY DEVIN TRUSSEL
63001 : REM ENHANCED BY TOM BASSETT OCTOBER 1979
63002 :
63005 CLEAR 100:R=256
63006 PRINT:INPUT"How many lines to renumber (default = 256):";R
63010 DIM OL(R),RL(R),P(R):OH=0:AL=213:AH=1
63011 OS=0:INPUT"Start renumbering with old line # (default = 0)
";OS
63012 OE=G3000:PRINT"End renumbering with old line # ";
63013 INPUT"(default = program end)";OE
63015 ZZ=100:INPUT"New line numbers BEGIN at (default = 100)";ZZ
63017 NH=INT(ZZ/256):NL=ZZ-NH*256
63018 II=10:INPUT"Line number INCREMENT is (default = 10)";II
63020 P=0:PRINT:PRINT"Now renumbering: Please be patient."
63025 AD=256*AH+AL:LL=PEEK(AD+2):LH=PEEK(AD+3):OL=256*LH+LL
63030 IF OL=G3000 THEN G3510
63031 IF OL>OE THEN G3500
63035 IF OL<OS THEN OL(OH)=OL:RL(OH)=OL:OM=OM+1:GOTO 63070
63040 OL(OH)=OL:RL(OH)=256*NH+NL:OH=OH+1:P=P+1
63050 POKE AD+2,NL:POKE AD+3,NH:NH=NL+11
63055 IF NL>255 THEN NL=NL-256:NH=NH+1
63060 IF OH>R GOTO 63500
63070 AL=PEEK(AD):AH=PEEK(AD+1):GOTO 63025
63500 PRINT:PRINT P;"lines renumbered.":GOTO 63911
63504 :
63505 : REM NUMBERS CHANGED, NOW CHANGE INTERNAL REFERENCES
63506 :
63510 PRINT:PRINT"A total of";OH;"lines renumbered.":OH=OH-1:L=L+4
63
63512 PRINT
63515 PRINT"Now correcting internal references: Please be patient."
63520 L=L+4:LN=256*PEEK(L)+PEEK(L-1)
63525 IF LN=G3000 THEN G3920
63530 L=L+1:CH=PEEK(L):IF CH=0 THEN G3520
63540 IF (CH<>137)AND(CH<>141)AND(CH<>162) THEN G3530
63550 LO=L
63560 L=L+1:CH=PEEK(L):IF(CH=137)OR(CH=141)THEN G3550
63565 IF CH=32 THEN G3560
63570 IF (CH>47) AND (CH<53) THEN GOSUB 63700:GOTO 63560
63580 IF NS="" THEN G3530
63590 IF CH=44 THEN GOSUB 63800:GOTO 63550
63600 GOSUB 63800: IF CH=0 THEN G3520
63610 GOTO 63530
63700 H=CH-48:NS=NS+RIGHT$(STR$(N),1):RETURN
63800 J=-1:N=VAL(NS):FOR I=0 TO OH
63805 IF OL(I)=N THEN J=1:I=OH
63810 NEXT I:IF J<>-1 THEN G3815
63812 PRINT"## Can't find line";N;"in table ##":GOTO 63890
63815 PRINT"Line";LN;CHR$(1);": Replaced";OL(J);"with";RL(J)
63820 NL=RL(J):NL$=STR$(NL):NL$=RIGHT$(NL$,LEN(NL$)-1)
63830 IFLEN(NL$)>(L-LO-1)THENGOTO 63900
63840 IFLEN(NL$)<(L-LO-1)THENNLS$=" "+NLS:GOTO 63840
63850 FORI=LO+1TOL-1:NS=I$$(NLS,I-LO,1):N=VAL(NS)+48:POKEI,N
63860 IF NS="" THEN POKE I,32
63870 NEXT I
63890 NS="" :RETURN
63900 PRINT"## No room to replace";N;"with";NL;"in line";LN;"##"
63901 GOTO 63890

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63904 :
63905 : REM NOW SELECT OPTIONS: CONTINUE OR END
63906 :
63911 PRINT:INPUT"More lines to renumber (Y/N)";CS
63912 IF (CS="Y") OR (CS="YES") THEN PRINT:GOTO 63011
63913 IF (CS="N") OR (CS="NO") THEN G3510
63914 GOTO 63911
63920 PRINT:PRINT"Internal references have been corrected ";
63921 PRINT"except as (if) noted."
63925 BS="" :PRINT:INPUT"Disable RENUMBER program (Y/N)";BS
63940 IF (BS="Y") OR (BS="YES") THEN G3975
63950 IF BS="N" THEN GOTO 63970
63960 GOTO 63920
63970 PRINT:PRINT"To restart program, type 'CONT' and hit RETURN
";
63971 PRINT:STOP:GOTO 63000
63975 BS="" :PRINT:INPUT"Are you sure";BS
63976 IF (BS="Y")OR(BS="YES")THEN G3978
63977 GOTO 63970
63978 POKE AD,0:POKE AD+1,0:POKE AD+2,0
63979 DD=AD+2:LB=DD-INT(DD/256)*256:HB=INT(DD/256)
63980 LB$=STR$(LB):HB$=STR$(HB):LB$=RIGHT$(LB$,LEN(LB$)-1)
63981 HB$=RIGHT$(HB$,LEN(HB$)-1)
63982 PRINT:PRINT"At the READY prompt that follows, type the following";
63983 PRINT" line:"
63984 PRINT:PRINT"POKE 439,";LB$;" :POKE 440,";HB$;" (then hit RETURN)"
63985 PRINT:END

```

control characters courtesy of John St. Pellicer

CTRL	ABBR.	DESCRIPTION	CTRL	ABBR.	DESCRIPTION	CTRL	ABBR.	DESCRIPTION
@	NUL	null, or all zeros	K	VT	vertical tabulation	V	SYN	synchronous idle
A	SOH	start of heading	L	FF	form feed	W	ETB	end of transmission block
B	STX	start of text	M	CR	carriage return	X	CAN	cancel
C	ETX	end of text	N	SO	shift out	Y	EM	end of medium
D	EOT	end of transmission	O	SI	shift in	Z	SUB	substitute
E	ENQ	enquiry	P	DLE	data link escape	[ESC	escape
F	ACK	acknowledge	Q	DC1	device control 1 (X ON)	\	FS	file separator
G	BEL	bell	R	DC2	device control 2]	GS	group separator
H	BS	backspace	S	DC3	device control 3 (X OFF)	^	RS	record separator
I	HT	horizontal tabulation	T	DC4	device control 4	_	US	unit separator
J	LF	line feed	U	NAK	negative acknowledge		SP	space
							DEL	delete

From THE INSTITUTE, news supplement to IEEE SPECTRUM: Abby Gelles, a member of the IEEE Computer Society, has been appointed executive director of a new national computer society-the Personal Computer Society. Membership is open to anyone interested in noncommercial uses of computers. Annual dues are \$10 for an individual or \$25 for an organization. For more information, write to Abby Gelles, PO Box 147, Village Station, NY, 10014. I will contact Ms. Gelles and try to arrange a subscription exchange similar to the one we have going with the Australian users group (free exchange of printable material).