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><>< TRICKS OF THE TRADE ><><
><><><>< TUTORIAL #6 ><><><><
><><><>< MIKE WHITE ><><><><
><><><>< COUNTY LINE #2 ><><><><
><><><>< R.D.#1 BOX 373 ><><><><
><><><>< WAKEMAN , OHIO ><><><><
><><><>< 44889 ><><><><
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GREETINGS! TO ALL THE NEW SUBSCRIBERS, AND TO ALL YOU "DIE HARDS", **WELCOME BACK!!**
     AS YOU CAN SEE, I HAVE UPGRADED MY COLUMN WRITER TO INCLUDE THE SYMBOLS ←→↑↓x AND ÷ AS WELL AS **ENHANCED PRINTING!** LAST YEAR THIS COLUMN HAD SOME FUNNY SYMBOLS IN SOME OF THE LISTINGS. BUT NO MORE! IF YOU DON'T HAVE **NIAGARA BUG BULLETIN VOL.2** GET IT!! BACK ISSUES ARE AVAILABLE THROUGH KEVIN O'NEILL.
     ON PG.33 VOL.2 **NIAGARA BUG BULLETIN** I SAID THAT "FOR NEXT" LOOPS RUN FASTER THAN GOTO OR GOSUB. THAT IS BECAUSE THE ADDRESS FOLLOWING THE "FOR" STATEMENT IS "PUSHED" ONTO THE STACK WITH THE "TO" AND "STEP" VALUES. LOOP 1 OF MY LAST COLUMN (LAST YEAR) DEMONSTRATES THIS. LOOP 2 SHOWS THE EXACT ADDRESS. AS THE "FOR" STATEMENT IS READ BY THE COMPUTER THE "STEP" VALUE CHANGES, BUT ONLY IF TR(1) IS PULLED! HENSEFORTH, THE "FOR" STATEMENT IS ONLY READ ONCE, NORMALLY! THE STACK HOLDS EVERYTHING TILL THE "NEXT" IS ENCOUNTERED. THEN WE RETURN TO THE STORED ADDRESS, AND KEEP LOOPING. THE ADDRESS OF THE LOOPING VARIABLE IS ALSO PUSHED ONTO THE STACK. SEE **QUADRA** OR THESE 2 LOOPS:

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         LOOP A                          LOOP B

10 FOR A=0TO 99              10 FOR A=0TO 99;IF A=50GOTO 30
20 FOR B=0TO 99              20 NEXT A
30 NEXT A                    30 FOR B=0TO 99;IF B=50RUN
40 NEXT B                    40 NEXT B
```

     LINE 40 "BLOWS OUT" IN LOOP A, BECAUSE THE "FOR B" DATA GETS ERASED WHEN "FOR A" DATA GETS READ FROM THE BOTTOM OF THE STACK. LOOP B RUNS FOREVER! THESE "FOR" STATEMENTS ARE "RESTACKED" WHEN REINITIATED, SO THE STACK (200 BYTES IN AB) DOESN'T EXPLODE.
     NOW AS PROMISED LAST YEAR, LET'S LOOK AT:

DIRECT SOUND PORT ACCESS

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&(16)=MO          MO=&(16)
&(17)=TA          TA=&(17)
&(18)=TB          TB=&(18)
&(19)=TC          TC=&(19)
&(20)=VFx64+VR    VF=&(20)÷64;VR=RM
&(21)=NMx16+VC    NM=&(21)÷16;VC=RM
&(22)=VBx16+VA    VB=&(22)÷16;VA=RM
&(23)=NV          NV=&(23)
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THE CHART WAS TAKEN FROM **THE PORT TO VARIABLE TRANSLATOR** BY [GEORGE MOSES]. THE PROGRAM LETS YOU HEAR THE SOUNDS AS WELL AS SEE THEIR VALUES. THE TUTORIAL ON PG.62 TO 66 VOL.1 ARCADIAN EXPLAINS THE SOUND GENERATOR IN DETAIL. ONE THING ABOUT &(21), &(21)=255 GIVES THE SAME SOUND AS &(21)=63. GEORGE MOSES'S PORT TO VARIABLE TRANSLATOR WON'T EVEN ACCEPT A &(21) INPUT OVER 63.

ON PG.69 VOL.1 ARCADIAN YOU'LL FIND A CHART OF CONCERT NOTES TO AUDIO FREQUENCIES. AND ON PG.73 IS A CHART FROM &(17) OR TA VALUES TO AUDIO FREQUENCIES. REMEMBER THAT TB+TC OR &(18)+&(19) ARE THE SAME (SOUND WISE) AS &(17) OR TA. THEREFORE YOU CAN MAKE THREE VOICE MUSIC FROM THESE TWO CHARTS. GEORGE MOSES SENT ME A COUPLE OF LETTERS A WHILE BACK AND HE GAVE ME THIS:

THE FORMULA FOR A NOTE ONE OCTAVE LOWER IS TO TAKE THE MO (OR TA) VALUE, ADD 1, DOUBLE IT, AND SUBTRACT 1.

THE FORMULA FOR A NOTE ONE OCTAVE HIGHER IS TO TAKE THE MO (OR TA) VALUE, SUBTRACT 1, AND DIVIDE BY 2.

TO CREATE STRANGE SOUNDS REQUIRES A "FOR NEXT" LOOP. HERE IS "THE RAZZ"!! SLOBBER AND ALL:

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10 NT=-1;&(18)=-1;&(19)=100;&(21)=36;&(22)=-1
20 FOR A=50TO 0STEP -1;&(20)=A
30 NEXT A;NT=0
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IF YOU USE THE VARIABLES INSTEAD OF THE PORTS, YOU MAY USE THEM TO STEP THE LOOP. (SUCH AS "FOR VR=50TO 1STEP -1"). BUT NOT ALL IS SWEET!! TRY THIS:

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11 NT=10
12 PRINT "135x1 5x100
13 CLEAR
60 FOR N=1TO 1000;NEXT N
333 NT=0
343 TB=-1;TC=100;NM=2;VC=4;VA=-1;VB=-1
344 FOR VR=50TO 1STEP -1
345 FOR XY=1TO 2;NEXT XY;NEXT VR;↓
511 NT=15
512 PRINT "100101100+20220110-11000
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THE VARIABLES RUN SLIGHTLY FASTER THAN THE PORT LOOPS. THE REASON IS, THERE ARE LESS BYTES. SO A SHORT DELAY IS ADDED TO LINE 345. BUT "WHERE IS THE RAZZ"? IF YOU ADD THE ABOVE PROGRAM TO **ANTI-AIRCRAFT GUN** BY [BOB OGDEN], PG.73 ASTRO BASIC HANDBOOK, (EXCEPT LINE 60) YOU WILL GET "THE RAZZ" IF THE AIRPLANE REACHES THE RIGHT EDGE OF THE SCREEN. BUT ONLY IF YOU MISS AT LEAST ONCE FROM THE GROUND. OTHERWISE, YOU HEAR A NASTY SCREECH. NEXT MONTH I'LL TELL YOU WHY! ALSO, DID YOU TAKE THE "&(16)=71" OUT OF LINE 20 OF **SPACE MISSION (PART 2)**? IF ANYONE CAN TELL ME WHERE THE MO SHIFT OCCURS BEFORE THE MARCH "TRICKS" COLUMN COMES OUT, I'LL GIVE THAT PERSON A FREE **QUADRA**! (HINT) ANTI-AIRCRAFT GUN MODS ALSO SUFFER FROM <u>MO SHIFT</u>! CLUES NEXT MONTH! KEEP BUGGIN'