

MARCH  
FEBRUARY 1982

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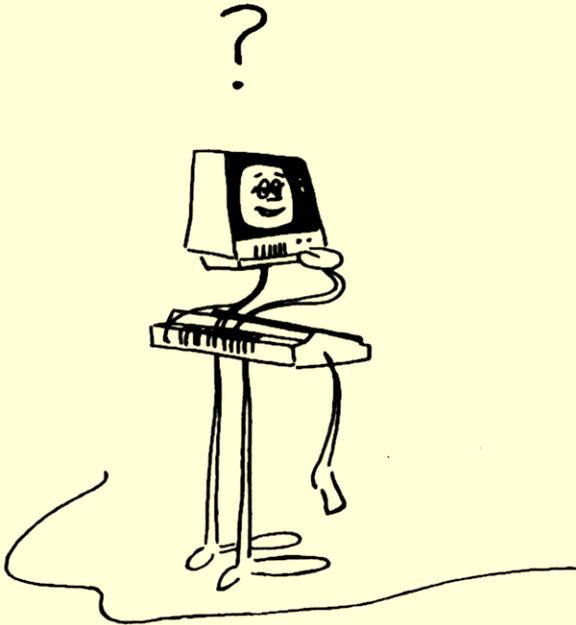
# TRS-80™ NEWSLETTER

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SOUTH BAY - USERS GROUP

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SBUG meetings are held the 3rd Tuesday of each month in the north east corner of Dysans' building at:

5401 Patrick Henry Drive  
Santa Clara, Ca  
Time - 7:15 to 10:30 PM

March 16, April 20, May 18

Features: 1) Local programmers will speak about their product as advertised in 80 Microcomputing. MX-80/INCOME TAX  
2) Open discussion.

Editor's note:

I think that the article by Eric Brewer is an excellent one, especially if you're just beginning to get into Assembly Code like I am. Tell Eric at the meeting that you would love to see more articles. Welcome to the club Eric!!!

\*\* How many would like to see the return of Brian's Bargain BASICS?? \*\*

If you see Brian at the meeting tell him you would love to see his column again.

\*\*\*\* Your Steering Committee follows \*\*\*\*

Discussion Leaders:

-----  
Phil Coffman (408) 997-8247  
Mike McHenry (408) 245-4704  
Gerry McKee (408) 926-4063  
Sabri Kawash (408) 732-5484  
Bill Richerson (408) 257-8267

Treasurer:

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Larry Gunderson (408) 259-5349

Newsletter Editor:

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Robert Byrd (408) 732-6775

Librarians:

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Pete Huntsinger (disc) (408) 227-7125  
Bob Brown (tape) (408) 379-2774  
Ron Carpenter (doc.) (415) 726-3487

If the need arises feel free to give one of us a call.  
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Send Newsletter articles to:

Editor, South Bay TRS-80 User Group  
Robert Byrd  
P.O. Box 60116 (This is SBUG's new address)  
Sunnyvale, Ca 94088  
(408) 732-6775

Deadline for the April newsletter 10 April 82.

If at all possible send articles via modem or saved on disc/tap. I will see that your disc or tape is returned to you. Thanks . . .

## BULLETIN BOARD SYSTEM (B.B.S) REVIEW

This column will occasionally be in the newsletter concerning features of the your B.B.S.. If lack of knowledge in telecommunications is the reason that you're not using or planning on using the B.B.S.. Then that excuse will not work anymore, because I plan on keeping you informed, via newsletter, all about the features of your B.B.S.. Believe me, this system as a tool available to us, can be just the link we need to make computing alot more interesting and make information gathering a SNAP.

- An example of the systems use -

Just for funzies lets use two of our officers as an example, Larry Gunderson and Bill Richardson. Bill is working on a project to have a public swap meet for SBUG. But Bill would like to send a letter to all the SBUG members from the past, (those members who dropped from the club), to tell them about the swap meet. Bill sits back in his chair an decides it would be better to get in touch with the treasurer, Larry Gunderson, and get a copy of the mailing list used for the last couple of years. With this mailing list he could simply print out some labels and stick them on copies of the letter. But Bill doesn't have the mailing list. There are two ways the problem could be solved. Remember we all belong to SBUG and supposedly own TRS-80 compatible equipment.

