ATARI®
INPUT/OUTPUT™

17-year old Justin Whittaker makes the BIG time with LONE RAIDER
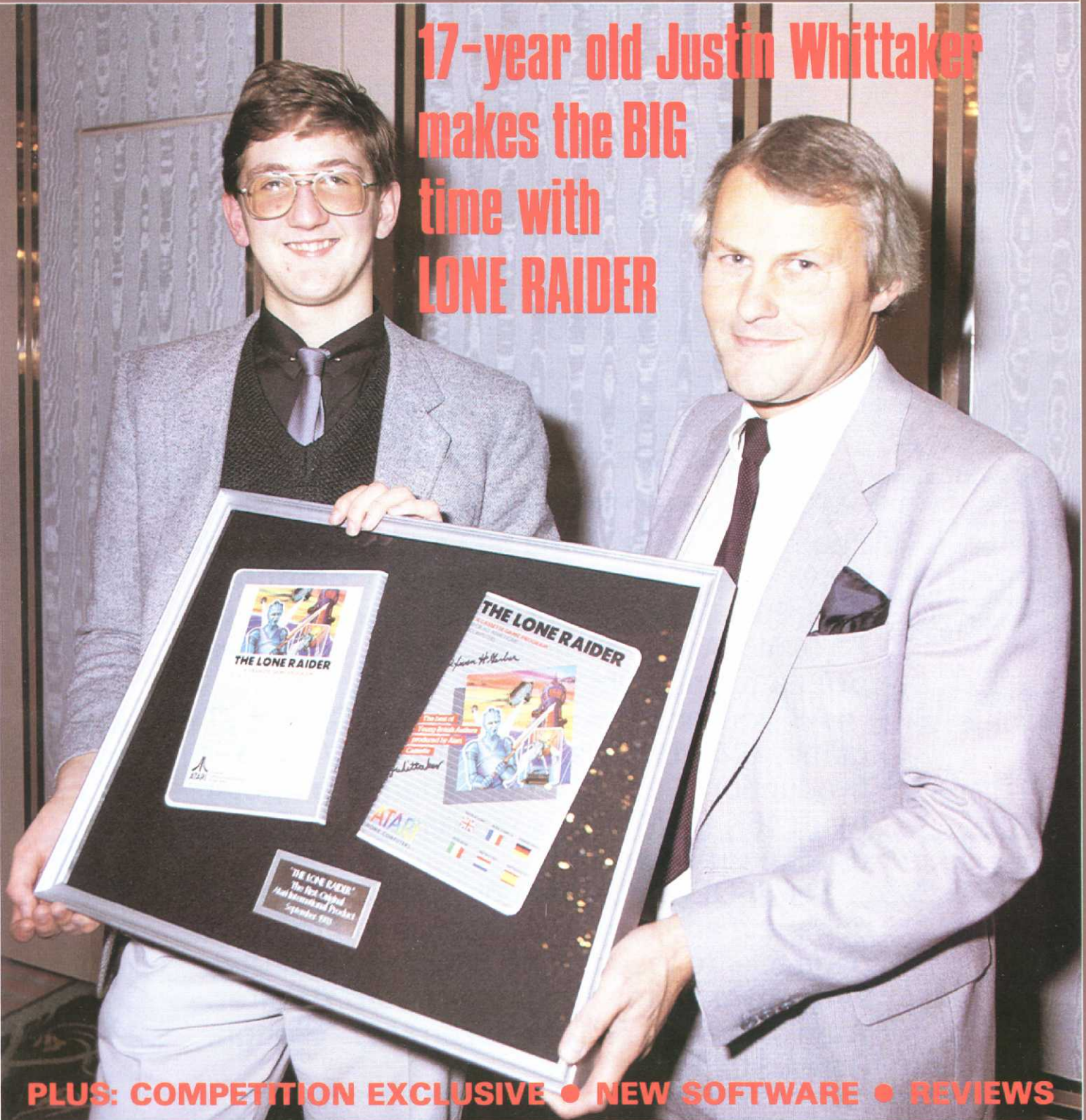
PLUS: COMPETITION EXCLUSIVE ● NEW SOFTWARE ● REVIEWS

CALLING ALL I/O PROGRAMMERS!

The Atari Cricket Competition

Here's your **BIG** chance to put your computing skills to the test and win a brand new **Atari 800 XL Home Computer, peripherals and software** or a cash prize of **£1,000!!** And, there are superb **software prizes** for runners up!

All you have to do is write a **CRICKET** game, to be accepted by ATARI for production, using your Atari Computer (with 16K RAM) and Atari Assembler Editor or Macro Assembler

For FULL competition details, please complete and return the application form on page 5 — to reach us no later than February 29th, 1984 — to: The Editor, **Atari Cricket**, Atari House, Railway Terrace, Slough, Berks SL2 5BZ

CONTENTS

I/O ™

A warm welcome to all new and old Atari users as we start 1984 with our 5th edition of INPUT/OUTPUT.

Many of you will be sampling the vast capabilities of the new Atari 600 XL, but for all Atari fans who are looking for an exciting computing challenge, do have a go at entering **The Atari Cricket Competition.** You never know, you may well find your winning game featured among the top ranking Atari software in these pages . . . Take a look, for example, at the success story of 17-year-old Justin Whittaker, creator of the Lone Raider on page 14.

You will find all the regular features, of course, and a bit more! We would like to extend a special thanks to Jack Schofield, Editor of Practical Computing and Kevin Duquemin and Richard Hawes of Silica Shop for their contributions to I/O.

On a final note, we now have limited stock of Atari Disk Holders, Reference Folders, Tote Bags and Pens (see last issue of I/O for details). Subject to availability, back issues of I/O can also be obtained at a cost of £1 each which includes P&P. Please make cheques/postal orders payable to **Atari International (UK) Inc.**

Editor

Paul Daniels and his MAGIC ADVENTURE

When Paul Daniels was last interviewed for I/O, he was hinting at a scheme of his own for his Atari. Well . . . it's arrived.

Some of you will already have bought a copy of Paul Daniels' Magic Adventure to find that the game begins in a strange airport — just how strange you soon discover. The format at this stage is the traditional Adventure commands in English, but some of the responses are not at all traditional!

When you manage to struggle to your hotel, you find yourself in a game of roulette with all the correct rules and odds. Anyone wanting to try out a private betting system will find this part of the game fascinating. Then . . . on to Paul's Magic Show where the tricks are *really* mystifying and Paul's predictions (written on the screen in code) are later revealed to be correct. When the show is over, you're still only half-way through the game, with a very tricky problem to solve.

Part Two picks up the trail to baffle you again with codes, puzzles and a surprise finale.

I asked Beryl and Gil Williamson of Amazon how it felt to work with the great magician. "Tremendous" said Beryl. "Paul is a very experienced games player, who easily perceives what is possible and effective in a game. He also believes in entertaining his audience, and that's what we've all concentrated on. Above all, the game is fun to play."

Gil also enjoyed his late night and early morning sessions working with Paul on the various tricks and puzzles and finds him rewarding to work with. Paul came into contact with Amazon through their KEYWORD word processing package and they have been collaborating on the game since last December. The adventure is issued in two parts, each part is selling for £19.95 on both disc and cassette.

Each part requires an Atari with 32K and BASIC.

Although the second part of the game can be played by itself, the first part contains clues which make the second part easier. As Paul says: "We are particularly keen that the game be both challenging and amusing."

Atari Sports A Legend

Keen golfers amongst you no doubt watched the final day's live television coverage of the 1983 Bob Hope British Golf Classic, played at Moor Park Golf Club this autumn.

Together with a host of celebrities, professionals and leading amateurs the old maestro led his troupe around the course delighting the huge crowds with his play and wit, bringing the tournament to a splendid conclusion on its final day, sponsored by Atari.

With the likes of ex-US President Gerald Ford, James Garner and Telly Savalas rubbing shoulders with Bernhard Langer and Brian Barnes, everyone had a favourite to follow and a day out to enjoy.

Beadle's Bits and Pieces

Another star who is getting to grips with Atari's Home Computers is Jeremy Beadle, one of the presenters from the popular television series Game for a Laugh.

Whilst he is best known for this role his main occupation is writing and devising television programmes. He's also a fanatical collector of odd and interesting facts, as a visit to his house will testify. The rooms are filled to the ceiling overflowing with books, lists and all sorts of pieces of information which, up to now, he has been laboriously cross-referencing, that is if he can find them!

"So I badly need a computer", he says. "I've got more than 5000 books on UFOs,

animals, sport, history, ghosts, cowboys and indians . . . not only do I need a machine to file away useful facts and oddities about these subjects, but I'm fed up of crawling round piles of books to get to the bathroom."

To help Jeremy make order out of this chaos, Atari arranged with the TV Times Magazine for Jeremy to try out a new Atari 600XL home computer system and following a training session at Atari, he is now putting it to good use.

But if one day you find yourself being asked to do something rather strange with a computer, just bear it in mind that a certain Mr Beadle might spring up from behind to tell you that you've been "Game for a Laugh".

Atari Worldbeaters

Over-18 Champ Andrew Brzezinski receives his well-earned prize.

Holiday Inns — computing comfort

Over 80,000 video game fans entered the Atari Player of the Year competition in 1983.

From the numerous in-store local heats on Phoenix, top-scorers progressed to the regional finals to play Ms Pac-Man. Eventually the fifty top scorers from these went through to the national finals held at the Camden Palace in London where Stuart Murray became the under-18 champion and Andrew Brzezinski the over-18 champion.

Both winners received Atari 800 Home Computers plus a place in the Atari World Video Game Championship held in Munich. And there, sure enough, Andrew and Stuart beat all the champions from 21 other countries with the amazing scores on Centipede of 322,044 and 323, 512 respectively!

The prize for our two World Champions — an expenses-paid trip for two to the 1984 Olympic Games in Los Angeles.

Computers For All The Family

In addition to the very popular computer camps with which Atari was involved during the summer, Atari also ran special computer weekends for families in the autumn.

In conjunction with Holiday Inns these weekend breaks were run to provide an extensive introduction of home computing to all the family, in the plush comfort and surroundings of two of Holiday Inn's exclusive hotels.

From the complete novice to the computer studies lecturer the weekends had something for everyone and filled a considerable demand.

Exhibitions

As part of Atari's launch of the new XL range of home computer products, Atari took part in two major exbibitions in the autumn.

Atari's display of the XL range was first made to the public at the Great Home Entertainment Spectacular, Olympia and then at the Personal Computer World Show, Barbican.

