I'll take a cup of 30-weight...

    Could I have another toothpick to hold up the
left eyelid too? The clock on the wall says 7:00
AM!!? Nobody works at this hour - especially us
computer-type people. Ya see, we get used to de-
bugging in the early hours of the day (7:00 is
late!) when normal folks have put their keyboard
to rest and the mainframe CPU has lots of time to
do our bidding without some other timesharer's
interruption. With micros, there is no need to
timeshare, however. So here I am at sunrise...

```
****************************************************************************
*                                                                          *
*     Side              Title                       Turns Count            *
*                                                                          *
*                                             CTR-41          CTR-30       *
*                                                                          *
*     ****         Super Cover                 18 & 270      10 & 158      *
*    **   **       Troll's Treasure            65 & 305      38 & 180      *
*    **   **       Banner (Mem 30800 - Model I) 183 & 395   108 & 232     *
*     ****         Replace (Disk only)         224 & 428    132 & 252      *
*                                                                          *
*                                                                          *
*      **          Crolon Diversion             9 & 263       5 & 155      *
*     ***          RPN Instructions            98 & 328      57 & 194      *
*      **          RPN Calculator             160 & 375      94 & 221      *
*     ****         Edit (System EDIT - Model I) 240 & 438    141 & 257     *
*                                                                          *
*                                                                          *
* CLOADing Notes - This tape may load at an ODD RECORDER VOLUME.  Set the volume LOWER than normal for your first attempt, then *
* increase it slightly until the tape loads.  If the first copy of a program won't load, try the second.  That is why it is  *
* there.  Model I only:  Put an AM radio very close to the keyboard, tune it to a non-station, and you can listen to the tape *
* loading in.  Adjust the recorder volume so the hash from the computer sounds 'cleanest' during a load.                     *
*                                                                          *
* Model III notes - Load the tapes at the LOW speed (POKE 16913,0).  An occasional program will NOT run.  There may be upper and *
* lower case goofs in some programs.  Arrow keys often are translated as follows: (↑, ↓, ←, →) = ([, \, ], ^).             *
*                                                                          *
****************************************************************************
```

    Look on the screen - it's a bird, it's a plane, it's a thief! Our hero
to the rescue! CLOAD tug-a-war ensues. Guess who wins in Super Cover...

    Time for another trip (we sure take a lot of them). Let's go look for
the Troll's Treasure! Oh, it's dangerous? On second thought, you go look
for the treasure and I'll split the booty with you if you find it.

    This particular adventure has a neat feature. It only looks at the first
and last word of a command. Now you can give commands in English ('GET THE
SACK' instead of 'GET SACK') if you want to. You can still type just the
first letter of a direction ('N' instead of 'GO NORTH') or just the first
three letters of any word ('OPE DOO' instead of 'OPEN DOOR') if you are more
impatient. And don't forget the 'SAVE' and 'LOAD' features so you can do
some other necessary things like eating and sleeping without having to start
the adventure over. This one could take a while (I haven't finished it
yet)...

    There are two programs for Model I'ers only this month. It looks as
though they both do some redirection of the video control, and this is
probably why they won't work on the Model III. And I don't know what fun
things will happen when these programs are used with the R/S lower case mod

and driver. Anyway, the first of them is Banner. With Banner, any characters displayed on the screen in the normal way will also be displayed in two inch letters that scroll across the top of the screen. The program has a built in demo when you first run it, that is deleted after it is done leaving you all but approximately the top 2K of RAM available.

You can change the speed of the banner's scrolling by POKEing a number from 1 to 255 in the correct location, depending on the amount of RAM your computer has. And I realize that the label on the tape says to set the Memory Size to 30800, but if you have more than 16K of RAM, that also changes. See the table below:

	Amount of RAM		
	16K	32K	48K
Set Memory Size to:	30800	47184	63568
To change scroll speed POKE at:	31326	-1442	-17826

If you plan to have a machine language routine already protected in high memory when you load in Banner, set the Memory Size lower than specified above (by the size of the first routine) so that both routines are protected. When you run Banner, it will display the right location to POKE for the speed change.

There are three one-letter commands you can feed Banner when you have it running. If you want to change the command letters to something else, just load in Banner and, BEFORE running it, POKE in the ASCII value of the character you want to use instead. Save the new copy of Banner if you want the change to be permanent. Then run it. The commands and the POKE locations are listed below:

Current Char	Banner is	Normal Letters	DOS POKE	Lvl II POKE
<shift> N	ON	ON	27678	17997
<shift> F	OFF	ON	27696	18015
<shift> T	ON	OFF	27705	18024

Ever have one of those days when you couldn't even spell your name right --- 20 times? Well, if you had that document on disk as an ASCII file, you could easily correct the spelling of each of those names (do it on some other day to be safe - you don't want to misspell it again) with REPLACE. All that you need are disks (that cuts a bunch of you out), the original file in ASCII format on a disk, and room on an on-line disk (that cuts the rest of us out) for the new ASCII format file. Think of the possibilities. You could change all of the PRINTS to LPRINTS in a particular program. The author used it to change all of the two character variable names in the adventure game he was writing to one character, and saved a bunch of memory (but woe to the programmer that tries to modify the program in the future). A useful utility!

Play time! Get out Crolon Diversion. The object is to save the world from the invading Crolons (ho hum). How about a game where you save your ankles from flea bites? Anyway, this is fun. It also has sound, so hook up an amplifier to the large grey plug (or push the play-record buttons on the recorder and listen through an earphone plugged into the earphone jack). Note: This program PEEKs the screen, so those of you with the lower case mod may have to load in the lower case driver for this program to work.