First way:

Bill, who lives near Cupertino, calls Larry, who lives near Milpitas, only to find that Larry isn't home. Bill finally gets in touch with Larry, two days later, and after a 20 minute drive, each way, gets a copy of the mailing list. Bill says to himself, "There has got to be a better way!!!"

At last there is...

Second way:

Bill calls the B.B.S. system and leaves a message on Larry's board explaining to him his situation, I might add that this message could be private and not available to all users only Larry & Bill. Later that evening Larry calls up the B.B.S. and receives his message from Bill. Larry then uploads the mailist on the B.B.S. and leaves a message on Bill's board telling him the name of the program and possibly the access password (ex. MAIL/DAT.PASS2, MAIL/DAT --> FILESPEC, PASS2 --> PASSWORD).

The next day, Bill calls the B.B.S. and receives his message from Larry then downloads the file to his system. That evening he puts the letters, to the users, in the mailbox. Bill says to himself, "Thank goodness for technology!!"

Reminder:

Many active members who are accessing the B.B.S. will be updated, almost to the hour, of the latest activities that SBUG is working on.

Robert Byrd

This program gives a printout of all the video display locations. I find it easier to use for graphics or PRINT@ statements.

```
30 FOR I = 960 TO 1023
40   E = I - 960
50   LPRINT
60   FOR J = I TO E STEP -64
70     LPRINTUSING"####",J;
80   NEXT J
90 NEXT I
```

Sandy Phelps

-----  
**H A R D W A R E   M O D I F I C A T I O N S**

**MONITOR STABILIZATION**

I have been bothered by the "shrinking" screen and flickering of the display whenever the refrigerator comes on or my wife pushes the button on the microwave oven. In addition, a slowly moving ripple in the display would move from bottom to top. This was particularly noticeable when using the computer during the evening.

I had tried the modification in 80 Microcomputing in which a regulator transistor was added and I used RCA SK components since I hadn't found the specified Sylvania ECG parts. It worked after a fashion, but the voltage was too low and the screen size was marginal as a result. After a couple of months, there was a sizzle and a zap and the regulating transistor blew out so I had taken the modification out of the circuit.

I decided to try the job again with the correct Sylvania ECG parts this time AND higher voltage. I found that SHAD's on Bascom Avenue in San Jose opposite Quement's carries the full Sylvania ECG line. I bought a transformer at Halteks for \$3.00 that was for a "dry disc rectifier" and put out 120-160 volts output depending on the primary taps used and good for 100 or more volt amperes. By using this transformer mounted with bolts through the floor of the monitor in the area behind the brightness and contrast controls I was able to get a reasonably good mechanical arrangement. I added a bridge rectifier to increase the ripple frequency by a factor of 2 and to help the filters do a better job and pretty well followed the arrangement in the original March 1980, 80 Microcomputing page 113 article, Regulate It!, by William Klungle. However, there is one part of his article that seems to be incorrect if you refer to it. The 180 kOhm resistor should be 18 kOhms to allow sufficient zener current for proper regulation. I recommend buying the ECG one half or one watt zener that is closest to 120 volts. I actually used the recommended one and another in series to give me about 120 volts after regulation. You should be warned that your monitor may not exactly match the schematic given. I have both the Radio Shack monitor schematic and the Sam's Photofact schematic and not only do the two not agree, my monitor is slightly different from both. This is not of major importance since the circuitry is very straightforward, but you should be forewarned. I recommend that you examine the article referenced, to see the diagrams on mounting the transistor socket and parts. I mounted four separate diodes on a terminal strip and used a metal screw to fasten it to the back of the monitor front panel below the "Radio Shack cover-up plate" which goes where the tuner should be.

This modification has been in for a month now and the display is rock solid. Not a trace of jumping when the refrigerator comes on and only an almost unnoticeable remnant of the "squiggle" running up the screen at certain times of the day depending on what appliances are on the AC line - you have to study the display carefully to see it. Someday I'll fix that too!