The Atari stands at both exhibitions included Atari Theatre sessions which presented home computers to the uninitiated, whilst a display of Atari's forthcoming Touch Tablet and Light Pen at the PCW drew enthusiastic praise from novice and expert alike.

Atari light pen extravaganza at PCW

ATARI CRICKET

Please send me details of
The Atari Cricket Competition
(Please complete in BLOCK CAPITALS)

Name . . . .

Address . . . .

. . . .

. . . . Post Code . . . .

INPUT
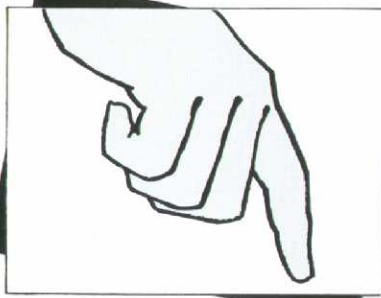
A Helpful Hand

Many thanks for your very interesting feature on Scrolling Venetian Blinds in Input/Output No 4.

I cannot understand machine code and write all my small programs in BASIC. I phoned the HELPLINE and although they were very helpful indeed were not able to assist me.

Mike, could you please tell me how to get out of your Basic program without having to touch the keys. I should like to be able to run the blinds for about 30 seconds before ARTI (that's the name for the computer) switches to the next part of my programs.

Thank you again,
Bob Young
Romford
Essex

I was very pleased to hear that you liked the tutorial program!

The purpose of the article is to stimulate interest in programming and also to give beginners a useful program. I feel you will agree that these small aims are not too easy to meet within the confines of Input/Output. However, as much as I would like to help you in altering the machine code part of the article, I feel that the best person to do this would be yourself as you are the only person who can know how you wish to use the end of the program.

If, at this time, you do not understand Assembly language, may I suggest that you purchase a good book on the subject.

One that comes immediately to mind is "The Atari Assembler" by Inman & Inman. The lessons and small routines within this book, used in conjunction with the Atari Assembler Editor cartridge, will quickly take you to the position where you are able to customise any small routine which we may publish in I/O.

— Mike Wilding

Incurable Addiction

Upon reading the New Software article in the Winter edition of I/O, I was thrilled to see that one of my arcade favourites, POLE POSITION, is soon to be added to the already vast range of Atari software. I await the cartridge releases with great anticipation and hope that the translation from arcade to living room format equals the standards set by PACMAN and the marvellous DONKEY KONG.

Whilst on the subject of arcade games, I would like to take this opportunity to ask if there are any plans in the Atari pipeline to convert the ultimate arcade game STAR WARS to home computer format. I am sure the switch from vector to raster graphics would not detract — in fact, could even add to the excitement and playability of this truly outstanding and testing game.

As you may have realised, I am a bit of a computer games buff and yet have seen no graphics or action to come anywhere near the standards set by Atari! However, despite my incurable addition to the joysticks, I do find a little time to develop and hopefully improve on my programming techniques which I feel are progressing quite promisingly.

The next step for me must be an ATARI 800 XL. Imagine an adventure game which utilised the new machine's full 64K capacity — the mind boggles!!

Keep up the good work with I/O and your spectacular software!
Nicholas Smith
Chesterfield
Derbyshire

Nicholas, Atari has no immediate plans to release STAR WARS, but keep your eyes peeled to the New Software pages in future editions of I/O — Ed.

PEEK & POKE
Readers' Programs
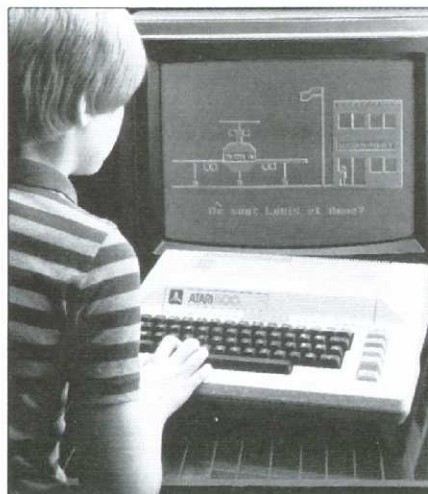
I have included an educational program where the object is to get your man across the river by hopping on to the stones. To get the man to move, you must answer a maths question. If the answer is correct you move on, but if it is incorrect you move back a place. The game ends when the man gets to the other side or is forced off the screen by too many wrong answers.

I hope you do not mind my using your Player Missile graphics from issue 3 in this program to create the person!

I enjoy reading your magazine.
Jonathan Joseph (Aged 13)
Headington
Oxford

```
1 REM MATHGAME BY J JOSEPH
5 OPEN #2,6,0,"K."
10 GRAPHICS 0
20 SETCOLOR 2,4,4
30 PRINT "MATHS"
40 PRINT "-----":REM PRINT IN INVERSE
50 PRINT "do you want a game?(Y/N)"
60 GET #2,A
70 IF A=78 THEN END
200 GRAPHICS 0:SETCOLOR 2,0,0
210 X=57
220 POKE 752,1
230 Y=91
240 A=PEEK(106)-8:POKE 54279,A:PMBASE=
256*A
250 POKE 559,46
260 POKE 53277,3
270 POKE 53248,X
280 FOR J=PMBASE+512 TO PMBASE+640:POK
E J,0:NEXT J
290 POKE 704,156
300 FOR J=PMBASE+512+Y TO PMBASE+520+Y
:READ A:POKE J,A:NEXT J
310 DATA 0,56,16,186,84,16,40,68,0
311 REM LINES 311 TO 327 ARE USED TO
          GIVE INSTRUCTIONS ON ENTERING
          THE PROGRAM AND ARE NOT TO BE
312 REM ENTERED IN THE PROGRAM PROPER

313 REM IN LINE 330 REPLACE THE STARS
          WITH THE FOLLOWING BLOCKS
314 REM EACH SHOULD BE ENTERED IN
          INVERSE WITH THE CONTROL KEY
          HELD DOWN.
315 REM 8 GROUPS OF 4. EACH 4 IN
          INVERSE WITH A NON-INVERSE
          SPACE BETWEEN EACH BLOCK
320 REM BLOCK ONE - QWES
321 REM BLOCK TWO - WEQS
322 REM BLOCK THREE - WESA
323 REM BLOCK FOUR - AADS
324 REM BLOCK FIVE - ZSWA
325 REM BLOCK SIX - EDWW
326 REM BLOCK SEVEN - SDXC
327 REM BLOCK EIGHT - CXAD
330 POSITION 1,22:? "**** **** **** **
** **** **** **** ****"
340 S=INT(RND(0)*50)
350 U=INT(RND(0)*8)
355 M=S*U
360 SOUND 0,150,10,10
370 POSITION 1,1:? S;"X";U;"=?"
380 SOUND 0,121,10,10
400 FOR TONE=0 TO 50:NEXT TONE
410 SOUND 0,0,0,0
420 INPUT ANSWER
430 IF ANSWER=M THEN GOSUB 600:? "CORR
ECT "
440 IF ANSWER<>M THEN ? "No, it's ";M
450 IF ANSWER=M THEN X=X+10:POKE 53248
,X
460 IF ANSWER<>M THEN X=X-10:POKE 5324
8,X
461 IF X<48 THEN GOTO 1000
463 IF X>207 THEN GOTO 1111
465 FOR PO=0 TO 200:NEXT PO
470 ? CHR$(125)
480 GOTO 330
600 FOR MUSIC=0 TO 255
610 SOUND 0,MUSIC,10,10:NEXT MUSIC
620 RETURN
1000 PRINT "I WON":FOR EN=0 TO 500:NEX
T EN:RUN
1111 PRINT "YOU WON":FOR EN=0 TO 500:N
EXT EN:RUN
```

The object of this program is to produce a number of predetermined 'patterns', both in low resolution (colour) or medium resolution (no colour).

Instructions:
1. Load and run the program in normal manner.
2. Choose between high or low resolution graphics.
3. Pattern is built on screen. At any desired point, press SELECT KEY. If low resolution has been chosen, then the colours of the pattern will rotate. Moving the joystick up or down will affect the speed of rotation. If high resolution has been chosen, SELECT KEY will freeze the picture.
4. Press the START key for the next pattern.
5. On completion, the program returns to the menu.

Eamonn Gaffney (Aged 12)
Watford
Herts

TOWERS OF HANOI is an Atari version of a classic puzzle where discs had to be moved from one pole to another, obeying certain rules. My program contains a facility where you can watch the computer complete the puzzle. This is one of the first programs I wrote for my Atari with 16K RAM. The program uses the excellent sound and colour facilities offered by Atari and I hope you will use it in your magazine.

