

```

><><   TRICKS OF THE TRADE   ><><
><><><><><   TUTORIAL #7   ><><><><><
><><><><><><   MIKE WHITE   ><><><><><
><><><><><><   COUNTY LINE #2   ><><><><><
><><><><><><   R.D.#1 BOX 373   ><><><><><
><><><><><><   WAKEMAN , OHIO   ><><><><><
><><><><><><   44889   ><><><><><

```

LAST YEAR I SAID THAT "YOU MAY CONSIDER PURCHASING THE PORT TO VARIABLE TRANSLATOR BY [GEORGE MOSES]". IN TRUTH THIS PROGRAM IS A "FREEBEE", AND APPEARS ON PG.58 VOL.5 ARCADIAN. I GOT MINE FROM GEORGE, ON A TAPE WITH ASTRO ZAP AND BACH MUSIC. I FORGOT ABOUT PG.58 VOL.5. SORRY ABOUT THAT! I STRONGLY SUGGEST THAT YOU KEY THIS IN. BE SURE TO READ THE TUTORIAL WITH IT!

OTHER THAN THE SOUND VARIABLES, AND PORT COMMANDS, THERE ARE THREE OTHER WAYS OF ACCESSING SOUND IN THE BALLY, "MU=", "TV=", AND "PRINT ". THESE ARE UNDER THE HEADING OF:

### INDIRECT SOUND PORT ACCESS

ON PG.71 TO 73 OF VOL.1 ARCADIAN IS THE TUTORIAL ON INDIRECT SOUND PORT ACCESS. THE CHART ON PG.73 HOLDS TRUE FOR BOTH BB AND EB. AB USES A DIFFERENT KEYBOARD CODE. THAT IS, THE "A" (TV=65) FOR EXAMPLE, GIVES A &(17) VALUE OF 27 IN BB OR EB. IN AB IT'S 43. LISTEN TO SOME KEYBOARD SOUNDS BETWEEN AB, BB, AND EB, IF YOU HAVE ACCESS TO THESE BASICS, AND YOU'LL UNDERSTAND WHAT I'M SAYING. GEORGE MOSES SENT ME A COUPLE OF LETTERS (MENTIONED LAST MONTH) CONTAINING THESE TWO SHORT PROGRAMS:

```

1 .MO AND TA SHIFT ROUTINE
5 CLEAR
6 PRINT " NOTE      MO      TA
10 FOR A=48TO 55;NT=10
20 PRINT " -",;TV=A;NT=0;GOSUB 100;NEXT A
90 NT=0;STOP
100 NT=0;PRINT MO,TA;RETURN

```

```

1 .MO AND TA PRINTOUT ROUTINE
10 CLEAR ;GOTO 20
15 BOX 0,8,160,8,2
20 NT=3;PRINT " INPUT NOTE ",;FOR B=1TO 2;@(B)=KP;TV=@(B);IF @(B)
) #13NEXT B
30 NT=0;PRINT ;CY=-8;PRINT " NOTE      MO      TA
40 NT=20;CX=-71;FOR A=1TO B-1;TV=@(A);NEXT A;NT=0;PRINT MO,TA;GO
TO 15

```

SUBSTITUTE A "+", "x", "÷", OR A SPACE, FOR THE PRINTED "-" IN LINE 20 OF THE FIRST PROGRAM TO SEE ALL THE SHIFT VALUES. THE SECOND PROGRAM GENERATED THE DATA FOR THE CHART THAT FOLLOWS. (ALSO IN GEORGE'S LETTER BY THE WAY):