The transformer does introduce a magnetic field and you will have to do some realignment of the display, but it does remove one of the major hazards of the monitor, its chassis that is connected directly to the AC line. When the modification is completed, re-center the display with the centering magnets controlled by the aluminum tabs at the neck of the tube. Watch for the best linearity you can get while you do this. Then open the keyboard unit and adjust the two pots at the right hand edge to put the display borders where they belong. Write a simple program to draw lines or just fill the screen with text by a simple program:

```
10 PRINT "I";  
20 GOTO 10
```

The above modification combined with the Radio Shack anti-glare screen really makes a big difference in the monitor. Now, if only we could make it into 80 columns....

#### Parts required for modification

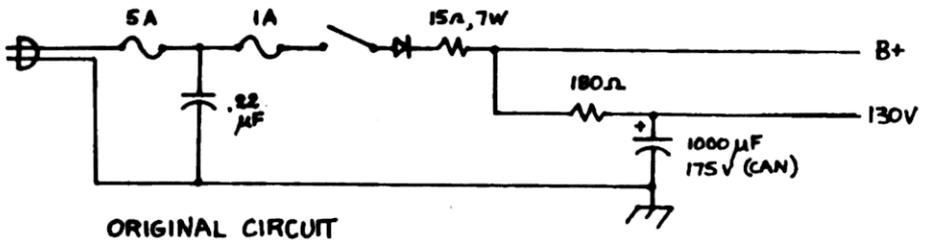
T1 - Transformer, 110-130 V primary, 120-150 V secondary about 50 VA or greater capacity (slight step-up and isolation)  
C 1,2 - .01 uF, 600 V disk capacitors  
C 3 - 100 uF, 250 V electrolytic capacitor  
2 - long 8-32 screws (approx 2") and nuts for mounting transformer  
D 1,2,3,4 - 1N4007 or other 1A, 400 V or more diodes OR equivalent bridge rectifier  
Terminal strip, 4 lugs or more for mounting diodes  
Sylvania ECG 421 TO-66 socket and washer or equivalent  
Q1 - Sylvania ECG 124 transistor  
D5 - Sylvania ECG 1/2 or 1 watt zener diode about 120 volts  
R1 - 18 kOhm, 1 Watt resistor  
Dab of silicon heat sink compound

#### "DESTREAKING" THE DISPLAY

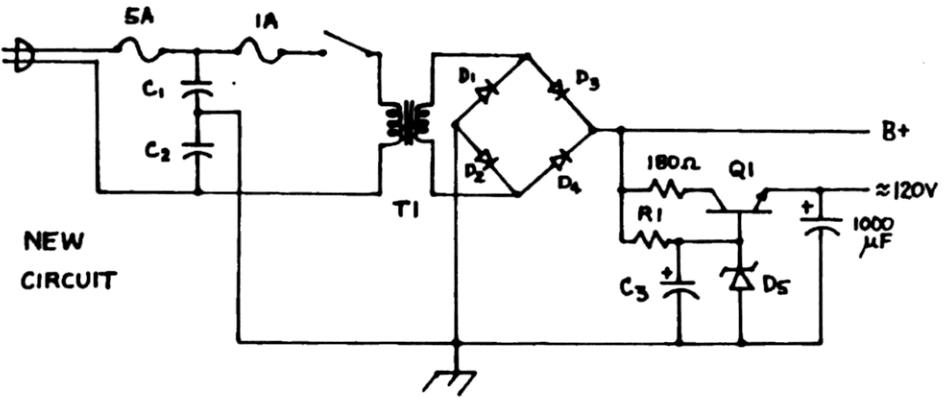
In the February issue of 80 Microcomputing, Dennis Ritz shows how to remove the streaking from the display. Even though I don't play a lot of games on the TRS-80, I found the black streaks which appear across white areas to be annoying. The article looked simple and only involved a couple of dollars at most in parts, so I decided to try it.