Russell May
Kings Norton
Birmingham

```
0 REM PATTRENS
1 REM DEMO
2 REM BY
3 REM E.A.GAFFNEY
4 REM FOR ATARI I/O NOV. 83
5 DIM AN$(1):POKE 54018,100:REM TURNS
CASSETTE PLAYER ON,SO PUT A CASSETTE I
N AND PRESS PLAY!
10 TRAP 10:RESTORE
15 CO=5:GRAPHICS 0:SETCOLOR 2,0,8:SETC
OLOR 4,0,8:SETCOLOR 1,0,0
20 POSITION 2,5:? "DO YOU WANT HIGH RE
SOLUTION GRAPHICS":POSITION 17,7:PRINT
 "OR"
25 POSITION 7,9:? "LOW RESOLUTION WITH
 COLOURS":POSITION 12,12:? "TYPE H OR
L":
30 INPUT AN$:IF AN$="H" THEN G=2
35 IF AN$="L" THEN G=1
40 IF G=0 THEN RUN
45 READ A,B
50 IF G=1 THEN E=A:GOTO 100
60 E=B
100 GRAPHICS 22+G:S=0:SETCOLOR 4,0,8:C
OLOR 0
105 IF G=2 THEN SETCOLOR 1,0,0:SETCOLO
R 2,0,8
110 COLOR 0:FOR T=1 TO 999999999 STEP
E
120 IF E=22 THEN S=45*G:GOTO 140
130 IF S<45*G THEN S=S+1
140 X=S*COS(T)+75*G:Y=S*SIN(T)+45*G
145 IF PEEK(764)=28 THEN RUN :REM CHEC
KS IF 'ESC' HAS BEEN PRESSED:THIS WILL
 START THE PROGRAM AGAIN
150 DRAWTO X,Y
160 CO=CO+1:IF CO>3 THEN CO=1
170 IF G=2 THEN CO=1
175 COLOR CO
180 IF PEEK(53279)=5 THEN GOTO 200:REM
 CHECKS IF THE SELECT HAS BEEN PRESSED
:THIS WILL HALT OR ROTATE THE PATTERN
190 NEXT T
200 IF G=2 THEN 300
205 VC=30
210 L=PEEK(710):POKE 710,PEEK(709):POK
E 709,PEEK(708):POKE 708,L:REM THIS RO
TATES  THE COLOURS
215 SH=STICK(0):REM CHECKS THE JOYSTIC
K:THIS ALTERS THE SPEED OF ROTATION
220 IF PEEK(53279)=6 THEN GOTO 45
225 IF PEEK(764)=28 THEN RUN
230 FOR WAIT=1 TO VC
240 IF SH=13 THEN VC=VC+0.05
250 IF SH=14 THEN VC=VC-0.05
260 NEXT WAIT
270 GOTO 210
300 IF PEEK(53279)=6 THEN GOTO 45
310 GOTO 250
500 REM DATA STATMENTS:CHANGE THESE VA
LUES FOR DIFFERENT PATTERNS
510 DATA 11,55,22,1611,1611,3,3,2,2,90
,111,111,4,4,66,500
```

```
5 REM TOWERS OF HANOI BY RUSS MAY
10 GOTO 1000
20 COLOR 3:POKE 87,5
30 PLOT 3,34:DRAWTO 75,34:PLOT 3,35:DR
AWTO 75,35:PLOT 7,33:DRAWTO 71,33:PLOT
 7,32:DRAWTO 71,32
40 PLOT 16,33:DRAWTO 16,12:PLOT 17,33:
DRAWTO 17,12
50 PLOT 38,33:DRAWTO 38,12:PLOT 39,33:
DRAWTO 39,12
60 PLOT 60,33:DRAWTO 60,12:PLOT 61,33:
DRAWTO 61,12
70 POKE 752,1
80 OPEN #1,4,0,"K:"
100 REM INITIALISE
110 ? " HOW MANY DISCS (1 to 9) ?";:GET
#1,W:W=W-48:? ")","MINIMUM No.MOVES=";
INT(2^W)
115 FOR J=1 TO 500:NEXT J
120 NN=0:DIM N(3),D(W,3)
121 Y=1
125 FOR I=1 TO 3:FOR J=1 TO W:D(J,I)=0
:NEXT J:NEXT I
126 FOR I=1 TO 3:N(I)=0:NEXT I
130 FOR I=1 TO W:N(Y)=I:D(N(Y),Y)=W+1-
I
135 GOSUB 400
140 NEXT I
150 GOSUB 600
200 REM PLAY
210 ? :? "MOVE FROM STACK ";:GET #1,X:
X=X-48:? X:IF X<1 OR X>3 THEN 210
220 IF N(X)=0 THEN ? "}","STACK ";CHR$
(X+176);" IS EMPTY":GOTO 210
230 ? ,," TO STACK ";:GET #1,Y:Y=Y-48:
? Y:IF Y<1 OR Y>3 THEN 230
235 IF N(Y)=0 THEN 250
240 IF D(N(X),X)<D(N(Y),Y) THEN 250
245 ? "}","    ILLEGAL MOVE    ":GOTO
200
250 ? "}":GOSUB 300
260 IF N(3)<W THEN 200
270 GOTO 385
300 REM EXECUTE CHOICE
310 GOSUB 500
320 N(Y)=N(Y)+1:D(N(Y),Y)=D(N(X),X)
330 GOSUB 400
340 D(N(X),X)=0:N(X)=N(X)-1:NN=NN+1
350 ? ," MOVES TAKEN ";NN;""
360 RETURN
385 ? ,,"   FINNISHED":? ,," PLAY AGAIN
?":GET #1,X:IF X=89 THEN RUN
390 GRAPHICS 18:POSITION 6,5:? #6;"THE
 END"
395 GOTO 395
400 REM PLOTING
401 COLOR 2
410 D=D(N(Y),Y):H=22*Y-6:V=33-2*N(Y)
420 FOR J=1 TO D
425 SOUND 0,100,8,10
430 PLOT H+1+J,V:PLOT H-J,V
435 SOUND 0,0,0,0:NEXT J
440 RETURN
500 REM UNPLOT
510 COLOR 0
520 D=D(N(X),X):H=22*X-6:V=33-2*N(X)
530 FOR J=D TO 1 STEP -1:PLOT H+1+J,V:
PLOT H-J,V:NEXT J
540 RETURN
600 REM COMPUTER PLAYS
610 ? "DO YOU WANT THE COMPUTER TO MAK
E THE":? ," MOVES (Y OR N)";
620 GET #1,X:IF X=89 THEN ? "}":GOTO 7
00
625 IF X=78 THEN ? "}":GOTO 200
630 GOTO 620
```

```
700 REM COMPUTER MOVES
705 NN=0:IF W=1 OR W=3 OR W=5 OR W=7 O
R W=9 THEN 800
710 P=1:Q=2:GOSUB 900
720 P=1:Q=3:GOSUB 900
730 P=2:Q=3:GOSUB 900
740 IF N(3)=W THEN 385
750 GOTO 710
800 REM ODD MOVES
810 P=1:Q=3:GOSUB 900
820 IF N(3)=W THEN 385
830 P=1:Q=2:GOSUB 900
840 P=3:Q=2:GOSUB 900
850 GOTO 810
900 REM P AND Q
910 X=P:Y=Q:IF N(P)=0 THEN X=Q
920 IF N(P)=0 OR N(Q)=0 THEN 960
930 D1=D(N(P),P):D2=D(N(Q),Q):IF D1>D2
 THEN X=Q
960 IF X=Q THEN Y=P
970 GOSUB 300
980 RETURN
1000 REM TITLE AND SCREEN SET UP
1010 GRAPHICS 5:POKE 710,22:DLIST=PEEK
(560)+256*PEEK(561)+4:PK=PEEK(559):POK
E 559,0
1020 POKE DLIST-1,71
1030 FOR I=DLIST+37 TO DLIST+43
1040 POKE I,PEEK(I+4)
1050 NEXT I:POKE 559,PK
1060 POKE 87,2:? #6;"  TOWERS OF HANOI
"
1070 FOR I=1 TO 55:READ A:POKE 1535+I,
A:NEXT I
1080 DATA 8,72,138,72,238,38,6,174,38,
6,189,39,6,141,10,212,141,196,2,224,15
,208,5,169,0,141,38,6,169,5,141
1090 DATA 26,2,104,170,104,40,96,0,8,2
4,40,56,72,88,104,120,136,152,168,184,
200,216,232,248
1100 POKE 553,6:POKE 538,25
1110 GOTO 20
```
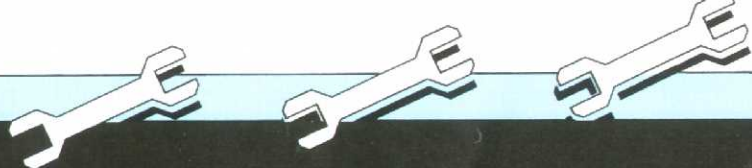
ASSEMBLY LINE

LEARNING THE ASSEMBLY LANGUAGE

(Without too much pain!)

by Steve Waters & Martin Walker

PART TWO — BRANCH STATEMENTS

In this second part of learning assembly language we will look at branch statements. With these instructions we can generate a small program. This program will read the joystick and change the background colour also the luminance of the background colour. For this program you will need the assembler-editor cartridge.

Some branch instructions:

Here we will look at some simple statements in BASIC and then we will see their assembly language equivalents.

1) Here is a simple and often used statement. In assembly language Z must be a location in memory somewhere.

```
IF Z = 0 THEN 50    LDA Z
                    BEQ ZERO
                    . . .
                    . . .
            ZERO . . .
```

2) Another simple but often used statement in BASIC, here again Z must be the memory location.

```
IF Z< >0 THEN 50 LDA Z
                    BNE NOTZ
                    . . .
                    . . .
            NOTZ . . .
```

3) Another example, but here the BMI will detect any number that is < 0 or > 127, as positive numbers are 0 thru 127 and negative numbers are 128 thru 255.

```
IF Z< 0 THEN 50    LDA Z
                    BMI NEGAT
                    . . .
                    . . .
            NEGAT. . .
```

4) The BPL detects if a number is positive, ie 0 thru 127 only.

```
IF Z = >0 THEN 50 LDA Z
                    BPL GREAT
                    . . .
                    . . .
            GREAT. . .
```

5. Here we must detect if Z>0, so first we must see if Z = 0, if it does then we must skip to zero.

Then we test for a positive number. We have to do this as the BPL instruction counts 0 as a positive number.

```
IF Z>0 THEN 50    LDA Z
                    BEQ ZERO
                    BPL PLUS
```

```
            ZERO . . .
                    . . .
            PLUS . . .
```

Some more complex examples.

Here we will look at examples that are slightly more difficult.

Here we will change Z to 1 if, and only if, Z = 0

```
IF Z = 0 THEN Z = 1 LDA Z
                    BNE NOGO
                    LDA #1
                    STA Z
            NOGO . . .
```

Here we simulate a basic loop, a common occurrence. But the loop must be less than 256.

```
WHERE Z <256
FOR X = 0 TO Z    LDX
            LOOP . . .
                    . . .
                    DEX
                    BPL LOOP
                    . . .
```

Here we do another type of loop that is used in BASIC, but where the start is Y and the end is Z. Again the value of Z WHERE Z <256

```
FOR X = Y TO Z    LDX Y
            LOOP . . .
                    . . .
                    INX
                    CPX Z
                    BPL LOOP
```

Here we do a loop that is greater than 256. What we do here is actually two loops. The inner loop goes from 1-251 (a loop of 250) the outer loop repeats the inner loop 4 times. So the result is 4·250, that is 1000 repetitions. All loops that are greater than 256 must be done this way.

```
FOR X = 0 TO 1000 LDY #0
            LOP1 LDX #1
            LOP2 . . .
                    . . .
                    INX
                    CPX #251
                    BNE LOP2
                    INY
                    CPY #4
                    BNE LOP1
```

