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><><   TRICKS OF THE TRADE   ><><
><><><><><   TUTORIAL #10   ><><><><><
><><><><><   MIKE WHITE   ><><><><><
><><><><><><   COUNTY LINE #2   ><><><><><
><><><><><><   R.D.#1 BOX 373   ><><><><><
><><><><><><   WAKEMAN , OHIO   ><><><><><
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670 &(19)=80;&(0)=7;&(1)=7;&(2)=7;&(3)=7;&(9)=30;FOR FA=7TO 1
STEP -1;GOSUB 98;NEXT FA;G=1;GOSUB 63,NT,2,-32,8,5;FOR FA=262TO
8STEP -5;GOSUB 98;NEXT FA
680 &(10)=96;&(9)=63;&(19)=70;FOR FB=7TO 1STEP -1;GOSUB 98;NEXT
FB;G=2;GOSUB 63,CX,-32,8,6;FOR FB=262TO 8STEP -5;GOSUB 98;NEXT
FB
690 &(19)=60;&(9)=10;&(10)=176;FOR X=7TO 0STEP -1;&(1)=X;GOSUB
98;NEXT X;G=4;GOSUB 63,CX,-32,8,5;FOR X=262TO 7STEP -5;&(1)=X;
GOSUB 98;NEXT X
700 &(9)=63;BOX 0,50,148,3,3;BOX -1,28,13,13,3;BOX 0,38,100,5,3;
&(19)=50;FOR FB=7TO 1STEP -1;GOSUB 98;NEXT FB;G=3;GOSUB 63,CX,
-32,8,6;FOR FB=262TO 8STEP -5;GOSUB 98;NEXT FB
710 BOX 0,50,148,3,3;BOX -1,28,13,13,3;BOX 0,38,100,5,3;BOX 0,8,
74,8,4;BOX 0,8,44,13,7;BOX 0,8,40,9,4;DATA NT,0,-15,8,7;PRINT
"QUADRA",

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THE ABOVE IS FROM THE 16K QUADRA. THE TITLE IS DRAWN, THEN THE SCREEN IS FADED TO ALL WHITE. LINES 670 THROUGH 700 REVEAL ONE QUADRANT AT A TIME. SUBROUTINE #98 IS A SHORT TIME DELAY AND #63 PRINTS TITLES OUT DEPENDING ON VARIABLE "G". "FA" AND "FB" ARE THE OTHER TWO COLORS IN EB (FOR YOU AB + BB USERS), AND THE WORD "DATA " OR "GOSUB A,B,C,D,E,(ETC.)" IS A FAST WAY TO LOAD A STRING OF VARIABLES. IN "GOSUB " THE FIRST NUMBER IS THE NUMBER OF THE SUBROUTINE. THE SECOND IS THE VARIABLE TO START LOADING AT. THE REST IS DATA TO LOAD. THE SEQUENCE IS, "NT,CX,CY,CC". WE KNOW ABOUT NT,CX, AND CY FROM AB. CC IS "CHARACTER COLOR" AND IT CONTROLS WHICH COLOR WE "PRINT " IN (5=FA, 6=FB, 7=FC). NOW, LET US STUDY THIS! THE LEFT SIDE OF THE SCREEN ONLY IS FADED IN, AND TITLE "G" IS PRINTED, THEN "FOR FA=262TO 8STEP -5" FADES FA BACK TO WHITE (THE LOOP STOPS AT 7, SEE NIAGARA BUG BULLETIN VOL.2 PG.27+33). &(10) IS MOVED UP, AND THE TOP OF THE SCREEN IS FADED THE SAME AS BEFORE (USING FB). &(9) IS SET, AND THE RIGHT SIDE OF THE SCREEN IS SHOWN BY TYING &(1) TO A VARIABLE (&(1) IS FA RIGHT OF &(9)). THEN 3 BOXES "MASK OUT" THE TOP BY USING "XOR", AND THE BOTTOM IS VIEWED THE SAME AS THE OTHER PARTS. THE BOXES ARE "XOR FC". IF THEY OVERLAY FB IT BECOMES FA. FC BECOMES BC, AND BC BECOMES FC. NO FA PIXELS ARE HIT, SO AN FB FADE WILL ONLY SHOW THE BOTTOM OF THE SCREEN. LINE 710 HEALS THE TOP AND CENTER OF THE PICTURE (A LOT FASTER THAN REDRAWING IT).

THIS PART, BEING IN THE 16K VERSION ONLY, IS NOT CRAMPED FOR SPACE. LINE #670 WOULD HAVE USED "FOR X=0TO 3;&(X)=7;NEXT X", IN PLACE OF THE 4 PORT COMMANDS (SAVING 11 BYTES) IF IT HAD BEEN.