I can say that the results are worth the slight effort and work very well. As far as I can tell, there is no noticeable difference in time for the display to change or a program to run and it DOES remove the streaks that are so annoying. The modification is an easy one and only takes an hour or so at most. I have had the modification in since the day after the magazine arrived, which was early last month, and have experienced no problems. I recommend it to everyone.

Ian Webb



ORIGINAL CIRCUIT



NEW  
CIRCUIT

MONITOR MODIFICATION SCHEMATICS

\*\* Assembly Language Corner \*\*

Here it is what many people have been waiting for!! I will try and write this column once a month as a I promised Brian Devendorf about a year ago. But anyway, back to the matter at hand. This month I will just present a few major subroutines that will be used in articles in the future, (I hope!).

The first routine is INPUT. The primary function of this is to accept a line of commands or data from the keyboard and to put it into a buffer. The buffer is pointed to by the register pair HL. The length of the input line is in register B. Then we do a "CALL INPUT" and wind up with some data in our "BUFFER". The actual input routine is a ROM call so the subroutine is very small. It consists of ZEROing out 2 locations in the LEVEL II BASIC's temporary storage area (4000H to 4200H).

The second routine is to PRINT a message to the screen. The message is terminated with a "NOP" mnemonic. The "NOP" generates a 00H value at the location. So, the message block can be terminated

with a "DEPB 0" command, also. It is just easier and faster to use a "NOP". Upon entry to the subroutine, HL points to the message block to be printed to the screen. When control is returned to the MAIN program, HL points to the location where the terminator is. (Yes, I am aware that there is a ROM call that does the same thing. But, I like using this routine since it gives the programmer the option to make the terminator whatever the programmer wants it to be.)

The third routine SEARCHES a table for an entry that is the same as what is in a buffer. Upon entry, DE points to the beginning of the table to be searched. Hl points to the "BUFFER" where the item being searched for is. Each entry in the lookup table has a set length. This length has to be stored at location ENTRYL. The format for table entries is as follows:

- 1 to 255 bytes - Entry
- 2 bytes - 2 byte number that can be a pointer to a subroutine address or just be a value for the entry.

An example of what a table would look like is with the listings at the end of this article. The table's name is original enough, TABLE.

To finish things off, I am furnishing a list of easy to use ROM call addresses. They are as follows:

- 01C9H : Clear the screen
- 0033H : Print the value in the 'A' register on the screen.
- 002BH : Waits until a key on the keyboard is pressed. The value of the key is returned in register 'A'.
- 0049H : Does the same as above EXCEPT it does not wait. So if no key is being pressed, then register 'A' is equal to zero.

Next month, I will discuss using ROM routines for doing math. Only +, -, \*, and / will be discussed. But, all the different forms of numbers will be discussed (meaning single, double, and integer precision will be discussed). As usual, listings and examples will follow the article. Until next time... Happy programing...

Eric Brewer

#### LISTINGS

```

;
; INPUT ROUTINE
; HL = POINTS TO BUFFER WHERE THE RESULT IS TO BE STORED
;
INPUT    XOR        A            ;SET A=0
         LD         (4099H),A
         LD         (40A6H),A
         CALL      05D9H        ;ROM INPUT ROUTINE CALL
         RET         ;RETURN TO CALLER

