Sams

October 28, 1978

To the chief Arcadian,

Hi Bob. I got my Tiny Basic cassette from Ron Schwenk this past week and cancelled my JS&A order--they still didn't know when they were going to have TB in stock. In fact, they still have only the three cassettes they have had for quite a while (Math, 280ZZAP & Baseball). They are not promising anything to anyone when it comes to Bally products so there must be bad feelings between the two companies. A friend ordered the basic unit back on February 28, 1978, in time to get the "freebies", but has not received it yet and can't get any word out of JS&A as to when they will ship. Ron, on the other hand, says he can get all the units he wants.

Anyhow, I called Ron one evening this past week to thank him for shipping TB to me. He had just come back from a Sacramento computer club meeting where he had been demonstrating the Bally and TB. He said to try the instruction &(10)=123 and see what happens.

Of course, that started the search for other unwritten instructions. So, &(10) controls the invisibility barrier. It blanks out any or all of the screen without destroying the images on the screen. So, put the statements in a loop thusly;

```
10 For A=0to174
20 &(10)=A
30 Next A
```

List it a couple of times to fill the screen with words, run it, watch the words disappear and then from top to bottom uncover one-half a pixel at a time!! Put in a timer loop to slow the action down. A great tool for games where one can squeeze the trigger of the hand controller and the screen will blank out or rotate the knob and turn the screen on or off in layers.

I haven't discovered an instruction that controls the -X to X pixels, however. *see p.3

If one wants to produce weird sounds or the equivalent of multiple notes use the instruction &(20)=n If n is equal to 0 or 64 or 128 or 192 or 256 the note is the note that is usually heard when reset is pushed. So, if you have a few minutes key in this program, run it and pick out a sound you would like to use in a program for special effects.

```
10 NT=50        (slow it down so you can hear what's happening)
20 FOR A= 0 TO 256
30 &(20)=A
40 Print "A"                   (play something)
50 NEXT A
```

The basic note stays throughout the program but the supplemental notes vary in effects. All start at the lowest position of the 64 note chromatic scale and go to the highest.

I had a couple of professional programmers from the University where I work stop by yesterday to look at the Bally and TB and they were intrigued by the above. They had both seen TB at the computer faire in Anaheim earlier this year and were very impressed by the power and potential of the Bally. Anyhow, it wasn't long until they got into the more serious side of &(n)=n statements. For instance, they found that the keyboard is configured as follows:

Try this:

```
10 PRINT &(23)
20 GOTO 10
```

+ run the program. In turn press each key in the left hand row and see the appropriate #'s appear.

23	22	21	20
1	1	1	1
2	2	2	2
4	4	4	4
8	8	8	8
16	16	16	16
32	32	32	32

&(M)=N appears to set output decimal port #M to the value of N

and

N=&(M) appears to read the value of the M input port into the variable N.

So, &(23)=1 if the "GO" key is depressed and &(20)=32 if the "WORDS" key is depressed.

They also discovered that &(k)=n where k is 28 for knob on controller 1
29 for knob on controller 2
30 for knob on controller 3
31 for knob on controller 4
and that n is from 0 (clockwise) to 255 (counterclockwise).

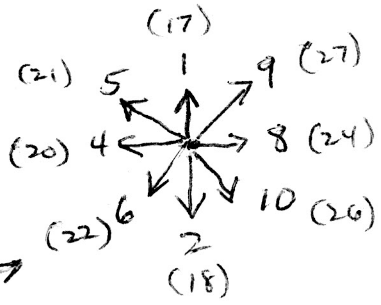
Joystick and trigger use &(j)=n where j is 16 for joystick 1
17 for joystick 2
18 for joystick 3
19 for joystick 4

Use this program for checking out your controller joystick operation to see that it functions in all positions.

n is 1 for up
2 for down
4 for left
8 for right
and 16 for trigger pulled.

— more

```
10 &(16)=JX(1)
20 PRINT &(16)
30 GOTO 10
```



Pulled Trigger + moved joystick combination #'s in ( ).

Personally, I don't know what to do with the above information because TB has built in all the capabilities I can think of for applications. Someone, somewhere will think up uses for it, however, so I hope they will let us know.

By the way, now that I have TB and have run my Bally for a few hours at a time the power supply gets extremely hot, in fact, it got somewhat warped in shape from overheating. And, if I put in a different casette after it is hot I can't get it to operate correctly until I power down and cool off the supply. Also, the cassettes do not stay in place unless I squeeze something between the eject button and the edge of the case. And sometimes the TB cassette does funny things such as put in numbers or letters I didn't key in or change the color of the screen when it's just sitting there untouched.

I haven't received my service manual yet but thanks in advance for getting Bally to do this for the Arcadians.

Here's my $5.00 for a subscription to the Arcadian. A very modest fee. I hope you can pay for publishing and mailing.

Sincerely,

Ernie

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cc: Ron Schwenk
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P.S. Number 3 hand control plug-in is on the extreme right. For some reason Bally numbered them, left to right from the front of the machine.

1 2 4 3

10/30/78
P.P.S

Since I wrote the letter I did some more looping through &(n)=n and found the following:

&(8)=n causes the screen to blank out and wipes out any program.

&(9)=0to39 changes the screen to black and uncovers the screen from left to right 4 pixels at a time.

&(13)=n does lots of strange things all of them causing program loss, most of them freezing action but some of them displaying a screen full of images such as memory and some delete the cursor some leave the cursor displayed. 24 turns the screen black and a couple displayed the word *OVERFLOW* from the calculator function.

&(18)=n gives more variations of musical tones.

&(19)=n ditto on musical tones.

&(21)=n causes the volume of tones to increase for 16 n's and then drop back to normal level.

I don't know whether all basic units react the same way to all the commands because in &(13)=n I couldn't get them all to react the same way two days in a row.

Also, there are probably others I haven't gotten to yet because of lack of time. E