WE MUST ALWAYS LOOK FOR NEW WAYS TO IMPROVE OUR PROGRAMS, OR EVEN SOMEONE ELSE'S! THIS IS HOW I GOT STARTED. LAST MONTH I LET YOU SEE TWO SUBROUTINES FROM **STARBASE I** BY GREG MIEJSKI. THEN I CHALLENGED YOU TO REWRITE THEM FOR EFFICIENCY. DID YOU GET THIS?

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7 &(21)=0;FOR FC=7TO 1STEP -1;FOR A=1TO 20;NEXT A;NEXT FC;RETURN
8 FOR FC=0TO 6;FOR A=1TO 20;NEXT A;NEXT FC;FC=91;RETURN
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ONLY THE "91" IS MY FAULT. I DIDN'T SAY WHAT THE VALUE OF "F" WAS LAST MONTH. THIS SETS FC TO A DULL RED.

ALSO, LAST MONTH I PROMISED TO EXPLAIN THE "SHRINKING" "Q" AND THE "FLASHLIGHT EFFECT", FOUND IN THE 16K **QUADRA**. THE SECRET IS IN THE USE OF XOR! THIS LINE DOES THE "FLASHLIGHT EFFECT":

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2000 &(23)=-1;FOR X=1TO 20;&(21)=RND (X*10);GOSUB 6;NEXT X;
&(10)=0;GOSUB 9,BC,0,103,0,204;&(9)=63;DATA NT,0,-17,48,5;PRINT
"0H N0!!
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NOTICE THE "GOSUB 9,BC,0,103,0,204". THE COLOR VARIABLES ARE LOADED IN ORDER (BC,FA,FB,FC). THE SCREEN IS DRAWN IN FB. THE FLASHLIGHT SPOT IS DRAWN IN FA AND SNAPPED TO LINE #6000. THEN THE SPOT IS SHOWN USING XOR! THE BC AND FB COLORS ARE THE SAME, MEANING THAT THE SCREEN REMAINS HIDDEN UNTILL THE SPOT HITS AN OBJECT. THEN BC BECOMES FA, AND FB BECOMES FC (DARK BLUE). THIS MEANS THAT THE SPOT IS YELLOW "103", THE SCREEN IS BLACK "0", AND THE PART OF AN OBJECT HIT BY THE SPOT GETS CHANGED TO A DARK BLUE "204", BY XORING THE SPOT WITH THE SCREEN! XOR IS ALSO THE SECRET BEHIND THE "SHRINKING" "Q"! ON PG.42 VOL.2 **NIAGARA BUG BULLETIN** I SAID "IF WE DRAW AND REDRAW THE SAME REVERSE (XOR) LINE WE WIND UP WITH THE ORIGINAL PICTURE REGARDLESS OF WHAT IT MAY HAVE BEEN." BUT, IF WE ERASE THE ORIGINAL PICTURE USING XOR WE WIND UP WITH THE LINE! COMPLETE AND SOLID! SO THE "Q" SIMPLY XORED OFF, AND THEN BACK ON AGAIN, ONLY SMALLER. THIS PRINCIPLE ALSO WORKS IN REVERSE! SO WHEN THE CIRCLES, BOXES, AND LINES ARE XORED FROM THE SCREEN, THE "SHRINKING" "Q" IS FINE.

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6 BC=RND (256)
7 DATA FA,BC+68,BC+196,BC+132;RETURN
9 NT=0;PL.;&(16)=71;RETURN
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THESE ARE THE SUBROUTINES #6 AND #9 REFERED TO IN LINE #2000 SHOWN ABOVE, "COLOR RANDOM" AND "SOUND OFF".

SORRY I LEFT YOU AB + BB PEOPLE SOMEWHAT OUT THIS MONTH, BUT I WANTED TO SHOW THE ADVANTAGE OF THE 4 COLOR SCREEN IN EB. NEXT MONTH I'LL TALK ABOUT THE MAZE FROM **SAFECRACKER**, AND THE MARTIAN FROM **QUADRA** 16K VERSION AGAIN. ONLY BOTH "TRICKS" CAN BE DONE IN AB! WITH THE MAZE, THE SCREEN IS CLEARED AND "FUSE TIMER" ALONG WITH THE REMAINING TIME IS PRINTED NEAR THE SCREENS CENTER. THEN THE MAZE APPEARS, INSTANTLY! HOW? SINCE &(10) COULDN'T HAVE BEEN USED? SEE **QUADRA** AB. TILL NEXT MONTH, KEEP BUGGIN'!!!!