Here is the small program that will read the joystick and change colours and/or luminances. Type this into your Atari via the assembler editor cartridge.

```
0    ;THIS PROGRAM WILL
1010 ;CHANGE THE COLOUR
1020 ;OF THE FOREGROUND
1030 ;USING THE JOYSTICK
1040 ;IN THE LEFT HAND
1050 ;SOCKET
1060 ;
1070 ;COLOUR IS SET BY
1080 ;PUSHING UP OR DOWN
1090 ;THEN PRESSING THE
1100 ;TRIGGER BUTTON
1110 ;
1120 ;LUMINANCE IS SET
1130 ;PUSHING LEFT OR
1140 ;RIGHT THEN PRESSING
1150 ;THE TRIGGER BUTTON
1160 ;
1170 ;
1180 ;FIRST WE MUST TELL
1190 ;THE PROGRAM WHAT
1200 ;OUR LABELS STAND
1210 ;FOR (SEE DE RE ATARI
1220 ;OR TECH NOTES FOR
1230 ;DETAILS OF LOCATIONS
1240 ;USED)
1250 ;
1260 PORTA    =    $D300
1270 COLOR2   =    $2C6
1280 STRIG0   =    $D010
1290 ;
1300 UP       =    $FE    ;THESE FOUR
1310 DOWN     =    $FD    ;VALUES ARE
1320 LEFT     =    $FB    ;GIVEN FOR
1330 RIGHT    =    $F7    ;DIRECTIONS
1340 ;
1350          *=   $3000  ;WHERE PROGRAM
1360 ;                     WILL BE
1370 ;                     ASSEMBLED
1380 ;
1390 ;
1400 START    LDA STRIG0  ;HOLD HERE IF
1410          BNE START   ;STRIG0 IS UP
1420 ;
1430          LDA PORTA
1440          CMP £UP
1450          BEQ DOUP
1460          CMP £DOWN
1470          BEQ DODOWN
1480          CMP £LEFT
1490          BEQ DOLEFT
1500          CMP £RIGHT
1510          BEQ DORIGHT
1520          JMP START
1530 ;
1540 DOUP     LDA COLOR2
1550          CLC
1560          ADC £$10
1570          STA COLOR2
1580          JMP RELEASE
1590 ;
1600 DODOWN   LDA COLOR2
1610          SEC
1620          SBC £$10
1630          STA COLOR2
1640          JMP RELEASE
1650 ;
1660 DORIGHT  LDA COLOR2
1670          CLC
1680          ADC £2
1690          STA COLOR2
1700          JMP RELEASE
1710 ;
1720 DOLEFT   LDA COLOR2
1730          SEC
1740          SBC £2
1750          STA COLOR2
1760          JMP RELEASE
1770 ;
1780 RELEASE  LDA STRIG0  ;HOLD HERE IF
1790          BEQ RELEASE ;STRIG0 STILL
1800 ;                     HELD DOWN
1810 ;
1820          JMP START
1830 ;
1840 ;
1850          .END
```

Part Three in next issue of I/O.

NEW SOFTWARE!

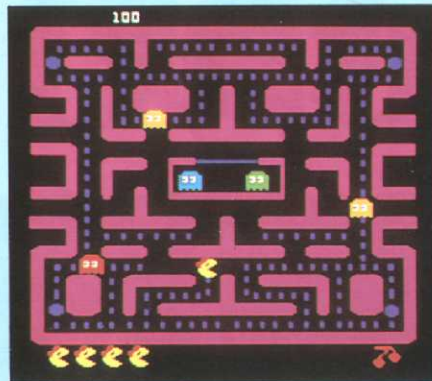## Ms. PAC-MAN

THE LONE RAIDER

POLE POSITION

For real Grand Prix racing action that puts the player in the driver's seat, POLE POSITION is the arcade hit of 1983. Players race against the clock and against other cars on a track full of curves and straightaways, while avoiding numerous on and off road hazards. This new home version of the smash arcade game features some of the most incredible motion graphics ever programmed into a home computer game to challenge even the most daring drivers!

- Cartridge: RX 8034
- For 1 player
- Requires 16K RAM and joystick
- SRP: £29.99

Score as many points as you can while Ms Pac-Man eats dots, fruits, pretzels, energy pills and ghosts. When she passes over dots, she gobbles them up and you score points. If she eats all the dots on the screen, you start playing on a new maze. Playful ghosts scurry about trying to gobble up Ms Pac-Man. Her only recourse is to eat an energy pill and then go after her ghosts.

- Cartridge: RX 8043
- For 1 or two players
- Requires 16K RAM and joystick
- SRP: £29.99

JOUST
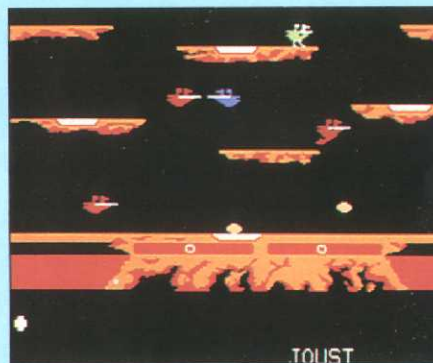
Enemy knights, attacking birds, dangerous eggs and molten lava all threaten to ''de-armour'' players in JOUST, a medieval action game with unusual twists. Knights on flying ostriches battle it out in mid-air, dropping eggs on each other that could turn into enemy birds. A highly successful arcade game, JOUST pits two players against one another or two players together against the computer.

- Cartridge: RX 8044
- For 1 or 2 players
- Requires 16K RAM and joystick
- SRP: £29.99
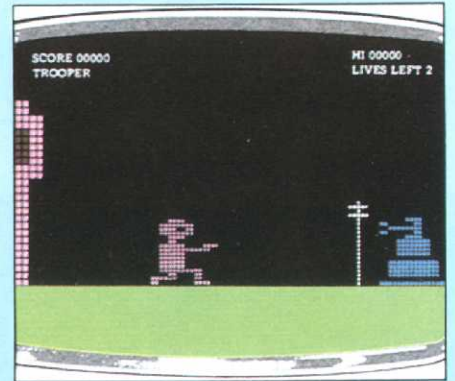
This is the first UK designed and developed game for Atari Home Computers written by 17-year old Justin Whittaker after only one year of programming on his Atari 800 computer.

The game has 3 colourful, exciting and challenging stages and 10 levels of difficulty. In the first stage, the Lone Raider must fight off the Robot Guards to get into the underground power factory (second stage). Once inside, he must destroy as much of the enemy power source as possible before entering the third stage. Here in the transmitter room he calls his space ship to beam him back to the surface. He is then promoted and sent back to battle with the Mutant Robots again.

A player may promote himself to the fifth difficulty level — Raider — and fight his way up from there. So far no-one has completed the tenth level of this game. We have left a message there for the first person to complete this tricky game!

An extremely fast moving, colourful game with marvellous sound effects all created by the Atari computer.

- Cassette: EC 2001
- For 1 player
- Requires 16K RAM and joystick
- SRP: £14.99

9
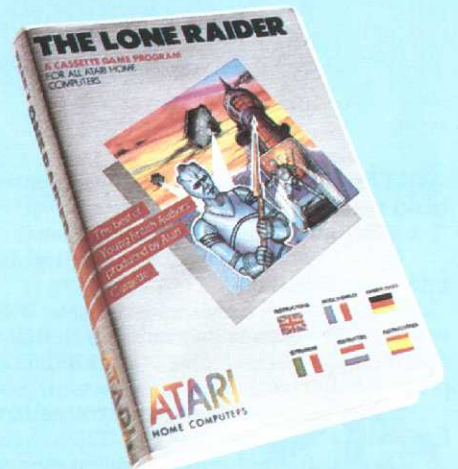
As your expe so can your
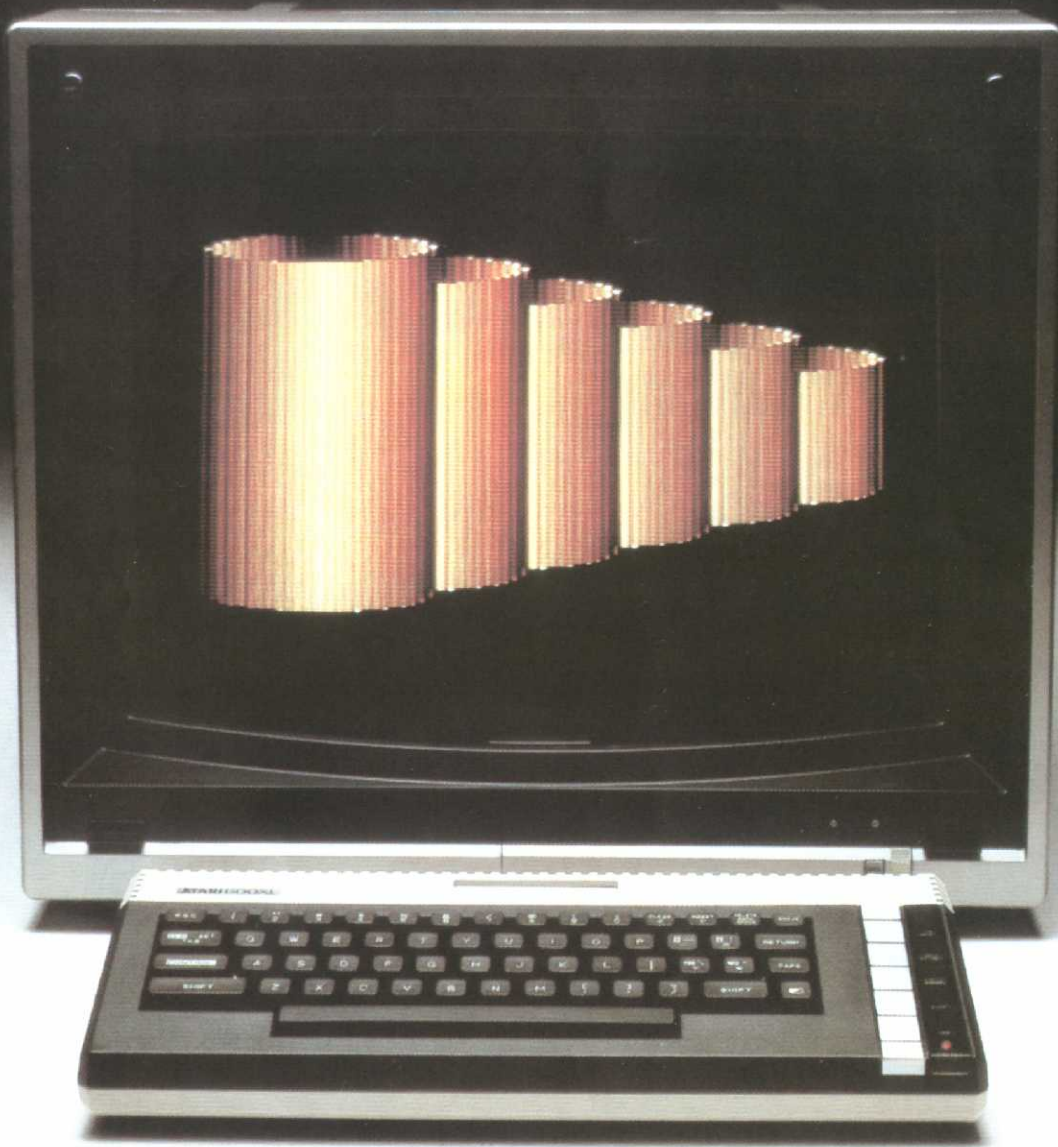
600XL Home Computer.