```

```

;PRINT SUBROUTINE
;HL = POINTS TO MESSAGE TO BE PRINTED
; MESSAGE MUST BE TERMINATED BY A VALUE OF
;   00H (THIS CAN BE CHANGED BY THE PROGRAMMER)
;
PRINT   LD      A,(HL)      ;GET VALUE FOR DISPLAY
        CP      00H        ;TERMINATE?
        RET     Z           ;YES...IF COMPARE=Y
        CALL   0033H       ;DISPLAY VALUE IN 'A'
        INC    HL          ;NEXT CHARACTER
        JR     PRINT       ;SAME AS JUMP BUT 2 BYTE
;
;SEARCH ROUTINE
;ENTRY:
;   DE = TABLE POINTER (BEGINING OF TABLE)
;   HL = ENTRY BEING SEARCHED FOR POINTER
;   (ENTRYL) = EACH ENTRY'S LENGTH IN THE TABLE
;
;RESULT:
;   (SRCHR) = 2 BYTE # RELATING TO ENTRY IN TABLE
;             (IE. COULD BE ADDRESS OF SUBROUTINE)
;             (THIS IS THE RESULT OF THE SEARCH)
;             (IF ZERO, THEN NOTHING WAS FOUND)
;
SEARCH  LD      A,(HL)
        CP      32          ;NOTHING START W/SPACE
        RET     Z
SRCHL1 LD      A,(ENTRYL)
        LD      B,A        ;B=LENGTH OF TABLE ENTRY
        PUSH   HL          ;SAVE BOTH POINTERS
        PUSH   DE
SRCHL2 LD      A,(DE)
        CP      0FFH
        CALL   Z,SCHEMEND  ;SEE IF END OF TABLE
        CP      (HL)
        JR     NZ,SRCH1
        INC    HL
        INC    DE          ;INCREMENT POINTERS
        DJNZ  SRCHL2
        LD     HL,SRCHR    ;HL=WHERE TO PUT RESULT
        LD     A,(DE)
        LD     (HL),A     ;SAVE RESULT (1ST BYTE)
        INC   HL
        INC   DE
        LD     A,(DE)
        LD     (HL),A     ;SAVE RESULT (2ND BYTE)
        POP   DE
        POP   HL          ;RESTORE STACK
SRCH1  POP   DE
        EX    DE,HL
        LD   A,(ENTRYL)
        LD   E,A
        LD   D,0
        ADD  HL,DE
        EX  DE,HL
        INC DE
        INC DE

```

```

SRCH2      POP      HL
           JR       SRCHL1
           LD       HL,SRCHR      ;STORE RESULT
           XOR      A              ;TELL CALLER NO SUCH
           LD       (HL),A        ;ENTRY
           INC      HL
           LD       (HL),A
           RET

SCHEND     PUSH     DE              ;SAVE POINTER
           INC      DE
           LD       A,(DE)
           CP       $FFH          ;CHECK NEXT LOC FOR END
           JR       Z,SRCHE1      ;END? YES...SRCHE1
           POP      DE            ;NO...RESTORE DE
           LD       A,(DE)        ;RESTORE A & RETURN
           RET

SRCHE1     POP      DE              ;RESTORE STACK
           POP      DE
           POP      HL
           JR       SRCH2
           ;TELL USER NO SUCH ENTRY

ENTRYL    DEFS     2
SRCHR     DEFS     2

```

EXAMPLES

```

;
;EXAMPLE TO USE PRINT ROUTINE
;
START      ORG      $0000H
           LD       HL,INTRO      ;HL="INTRO" MESSAGE
           CALL     PRINT         ;PRINT IT
           JP       @A9AH        ;BACK TO BASIC

INTRO     DEFM     'THIS IS AN EXAMPLE'
           DEFB     13            ;CARRIAGE RETURN
           DEFM     'OF HOW TO USE THE PRINT SUBROUTINE'
           DEFB     13
           DEFB     13
           NOP
           ;END OF MESSAGE BLOCK
           END      START

```

```

;
;EXAMPLE TO USE INPUT ROUTINE
;
START      ORG      $0000H
           LD       HL,INTRO      ;HL=ADDRESS OF MESSAGE
           CALL     PRINT         ;PRINT IT...
           LD       HL,BUFFER     ;HL=ADDRESS OF BUFFER
           LD       B,62          ;LENGTH = 62 CHARS
           CALL     INPUT         ;GET INPUT
           LD       HL,MES1      ;HL=ADDRESS OF MESSAGE 1
           CALL     PRINT         ;PRINT IT...
           LD       HL,BUFFER     ;HL=BUFFER ADDRESS
           CALL     PRINT
           JP       @A9AH        ;BACK TO BASIC
           END      START

```

```

;
;EXAMPLE TO USE SEARCH ROUTINE
;