## AB KEYPAD "KARACTER" FREQUENCIES

| CHAR | MO | TA  | CHAR | MO | TA | CHAR | MO | TA | CHAR | MO | TA | CHAR | MO | TA |
|------|----|-----|------|----|----|------|----|----|------|----|----|------|----|----|
| -1   | 71 | 100 | &    | 71 | 70 | -8   | 71 | 52 | C    | 71 | 41 | S    | 71 | 25 |
| 1    | 71 | 94  | '    | 71 | 69 | 8    | 71 | 52 | D    | 71 | 40 | T    | 71 | 24 |
| +1   | 71 | 89  | (    | 71 | 68 | +8   | 71 | 52 | E    | 71 | 39 | U    | 71 | 23 |
| -2   | 71 | 89  | )    | 71 | 67 | -9   | 71 | 51 | F    | 71 | 38 | V    | 71 | 22 |
| 2    | 71 | 84  | *    | 71 | 66 | 9    | 71 | 51 | G    | 71 | 37 | W    | 71 | 21 |
| +2   | 71 | 79  | +4   | 71 | 66 | +9   | 71 | 51 | H    | 71 | 36 | X    | 71 | 20 |
| -3   | 71 | 79  | -5   | 71 | 66 | :    | 71 | 50 | I    | 71 | 35 | Y    | 71 | 19 |
| !    | 71 | 75  | ,    | 71 | 64 | ;    | 71 | 49 | J    | 71 | 34 | Z    | 71 | 18 |
| 3    | 71 | 74  | .    | 71 | 62 | ?    | 71 | 49 | K    | 71 | 33 | [    | 71 | 17 |
| -4   | 71 | 74  | 5    | 71 | 62 | <    | 71 | 48 | L    | 71 | 32 | \    | 71 | 16 |
| "    | 71 | 74  | /    | 71 | 61 | >    | 71 | 46 | M    | 71 | 31 | ]    | 71 | 15 |
| #    | 71 | 73  | +5   | 71 | 59 | +7   | 71 | 46 | N    | 71 | 30 | ↑    | 71 | 14 |
| \$   | 71 | 72  | -6   | 71 | 59 | ?    | 71 | 45 | O    | 71 | 29 | ←    | 71 | 13 |
| %    | 71 | 71  | 6    | 71 | 55 | @    | 71 | 44 | P    | 71 | 28 | ↓    | 71 | 12 |
| +3   | 71 | 70  | +6   | 71 | 52 | A    | 71 | 43 | Q    | 71 | 27 | →    | 71 | 11 |
| 4    | 71 | 70  | -7   | 71 | 52 | B    | 71 | 43 | R    | 71 | 26 | 0    | 71 | 0  |

IF YOU RUN THE SHIFT ROUTINE FURTHER YOU'LL FIND THAT TA CAN ONLY SHIFT IF A NUMBER FROM 1 TO 7 GETS PRINTED. THE "+" AND "-" SIGNS HAVE NO EFFECT IF FOLLOWED BY AN ALPHABETIC CHARACTER OR A SYMBOL. EXAMPLE: PRINTING "+T" OR "-T" GIVES "T" SOUND.

TA IS ALWAYS RESET TO ZERO AFTER A NOTE PLAYS. VA IS ALSO RESET TO ZERO. THIS CAN BE USED TO ADVANTAGE. HERE ARE TWO LINES FROM U.F.O. ATTACK (AVAILABLE AS PART OF QUADRA):

```
14 C=X;I=0;VA=15;FOR D=Y-HTO -40STEP -B;GOSUB 6;C=C+J;LINE C,D,I
;IF V>0TA=40-D;BOX C+E÷8,D+3,1,1,I
```

```
18 MU=RND (9)+32;IF H>0GOSUB 3;P=P+1
```

THERE ARE NO OTHER SOUND COMMANDS IN LINES 15, 16, OR 17, OR IN SUBROUTINE 6. V>0 WHEN A FLYING SAUCER GETS HIT. SO THE LOOP GIVES A FALLING SOUND USING TA + VA. WHEN THE CRASH SOUND PLAYS, (LINE 18), TA + VA RESET TO ZERO TURNING OFF ALL SOUND.

UNLIKE MO! ON PG.71 VOL.1 ARCADIAN ONE FALSE STATEMENT WAS MADE. "AS SOON AS THE NOTE IS FINISHED, &(16) WILL AGAIN RETURN TO 71 UNLESS THE NEXT NOTE IS ALSO PRECEDED BY A ÷ (OR x)". NOT SO!! MO SHIFTS TO ONE OF FOUR NUMBERS (71, 35, 143, OR 0), AND STAYS RIGHT THERE! UNTIL ANOTHER SHIFT OCCURS, OR A &(16) OR "↓" COMMAND IS ENCOUNTERED. A "MO=" COMMAND MAY NOT ALWAYS WORK. IN SPACE MISSION FOR EXAMPLE, HALTING PART 2, AND KEYING IN "NT=0; MO=71" DOES NOTHING! AND, IF YOU KEY IN "PRINT MO", YOU'LL FIND MO ALREADY IS 71!! CONFUSED? HERE ARE YOUR CLUES: MO INPUTS FROM THE TAPE AND &(16) DOESN'T, BUT IF YOU STARTED LOOKING IN PART 1 YOU'RE ONLY HALF RIGHT. ALSO, BY CAREFUL LISTENING YOU WILL FIND THAT &(16)=0! IN ANTI-AIRCRAFT GUN MODS (LAST MONTH), THE SHIFT IS IN LINE 12. ALL FURTHER ANSWERS NEXT MONTH! KEEP BUGGIN'!