Whatever you want your home computer to do, the ATARI 600XL™ can do it.

ATARI 600XL product specifications.

Colour capabilities: 16 colours and 16 intensities. 256 shades.

Memory: 16K RAM expandable to 64K with memory expansion module. 24K ROM operating system including ATARI BASIC programming language.

Sound: 4 independent sound synthesisers. Each with a 3½ octave range.

Display: 11 graphic modes. 5 text modes. Up to 320 x 192 resolution. Maximum text display 24 lines by 40 columns.

Special ATARI integrated circuits: GTIA for graphics display. POKEY for sound and controller ports. ANTIC for screen control and I/O.

CPU: 6502C microprocessor. 0.56 microsecond cycle. 1.8 Mhz.

Extended graphics functions: High resolution graphics. Multi-coloured character set. Software screen switching. Multiple redefined character sets. Player missile (sprite) graphics. Fine screen scrolling. Changeable colour registers. Smooth character movement. Simple colour animation facilities.

Programming features: Built in ATARI

BASIC programming language plus 8 other languages. HELP key will provide additional information and menu screens. Syntax checking on entry.

Input/Output: External processor bus for expansion with memory and peripherals. 2 controller ports. Serial I/O connector. Monitor output.

Software: Over 1000 items of software available including self teaching programs with unique voice over. Education. Home management. Programming aids. Atari user written programs (APX). And Atari's famous entertainment software.

rience grows Atari 600XL.

1. Program Recorder.

2. 64K Memory Module.

3. Touch Tablet.

4. Trak Ball™ Controller.

5. Super Joysticks.

6. Colour Printer.

7. Disk Drive.

8. 80 Column Dot Matrix Printer.

9. Letter Quality Printer.

These peripherals will be available soon:

1. ATARI 1010™ Program Recorder for low cost storage and retrieval capability. Data transmission 600 baud. Storage capability 100K bytes on a 60 minute cassette. Track configuration 4 track, 2 channels (digital and audio). Auto record/playback/pause control.

2. ATARI 64K Memory Module gives the 600XL a massive 64K RAM.

3. ATARI Touch Tablet enables you to paint pictures and draw diagrams, with the touch of a stylus.

4. ATARI Trak Ball™ Controller enables cursor movement in any direction; adds to the pleasure of Atari games.

5. ATARI Super Joysticks. Gives you a greater competitive edge over your games.

6. ATARI 1020™ Colour Printer plotter. Four colour graphic print capability. 40 column. 10 characters per second. 5, 10 and 20 characters per inch.

7. ATARI 1050™ Dual Density Disk Drive. 5¼ inch disks holding 127K randomly accessible bytes provides both expansion and flexibility for your 600XL system with DOS III.

8. ATARI 1025™ 80 Column Dot Matrix Printer prints 5, 10 or 16.5 characters per inch. 40 characters per second. Ideal for program listings, financial reports, etc.

9. ATARI 1027™ Letter Quality Printer for word processing letters in professional type.

If you'd like to know more about the ATARI 600XL, write to Atari International (UK) Inc., P.O. Box 407, Blackhorse Road, London SE8 5JH and we'll send you all the details.

The new Atari XL home computer system. ATARI®

COMING SOON!

DONKEY KONG JNR.

PENGO

JUNGLE HUNT

JUNGLE HUNT 52/HCSS

This sequel to the illustrious DONKEY KONG game lives up to the high standards set by its predecessor. This time you're the son of the gorilla Mario and must rescue your dad by freeing him from the cage.

- Cartridge: RX 8040
- For 1 or 2 players
- Requires 16K RAM and joystick

This Antarctic action game pits adorable PENGO the Penguin against the menacing Sno-bees. PENGO must avoid his attackers or crush them with ice blocks. Players score extra points by moving special diamond ice blocks together. The scenery graphics are chilly, but the gameplay is definitely hot!

- Cartridge: RX 8045
- For 1 or 2 players
- Requires 16K RAM and joystick
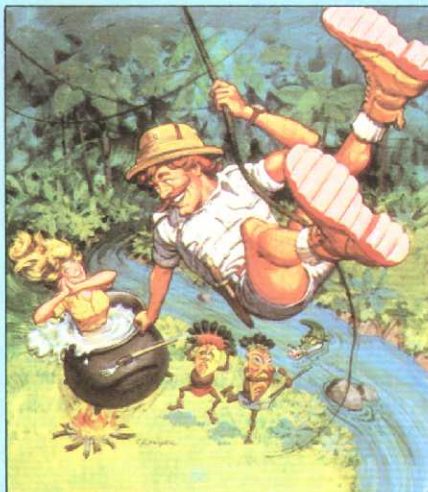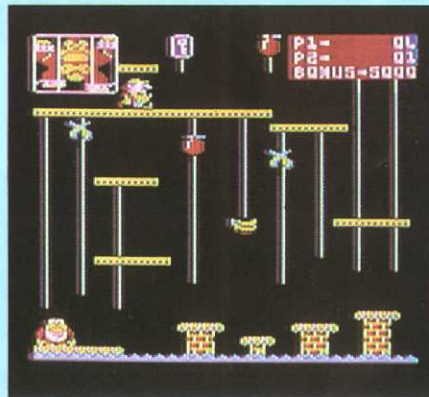
There's danger and action around every bend for the jungle hero as he chases after his kidnapped jungle woman. He must swing from vine to vine, swim through a river teeming with crocodiles, avoid rolling boulders and finally rescue his beloved from her cannibal captors. With the unique "jungle" graphics and colours, Atari brings all of the great gameplay of the original arcade JUNGLE HUNT to home.

- Cartridge: RX 8049
- For 1 or 2 players
- Requires 16K RAM and joystick

ROBOTRON: 2084

ROBOTRON 52/HCS

THE ATARI GAME KIT

With waves of attacking automated robots everywhere, it takes a quick hand on the laser trigger to stay alive in ROBOTRON. The Third in the Defender series of alien invasion games, ROBOTRON pits the last family on earth in deadly survival combat against the killer Robotrons. This fast action game is another superb reproduction of a popular arcade game with graphics and sounds that need no defence!

- Cartridge: RX 8033
- For 1 or 2 players
- Requires 16K RAM and joystick

KX 7400

The Atari Game Kit contains DONKEY KONG, a pair of joysticks and instruction manual.

ATARI SOFTWARE REVIEWS

By Kevin Duquemin and Richard Hawes of Silica Shop

THE HOME FILING MANAGER

The user manual of the Home Filing Manager starts with the very basic steps of 'booting up' the system and then takes you right through all the options within the program.

The Home Filing Manager is a computerised card filing system. Like the sort of system used in libraries to keep names of books in title or author order, The Home Filing Manager can store information on 'cards' on a data diskette. Each card is 38 characters wide by 18 lines high and is displayed on the screen looking like an ordinary filing card. Information can fill as much or as little of the card as necessary in one field. The first line on the card is reserved as the title line. When a file of cards is searched it is sorted alphabetically into title order. A card can be searched for in 3 ways. Firstly, you can look through all of the cards one by one, with the ability to change the search direction, until your card has been found. Secondly, you can instruct the computer to find cards by searching for their title and lastly, you can search for any phrase in any position on any card. With the last option, the computer will mark any cards it finds with a paper clip!

The program is very easy and quick to use. After initialising your data diskette a card is displayed on your TV screen with a list of options in a menu above it. One of these options will be highlighted and a short description of what that option does appears below it. For example, if option EXIT was highlighted the words EXIT TO MAIN MENU would appear below it. All of the standards on screen editing commands are supported — for example UP ARROW, TAB, CONTROL + INSERT, etc. — as well as a few extras such as returning a line previously deleted, using SHIFT and DELETE/BACK S. The option to print one or more of your filing cards is included, although even when printing a range of contiguous cards the printing of each card requires a keystroke from the user. Most keyboard characters are usable, but the program will not allow inverse or CONTROL characters.

Overall, this system beats any others in its moderate price range. The card system can be put to many applications; since I met the program I have already stored my friends' names and addresses on it and am currently filing my stamp collection.

Although the name of the package is THE HOME FILING MANAGER, I am sure some small businesses could use this program. Although it does not offer the extra features of a proper database management system, it is a very reasonable alternative.

The Home Filing Manager is an excellent example of the high quality of Atari's own brand software. The user manual is, as usual, very easy to follow.

R. Hawes

DIG DUG

When you first encounter DIG DUG, he is walking from the right-hand side of the screen to the centre of the TV set. He then digs downwards in the middle of four ferocious, lurking monsters to collect as much fruit and vegetables as he can.

It is not very long before one of the monsters, POOKA, starts to chase him. You can explode POOKA quickly by pressing and holding the red button on your joystick, or by pumping it repeatedly. Beware of FYGAR, the fire-breathing dragon — he's the hardest to kill. Attacking him from the side is worth more points than attacking him from above or below.

As you move around the game, you dig tunnels which the monsters follow. If possible, dig as deep as you can and lead the monsters up towards one of the rocks. This way, if you're sneaky enough you can kill all four monsters in one go. Dig your tunnel right up to the rock and as the rock is left unsupported it will fall down, crushing the monsters as it falls. But beware! the rock will also crush you if you are not quick enough to dodge its path.

For killing all four monsters at once you will score 6,000 points. The screen itself is comprised of five different scoring levels. You can score from 200 to 1,000 points for each monster you explode by pressing the fire button as fast as you can.

After two rocks have fallen in any round, a vegetable or fruit will appear in the centre of the screen. At this point, you should run towards it as fast as you can and eat it; more points will be added to your score. When you reach 10,000 points, you will receive a bonus life and again at every 40,000 points.

As the game progresses the monsters become smarter. Unless you destroy them quickly, they turn into ghosts, making it even harder to kill them. As soon as they enter a tunnel completely they become solid again, but while they are still ghosts, DIG DUG can only drop rocks on them. You have to become twice as quick and twice as cunning to stay with the game.

Once you have killed all the monsters on the screen, the game restarts, but this time on a higher difficulty level.

When I played this game there were many things which impressed me. For example, the catchy tune that is played throughout the game and the superb graphics which make up the characters and screens all come very close to the original arcade game.