RPN Calculator... Reverse Polish Notation. This program is modeled after the HP line of calculators. Just lovely. Give me a TI calculator with parenthesis any day. How to start an argument in one easy step! Anyway, this program simulates an RPN calculator while showing you the contents of the stack registers and how they change. This one is a bit different than

HP's in that it also can handle complex numbers (just in case you have to take the square root of -1).

Just what is Reverse Polish Notation? It's the system that any stack machine (like the TRS-80) uses internally for numerical calculation. In the TRS-80, the interpreter takes care of putting the equations you write (in the accepted mathematical form) into the RPN form that the computer wants. Here's how it works, sort of:

Take 'two times three'. Normally, we would just do '2 * 3' and get 6 for an answer. In RPN, we would first Push two on the stack (two is now in the X register). Then we would Push three on the stack, so that three is in the X register and moving the two to the Y register. Now we execute a multiply which multiplies the X and Y registers, removes the value in the Y register (and everything below the Y register is moved up to fill the space), and the answer (6) is put in the X register. In other words we did a '2 3 *'.

Let's try something more complicated like '2*(5-1)+((4+5)/3+6)*(3+5)'. RPN acts to get rid of the parenthesis in the equation by just putting numbers farther down on the stack until they are needed:

	X	Y	Z	T	
initial	0	0	0	0	
push 2	2	0	0	0	
push 5	5	2	0	0	
push 1	1	5	2	0	
subtract (Y - X)	4	2	0	0	(5-1)
multiply (X * Y)	8	0	0	0	2*(5-1)
push 4	4	8	0	0	
push 5	5	4	8	0	
add (X + Y)	9	8	0	0	(4+5)
push 3	3	9	8	0	
divide (Y / X)	3	8	0	0	(4+5)/3
push 6	6	3	8	0	
add	9	8	0	0	((4+5)/3+6)
push 3	3	9	8	0	
push 5	5	3	9	8	
add	8	9	8	8	(3+5)
multiply	72	8	8	8	((4+5)/3+6)*(3+5)
add	80	8	8	8	2*(5-1)+((4+5)/3+6)*(3+5)

The RPN order then is '2 5 1 - * 4 5 + 3 / 6 + 3 5 + * +'. It is all fairly straight forward except for that last '+' that ties the whole thing together. You just work from left to right, performing the operations in the most inner parenthesis when they are encountered. When you are translating an equation in normal form to RPN, the RPN form is a bit harder. Otherwise, problem solving using the RPN form is usually faster and easier to use.

But what happened at the bottom there? The answer was 80, but the other registers contain 8s now. Whenever the stack moves up, whatever is in the T register is duplicated into the Z register. This helps when you want a series of numbers each multiplied by a constant value.

Notes on RPN Calculator:

Single register operations are performed on the X register. Double register operations are performed on the X and Y register. If only one value results, the answer is put in the X register and the other registers are moved up.

Some of the less obvious commands are:

```
R=RTOP     Changes X and Y values to polar coordinates.
P=PTOR     Changes X and Y values to rectangular coordinates.
F=CHS      Changes the sign of X.
D=ROLLD    Rolls the stack down.
U=UP       Pushes the stack up.
J=XINTY    Interchange X and Y registers.
STO#       Stores X in one of 100 storage registers (ie: STO4).
RCL#       Recalls a number from a storage register to X.
DEG        Sets degree mode.
RAD        Sets radian mode.
EX         Sets E mode (e=2.71828) for taking ln(X).
TEN        Sets Ten mode for taking LOG(X).
G=I*       Complex #s only - multiplies X by i.
H=CONJ     Complex #s only - takes the complex conjugate of X.
I=ABS      Complex #s only - takes the absolute value of X.
```

The other program for the Model I'ers only is Edit. It is an interesting approach to full screen editing (you can even change line numbers). To load Edit, type 'SYSTEM', answer the '*?' with 'EDIT', and the program will load in and auto-execute. Note: the Memory Size is automatically set to 32390, so if you have a large program or are using DOS, you will be pushing the limits of your memory.

How it works (pay attention): First, get the line (or group of lines) that you want to edit on the screen. Now, hit <shift><down arrow>E and a flashing cursor will appear. Here is where it gets a bit confusing. Remember that when you use the <shift> key with any arrow key, ONLY the flashing cursor is moved. Any characters passed over by the cursor in <shift> mode are IGNORED. Position the cursor (hold the shift key down and use the arrow keys) at the BEGINNING of the line to be edited. Let go of th shift key. Take a breath.

The Right Arrow key UNshifted: Now move the flashing cursor over the part of the line that you do NOT want changed by hitting the right arrow key UNshifted. These letters are now saved as part of the new line. Make your change in the line, then use the right arrow key unshifted to move across the rest of the line so it is saved also. Hit <enter> and you've changed the line!

Making Changes: If you want to delete a character, just use the shift key with the right arrow to pass over it. If you want to change a character, just type the new character over the old one. Inserting is a bit strange. Get to the spot where you want to insert something using the right arrow unshifted. Then hit the <shift><up arrow> to go up a line. Type in your insertion. NOW, GO BACK TO THE CHARACTER FOLLOWING THE INSERTION IN THE ORIGINAL LINE BY USING THE <SHIFT> AND ARROW KEYS. Then simply use the right arrow unshifted to get the rest of the line.

Play with Edit. It's handy and fun to use once you get used to it.

Information on misinformation...

Last month we published Disk Exec, and it was billed as being able to put any machine language program from tape onto disk and execute it from disk. Wrong! Old moral - Never say 'any' when talking about computers. It turns out that some programs just won't cooperate (like March's Alien and this month's Edit). I have the author looking into a possible patch for Disk Exec to allow it to work for Alien (for the Model I at least) and, if he is successful, it will be published next month.

Dave