```

```

START      ORG      8000H
           LD       DE, TABLE ;DE=POINTS TO TABLE
           LD       HL, WORD   ;HL=POINTS TO WORD
           LD       A, 6      ;LOOKING FOR
           LD       (ENTRYL), A ;ENTRY LENGTH=6
           CALL    SEARCH     ;SEARCH FOR "WORD"
           LD       HL, SRCHR  ;HL=SEARCH RESULT
           JP      (HL)       ;JUMP TO ROUTINE
RETURN     JP      0A9AH      ;BAK TO BASIC
FOUND     LD       HL, MES1   ;HL=MESSAGE 1
           CALL    PRINT     ;PRINT IT...
           JR      RETURN    ;END OF SUBROUTINE
MES1      DEFB    'I FOUND IT! I FOUND IT!'
           DEFB    13        ;CARRIAGE RETURN
           DEFB    'IT WAS THERE ALL THE TIME!'
           DEFB    13
           DEFB    13
           NOP              ;END OF MESSAGE
WORD      DEFB    'LICK '
TABLE     DEFB    'LOOK '
           DEFW    0A9AH
           DEFB    'LISTEN'
           DEFW    0A9AH
           DEFB    'TASTE '
           DEFW    0A9AH
           DEFB    'OPEN '
           DEFW    0A9AH
           DEFB    'LICK '
           DEFW    FOUND
           DEFB    'CLOSE '
           DEFW    0A9AH
           DEFB    'DROP '
           DEFW    0A9AH
           DEFW    0FFFFH ;END OF TABLE MARKER
           END      START

```

```

;
;EXAMPLES TO USE MISCELLANEOUS ROUTINES
;

```

```

START      ORG      8000H
           CALL    01C9H      ;CLEAR SCREEN
           LD       A, '*'    ;A=VALUE FOR '*'
           LD       B, 10     ;LOOP 10 TIMES
LOOP       CALL    0033H      ;DISPLAY REGISTER 'A'
           DJNZ    LOOP      ;DECREMENT B
;JUMP TO LOOP IF B<>0
LOOP1     LD       B, 5      ;LOOP 5 TIMES
           CALL    002BH      ;GET CHAR FROM KEYBOARD
           CALL    0033H      ;DISPLAY IT
           DJNZ    LOOP1     ;LOOP...
           LD       A, 13    ;CARRIAGE RETURN
           CALL    0033H      ;DISPLAY IT...
           JP      0A9AH      ;BACK TO BASIC
           END      START

```

**CLASSIFIED SECTION**

For Sale -- new BASF 40 track drives. Bare (no case/power supply). \$175 firm. Can demonstrate or bring to meeting if you call me in advance. Ron Carpenter (415) 726-3487 late eve or weekends.

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Needed desperately -- 2732 ROM chips to be used as Level 2 BASIC. Ron Carpenter

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Also WANTED -- old Percom doubler I (1791 removed when upgraded to doubler II) for about \$15. Ron Carpenter

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HELP wanted with adapting odd 8" drives (CDC and Calcomp 140) to be used like SA800 with Omikron Mapper 2 and LNDoubler5/8. See Ron Carpenter at meeting (documentation librarian) or Ted Lester. We need someone who has done this before and can explain the obscure difficulties we've run into. Thanks much!

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WANTED for libraries and our bulletin board system (download section): TAX and Business programs. Contact Robert Byrd (408) 732-6775.

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Anyone interested in helping fix an LMW E/I with an extremely obscure disk I/O problem? It drops the same certain bits when reading large amounts of disk; different keyboards, drives, and diskettes still produce the exact same error. Sam Brown (408) 734-8898 eves.

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Tickets to the 7th Westcoast Computer fair \$7.50. This is half the price of admission at the door.

Where:

Civic Center Brooks Hall, San Francisco, March 19-21 (Fri - Sun). See Eric Brewer at the club meeting for tickets.

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Note: Arrocomp Doubler, regular price \$150, we can obtain 10 for \$120. If you are interested call Ian Webb (408) 867-9533 or Robert Byrd (408) 732-6775.

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For Sale -- Model I level II 16k, E/I 32k, 2 disc drives, 701 Centronics printer. Contact Sheral Suttie: Days - (408) 988-4755, Eves - (408) 292-6486.

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South Bay TRS-80 User Group  
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