DIG DUG is perfect for children as well as adults. It's simple to play and totally captivating. A well worth addition to your Atari games library!

K. Duquemin
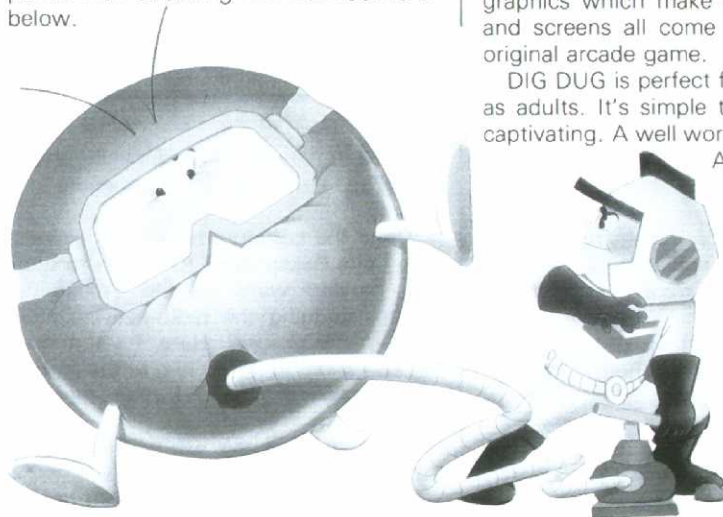
In issue 4 of I/O you no doubt read about the establishment of Atari's Software Development Group in the UK. One of its three main objectives involves the commissioning of individuals and publishing companies to develop software for eventual distribution under the Atari name (the copyright having been purchased).

As a result of this work Atari has now launched the Lone Raider, an exciting new computer game written by 17-year old Justin Whittaker from Staplehurst in Kent.

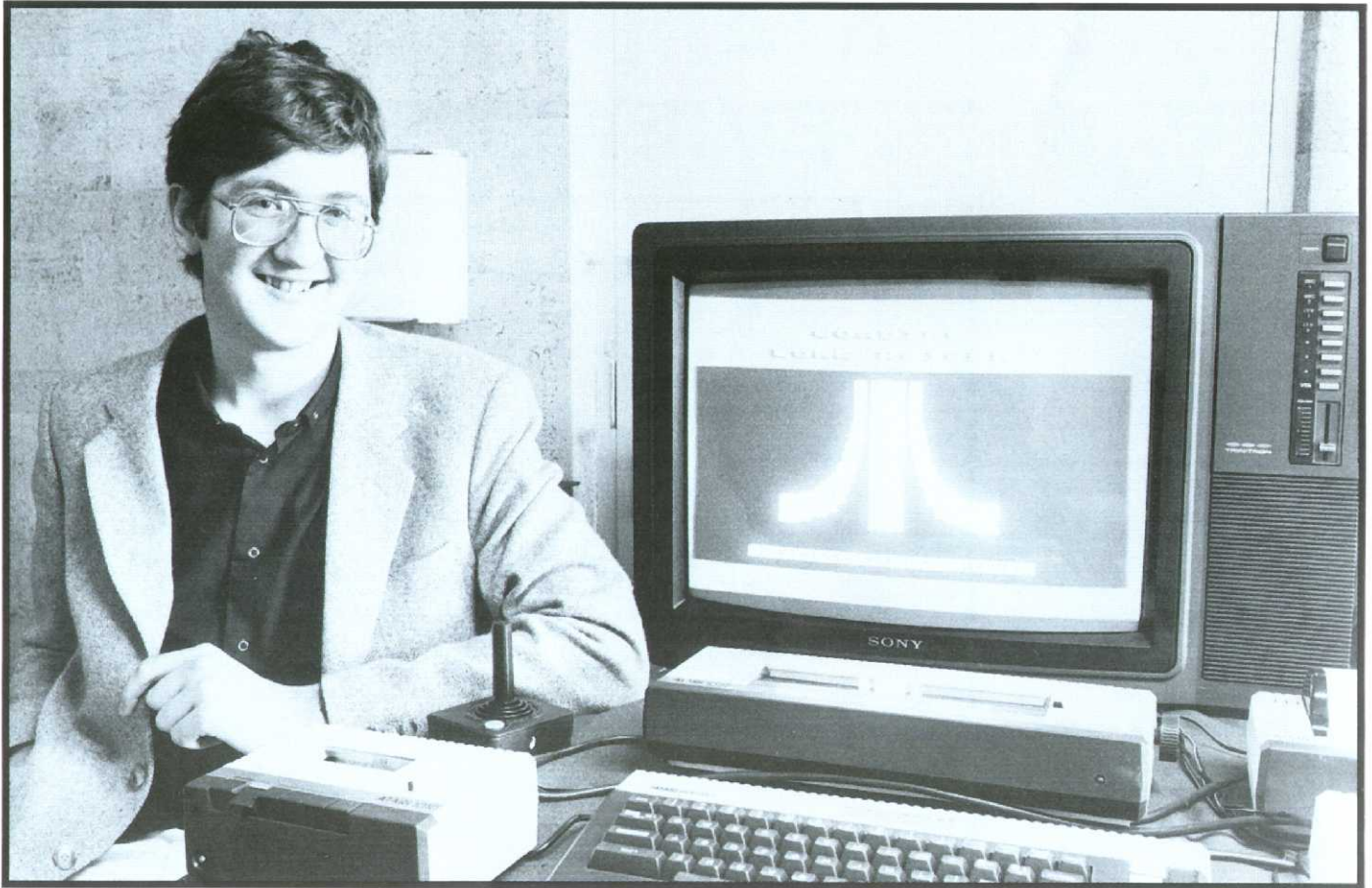Justin began using computers when he was fourteen and soon decided to save up and buy an Atari 800 Home Computer with Disk Drive. Whilst he did some computer studies at school, he taught himself computer programming at home.

In July 1982 Justin left school with no particular career planned out but after a few weeks' holiday he had made up his mind. "I told my parents that I was determined to design a top selling computer game." says Justin, and so he set about his task.

After a couple of initial attempts he eventually struck upon the idea for The Lone Raider. The hero's mission (controlled by one joystick) is to destroy an alien nuclear power plant. But to do this The Lone Raider must first enter the power plant which is protected by terminating guards and robots.

The neutron corridors, protected by more guards, then have to be cleared by The Lone Raider, absorbing energy-giving

Atari's Lone Raider, Justin Whittaker

protons in the process and making use of the Zap Doors to outmanoeuvre the enemy.

Once the corridors have been cleared, The Lone Raider must then pass through the moving walls to the Transmitter Room, dodging the radio-active Defensites in the process. Here, he summons his spaceship to return him to the surface where promotion and further missions await him.

It is undoubtedly an exciting, challenging game and at a recent press reception Justin drew the praises not only

of Atari's Managing Director, but also of the press, who have been keen to interview him further and to review the game.

It took Justin five months hard work, firstly to design the game from his original idea and then to program it in machine code. Having done this he then wrote to Atari's Software Development Group to tell them about it and having seen it they were very impressed. As a result Justin signed a contract with Atari, such that he now receives a royalty payment for every copy of The Lone Raider which is sold. The potential reward for Justin is therefore considerable but he's by no means resting on his laurels.

Not only is he working secretly on his next Atari hit but also he has been commissioned by Atari to work as a freelance programmer.

All that makes Justin a busy guy but if he's not working at his computer, then he's probably pursuing his other major interest — music. As well as listening to Kraftwerk or The Human League when he's computing he also writes music on an electric organ at home and plans to form a group with some friends fairly soon. And yes, you've guessed it, he's already experimenting musically with his Atari.

For the moment though he is an avid games player and aims to write computer programs for games which he, and clearly many young people, would like to play. But there is no telling how far he will go eventually and we wish him every success in this career of his own making.

ATARI SERVICE

TECH SPECS

For afficianados of previous "Atari Service" pages, Jon Dean is no more! But don't worry, Jon has moved across to the Software Development team, and will probably contribute to "Input/Output" from that area of the Company. We wish him great success in his new responsibilities.

In future editions we're going to alter the format slightly. Our intention is that this page should reflect the areas that generate most interest, and enquiries. These areas will be determined on the basis of calls and letters received. We will also attempt to prevent problems by keeping you well informed.

● Repairs

The nationwide independent Service Centre network has been established so that all Atari owners can have their units maintained locally. Any repairs carried out within the one year warranty period will be cost free.

Please make sure, that if your unit is within the warranty period, you remember to take your receipt or proof of purchase with you. If you post the item, include it in the parcel with a letter detailing your particular problem.

If you forget, you will just prolong the amount of time that your unit is inactive, or at worst, you'll be asked to pay for the repair.

● Protect Your Programs!

There are a number of ways in which you can protect your valuable and hard thought out programs from unauthorised listings.

1. To disable the BREAK key, thus preventing a listing, include the following line in your program:
   POKE 16,64:POKE 53774,64
(Remember to use this poke after every Graphics Mode command)

2. There is no way to totally disable the SYSTEM RESET key. However, POKE 580,1 will reset the cold start flag, thereby purging any resident programs in RAM whenever System Reset is pressed. (The devious 400/800 owners among you, may like to include the following variation in your protected programs!! — POKE 9,2:POKE 2,90:POKE 3,240)

3. Creation of a "Run Only" file is more complex but will prevent a program from being listed out after loading it. To do this add the following line to your program:
   32767 POKE PEEK(138) + 256*PEEK (139) + 2,0 :SAVE"C:":NEW

If you have an 810 or 1050 Disk Drive then substitute the command
SAVE"D:FILNAME":NEW

This line must be the last line of code in the program. When your program is ready to be protected and you have provided yourself with a back-up copy, give the command GOTO 32767 in the immediate mode. The program will be saved in a protected form. Trying to do anything other than RUN the program using the commands RUN"C: or RUN"D:FILENAME, will result in a system lock-up. BEWARE! — after protecting a program in this way even *you* will be unable to get a listing!!

● Loading Machine Code Programs

A great deal of the wide range of software available on cassette for Atari Home Computers is written in 'Machine code', the internal language the computer uses. Such software will not need an Atari Language cartridge, such as Atari Basic, in order to run on the computer. When using the Atari 800/400 computers the loading instructions for the software will specify that any cartridges must be removed from the cartridge slots. The normal loading sequence is then that the power is turned on with the START key depressed. When loaded, the software will run automatically.

Owners of the Atari 600XL will have to follow a different procedure as Atari Basic is built into the computer and so cannot be removed. In order to load machine code programs, the built in Basic must be 'disabled' by pressing the OPTION key in addition to the START key when turning the power on.

Nationwide Service

Here are some more newly established Independent Service Centres which have now been added to our rapidly expanding network in the United Kingdom. I.S.C. staff have been specially trained by Atari to ensure that your Atari Home Computer receives service of the highest standards possible.

To obtain the address of your nearest Atari Service Centre, simply call Atari Customer Relations on Slough (0753) 24561.

AVON
Bristol
Servicepoint Ltd.
Tel: (0272) 20423

CLEVELAND
Thornaby
McKenna & Brown
Tel: (0642) 603447

GRAMPIAN
Aberdeen
Telemech
Tel: (0224) 574248

HERTFORDSHIRE
Hemel Computer Centre
Tel: (0442) 212436

HUMBERSIDE
Hull
The Computer Centre
Tel: (0482) 26297

LANCASHIRE
Manchester
Servicepoint Ltd.
Tel: (061) 273 2977

LONDON
Servicepoint Ltd.
Tel: (01) 205 7771
Computer Vision
Tel: (01) 994 6563

LOTHIAN
Edinburgh
Silicon Centre
Tel: (031) 557 4546

MIDLAND WEST
Birmingham
Servicepoint Ltd.
Tel: (021) 359 0937

STRATHCLYDE
Glasgow
Servicepoint Ltd.
Tel: (041) 226 3360

SURREY
Sandhurst
Verran Micro Maintenance
Tel: Camberley 682556

YORKSHIRE
Sheffield
Walkley TV Services
Tel: (0742) 348286

PRACTICAL PERIPHERALS

By Jack Schofield

Everyone who owns a micro knows that the only worthwhile way to learn about computers is through "hands on" experience. The same is true of the Atari Touch Tablet, but even more so.

When Atari asked me if I wanted to look at this spanking new Peripheral, of which they were obviously proud, my enthusiasm flickered just above zero on the Kelvin scale. Not warm. Having had my finger-ends on it for a couple of days I'm converted. It's about the most fun you can have without playing Defender.

The Touch Tablet works rather like the Paint program, which is a recent addition to the Atari software line-up. It is also like the light pen system, yet to be released. All three are menu-driven programs which allow you to draw an image directly on the screen. The major difference is that with Paint you use a joystick, and with the light pen program you use a light pen. With the Touch Tablet a pen-like stylus is supplied, but you can, in fact, use anything you like.

To start you plug the Touch Tablet into the first joystick port and boot the disk: up comes the title page, then the menu. The Touch Tablet menu provides sixteen different options including Draw, Paint, Box, Circle, Magnify, Mirror and Help. There are four main colours to choose from, plus 12 patterns and a range of "brushstrokes". Selecting the options you want is just a matter of moving the cursor over them and clicking a button. Alternatively you can use the first letter of the option, eg press R for Rays or E for Erase.

The cursor is moved just by moving something over the surface of the Touch Tablet. It's very much like using Apple's new Lisa system, with a "mouse", or the small touch panel on the front of the Gavilan portable computer. However, these products are black and white only and cost £3,000 — £7,000, so they are not really competition!

At the simplest level you can select a thickish line and the colour you like. Then if you hold down the Touch Tablet button, every tiny movement of your finger end on the tablet surface is echoed instantly on the screen. It's so fluid it is just like scribbling on paper with a crayon. Perfect for children of all ages . . .

Next step — use the fine-pointed stylus attached to the Touch Tablet — it offers more control. Then you can try drawing circles: they draw themselves automatically around the selected point. Select three dots for the "brushstroke" and three circles are drawn instead of one. Select Mirror as well, and four symmetrical groups of three circles can be drawn all at once. And so on. The ease with which it is possible to draw abstracts is just magical.

Drawing specific things is, however, not so easy. I am inept at drawing things on paper, and drawing on the Touch Tablet is harder. Fine detail can be done, with much effort, by drawing in the enormously enlarged magnify mode, then reducing to normal later. However, I am confident that people with more artistic talent will be able to produce interesting results.

Once you have a picture you can play with the colour. You can change the whole palette, or select Rainbow mode, where the picture cycles through the colours like a jazzy game title screen such as on Way Out. You can also select interactive colour changing: the colours vary as you move the stylus about on the Touch tablet. It's an amazing effect. There are many more. Someone could write a book about the potential of it, and I trust someone at Atari is currently beavering away at just that.

Finally, any pictures you like can be saved to disk and recalled later. It would be great to have a way of printing them out, or incorporating them in other programs — eg adventures — but I don't know if this will be possible.

All in all, however, I have to say I'm extremely impressed with the Touch Tablet. It's a lot of fun.

Now this article was also supposed to include previews of the Trak-Ball and new 1020 Color Printer. Unfortunately I now don't have much space to tell you about them, so I'll be brief.

The Trak-Ball is just what it says — a ball-operated joystick-replacement, such as you will find in the arcade versions of Centipede and Missile Command.

I have to admit I really love the arcade Centipede, so I tried the Trak-Ball with my cartridge version. It does indeed bring the computer game closer to the arcade game, though I couldn't get as high a score as I can with a standard joystick. With more practice I might be able to!

I also tried the Trak-Ball with other games such as Defender, but with less success. I found it not sensitive enough, and somewhat inconvenient. The Trak-Ball is good for fast movements over a small area, but not suited to fine manoeuvering or cruising. But if you are a keen Centipede or Missile Command player, the Trak-Ball is worth trying.
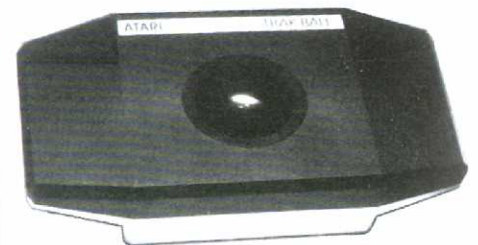
The last product I previewed was the 1020 Color Printer. This is a smart, chunky unit in the new Atari style — like the XL computers. It is easy to connect to any Atari micro as it hangs anywhere on the serial bus — plug it directly into a 400 or 800 or XL model, or into a disk drive or anything else with a spare SIO connection.

The printer itself uses four small ball-point pens in a rotating carriage, and prints, draws or plots on a roll of 4.5 inch wide plain (not thermal or silver!) paper. (There are similar models for the Oric and Tandy micros.) You can print 80, 40 or 20 characters across the width, or set your own size. The print quality is very good — far clearer than a thermal or dot-matrix printer — as long as the pens are reasonably fresh. It certainly provides very clear program listings.

The 1020 Color Printer winds the paper backwards and forwards to draw graphs, charts or patterns. The system is very flexible. With a bit of programming you can even draw hands and faces.
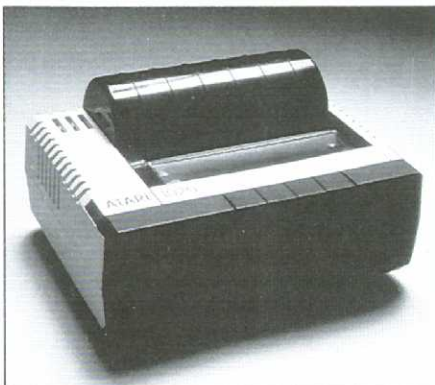
Although I would not recommend the 1020 Color Printer for writing letters to the bank manager, I did try it with the AtariWriter word processing cartridge. It will print and even justify text, but I had line spacing problems I couldn't lick in the few days available. Anyway, for word processing I would want the 1027 Letter Quality printer.

The 1020 Color Printer can certainly be used for graphs, charts and simple drawings, and could have business uses for printing things such as parts lists etc. A drawing of the part could be included!

Also, the 1020 Color Printer comes with a cassette. This cassette allows you to create colour graphics on screen using a joystick, and then print them out. This is not a facility I have heard about before, and might make the 1020 Color Printer almost as much fun as the Touch Tablet.

Almost . . .

Jack Schofield is the Editor of **Practical Computing** *magazine. He wrote this article using AtariWriter in an Atari 800.*

Mixing Old and New Atari Computer Products and Peripherals

By Martin Walker

As an enthusiast, and also being in the fortunate position of working for Atari, I was pleased to see that the new XL range of computers and peripherals have been designed to be compatible with the existing 400/800 series. This means that for all owners of Atari 400 or 800 (I have an 800 at home), we will still be able to get the maximum use out of our new products; even ones that are as yet only at the drawing board stage. This compatibility works in both directions, so new XL owners will be in the unique position of buying a new computer with immediate access to hundreds of software items.

All of our cartridge games will run identically on the 600XL and 800XL as will the disks and cassette software. The only programs which may have problems are a few third party titles which have not been written following the guidelines set out in publications such as De Re Atari and our Technical User Notes. These give all of the fixed points of our Operating System which would not change. In particular, things like the internal keyboard codes which appear in decimal location 764 to tell you the last key pressed, have changed on the new machines. So if anyone used these internal codes in their program, then the new machines may require most peculiar combinations of keys to be pressed to achieve the same effect. Whoops! If you own one of the new XL computers and are interested in buying a third party program, then do insist that you see it demonstrated on 600XL/800XL. I suspect that the other software firms will soon convert any rogue products and ensure that they will run on all Atari machines, but it will take time before these appear in the shops.

On the subject of hardware, I am sure you will all find it useful to know just which of the new peripherals will work with the 400/800 computers. Let's take them one by one.

1. The 1010 Program Recorder is functionally identical with the 410 Program Recorder. You can just plug it in and use it with the 400/600XL/800/800XL. One advantage is that there are now two I/O ports on the 1010 so it does not have to be the last item in the chain if you also use disk drives.

2. The 1050 Disk Drive can again be bought to use on any of our range although I would recommend more than 16K RAM memory for maximum benefit from either the 810 or 1050. The 1050 is about half the height of the 810 and a lot quieter in operation. The big advantage is that when DOS III becomes available shortly, you will be able to store 127K of information on each of your disks. Facilities are also available in DOS III to convert any of your own DOS II files to the new format in enhanced density. In normal use, the 1050 will switch automatically between normal and enhanced density disks. All you do is to insert a disk, the drive will know which type it is and load it.

3. All three of our new printers plug in directly to any Atari computer. The 850 interface is no longer needed although I am told that we will continue to manufacture it as long as there is a demand from users wishing to attach non-Atari printers to their system.

4. The CP/M module will allow disk users to run many existing business programs on any Atari machine. To quote from our new catalogue, "CP/M software is used for word processing and small business applications". It contains a Z80 microprocessor, another 64K of RAM and a switchable 40/80 column output suitable for a monitor or TV.

5. The Touch Tablet once again will run on any Atari machine. I know because I have tried it on my 800. Some of you may have seen demonstrations of the forthcoming Atari light pen and software at the recent computer exhibitions. I have used this on all four computers and there is a clever bit of programming involved which senses the amount of memory you have available and gives a more finely detailed picture automatically if you have more than 16K of RAM.

6 The Memory module is only intended for use with the 600XL and when fitted, gives the machine exactly the same specification as the 800XL with 64K of RAM. There is even a monitor output on both of these new machines should you wish to use it.

7. As the 600XL and 800XL have an expansion bus on the back, these two machines can take advantage of the new Expansion Box which has eight slots to take future circuit cards. There are also two RS-232 ports and a further bi-directional parallel bus provided, so I am expecting to see some interesting add-ons to appear.

As a final point, although there are now 16 Graphics modes available from the inbuilt BASIC language in the new computers, these are all accessible to 400 and 800 users with a bit more programming. Details can be found in many of the magazines and also in De Re Atari.

Martin Walker

Out of the Stone Age . . .

Atari end user, Peter Caddock, produces a TV commercial on his Atari 400.

By Barry Millns

As more and more people are using home computers it is very interesting to hear about the different applications which they are using them for.

One such person, who happens to be an Atari user, is Peter Caddock who wrote in to I/O to tell us what he has been doing.

Peter, who is 24 and lives in Cheshire, has recently begun work as a Trainee Assistant Film Editor for a film and TV company, having previously gained a degree in Audio-Visual Communications and Theatre Studies.

As part of his final examination Peter had to carry out a video project and, after a great deal of thought decided to make a commercial which he thought would be both challenging and enjoyable.

The subject matter which he eventually chose was The Sony Compact Disc and Player, the latest in domestic hi-fi technology. He wanted to produce a commercial that would have a distinct and powerful visual impact, and he therefore decided to employ hi-technological techniques, such as computer graphics, to emphasise the system's technical capabilities.
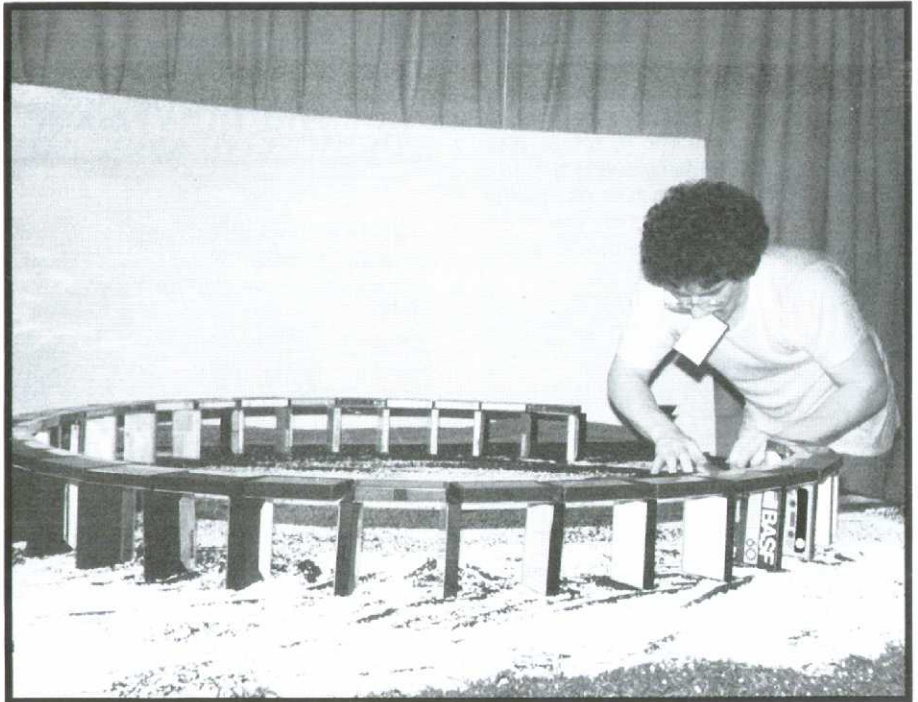
So, with the aid of his Atari 400 and the facilities of a film studio at college, he set about producing it.

The result was a 50-second commercial atmospherically depicting an array of audio cassette tapes in the shape of Stonehenge out of which evolves the Compact Disc and then the player; as his final caption put it: "Out of the Stone Age . . . Into the Sony Age." Whilst it is impossible to truly describe the commercial in print, Peter's computer generated graphics which undoubtedly achieved their hi-tech objective.

Peter produced some nine or ten different computer graphics for the video, making great use of the different graphics modes available on the Atari. He then used the studio's edit suite to animate

some of them; there were 36 different images of the Player itself which had to be animated in one section.

The commercial was such a success that it not only reached the final of the Sony National Student Film and Video Festival but also won the attention and praise of Sony's sales and marketing personnel.

Peter has also utilised his computer on occasions for his mobile disco, producing moving banner programmes and displays with a friend, Ric Davies.

Whilst at college, he produced some titles for its closed circuit television station, and on the entertainment side he is currently working on an adventure style game which has an unusual user approach, as well as a detailed graphics/music programme.

FACTS FILE

COMPOSITE VIDEO versus RF

The Atari 800 and the XL range of Home computers are equipped with a monitor socket, suitable for connecting to a Composite Video Monitor. Many users of Atari computers have been interested

to know why such "Video output" displays screen images, especially text, more sharply and with greater stability than a standard TV can.

Video monitor output is sharper than a TV because it gets the video signal directly from the computer's video output. In order to display an image on a TV, by way of the aerial, the computer must convert its video output to stimulate a normal broadcast signal. It does this with an RF (Radio Frequency) modulator, which is built into the computer. Then the computer's video output will be the same

as a broadcast signal from an ordinary TV station.

This means that the computer's video output must be re-converted by the TV's receiver before it is displayed on the picture tube. The sharpness of the displayed picture suffers as a result of this two-stage conversion, from video output to broadcast signal, and then re-converting it back to a pure video signal for display. Video monitors bypass these convertions by tapping the computer's video output directly, thereby generating a much clearer display.

A Look at S.M.A.C.

By Nigel Farrier

When home computers were in their infancy I went out and bought a cheapie as I had always been interested in computers. My first home computer had a "full colour" black and white screen and enough memory to satisfy the most advanced flea!

Having outgrown that fairly quickly I realised the need for something bigger and better. After comparing all the machines on the market it was obvious that the Atari came out tops. An 800 with 48K and disk drive seemed to fulfil all my requirements. I could zap all those multi-coloured invaders that seem bent on altering life as we know it (I think they have succeeded already), and also use it as a tax deductible asset for business purposes.

Having bought an 800 I was thirsty for knowledge so subscriptions went out to around 68 different magazines! 'Twas then that I realised the need to get together with other Atari enthusiasts.

A trip to the local computer shop revealed that there were some 15 or so other people in the same boat. Some of the more willing people and myself got together and that resulted in the birth of the South Middlesex Atari Club, euphemistically known as SMAC, on 2nd November 1982.

Initially the club started with around a dozen members but has since expanded to about fifty. Since the inception of SMAC, despite many hiccups, things have improved. Initially we used to meet for free at the computer shop despite there hardly ever being an Atari in working order because they sold them all. Unfortunately the shop closed down and we now have our meetings in a church hall in Staines. Now members bring along their machines and we have more hardware and software at our meetings than ever before.
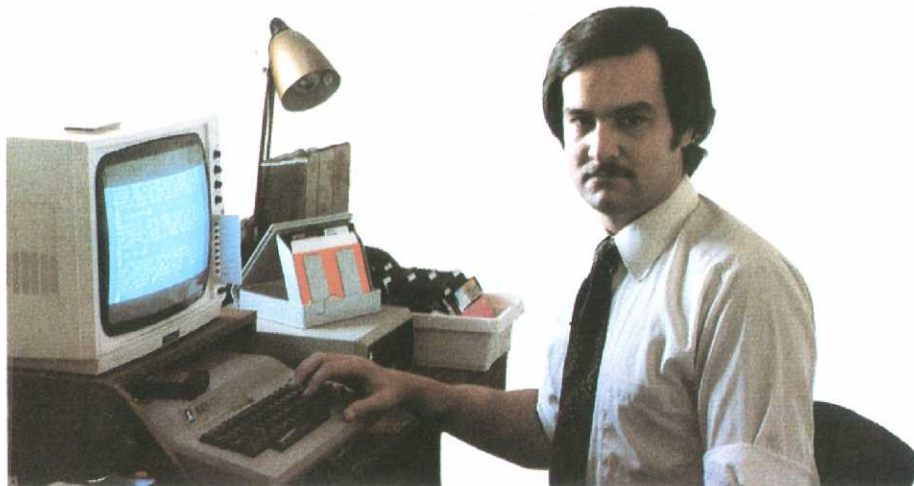
One of our members, Dave Collis, even made a power box which could run up to four computers and their peripherals without the need for hundreds of cables everywhere.

The club now has a library of around 150 public domain programs. Besides the ubiquitous games there are also a large number of demonstrations and utilities.

June 1983 saw the first issue of our newsletter the SMACLET. This seems to grow in size each month and runs up to a minimum of six pages long. In November we also started to include some handy reference charts for those little problems that take ages to find in magazines or the manual, for instance error codes — can you remember them all by heart?

Recently a new club, the Surrey and Hants Atari Club, SHAC, has formed as a subsidiary of SMAC. Their newsletter is currently included with ours and all programs etc. are jointly available between the clubs.

There are several people who should be mentioned as without their help and support none of this would have been possible. Our secretary, Brian Milligan, has done an excellent job despite being very busy elsewhere. The treasurer, Alan Wood, seems to have taken care of the money. I am still trying to work out how he manages to spend so much time abroad!

Sean Pryce and Carl Clement are two of our more serious members as they actually have some of their programs on the market. Their knowledge has helped a great deal.

Some of the girls, namely Helen and Sue, very kindly bring along tea and coffee to our meetings and even managed sandwiches and cakes for our A.G.M.

There are others who deserve a mention but I think I would end up writing about everyone in the club. Thanks to everyone.

At our recent Annual General Meeting a future club project was decided upon. We have decided to build a small 'robot' which the Atari can control. We might even enter it for the Micro Maze competition, who knows!

We are also in contact with other user groups and regularly send our newsletter to them and receive theirs in exchange.

If there is anyone else interested out there, why not contact us. Brian or myself would be glad to hear from you. You can telephone us on Staines 57161 or Ashford 45387.

Nigel Farrier
Chairman
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