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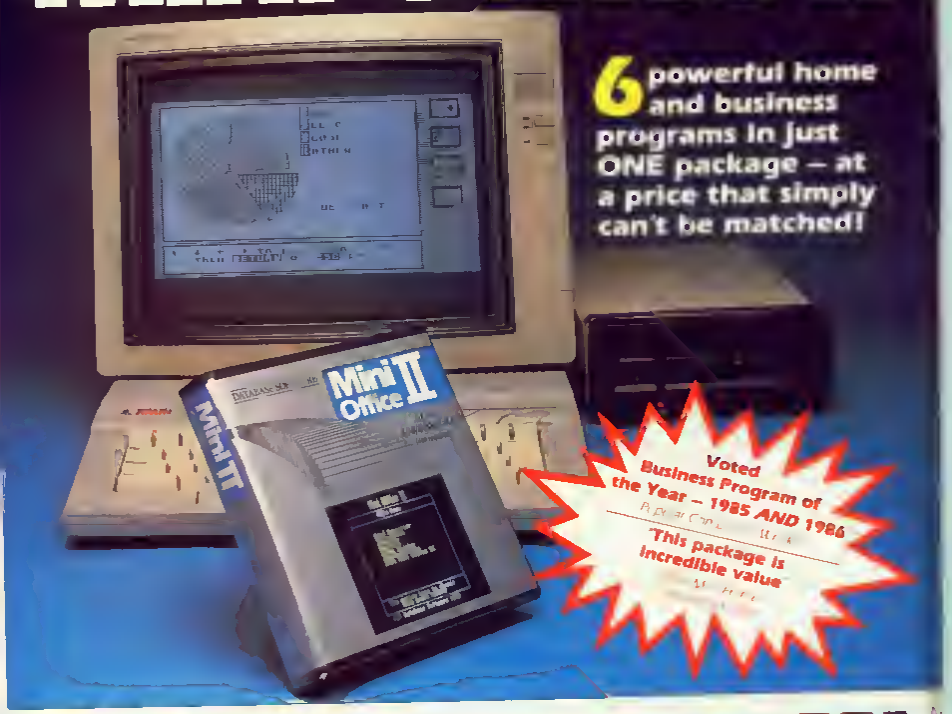


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Contents

News 5
All the latest from the ever changing world of the 8 bit Atari

Rouloc 9
More amazing exploits with our resident Atari adventurer

Calendar Maker 11
Print your own calendar for any day – past or present

Reviews 13
Our evaluation team takes a look at the latest software releases

Profile 17
We investigate the history of two legends in the software world

Light Gun Blaster 19
A game of fast reactions written specially for the Atari light gun

Easy Programming 21
More help with Atari Basic. This month the SOUND command

Control Characters 27
A complete guide to which keys produce the special Atari symbols

Competition 28
£600 of Red Rat software to be won – just take part in our survey

Five Liners 30
Prize winning mini programs sent in by our clever readers

Break In 32
Our fast action version of a classic oldie can drive you batty

Melody Maker 35
An entertaining and easy to use program to make beautiful music

Printer Review 37
We put the new Citizen LSP 100 printer through its paces

Software Solutions 41
Our resident expert helps to solve your programming problems

Colour Puzzle 43
We challenge you to solve the mystery of our tricky brain teaser

Graphic Equaliser 45
Create on screen magic using the output from any music tape

Child Artist 47
The kids will have hours of fun with this superb drawing aid

MicroLink News 48
More about Britain's nationwide online database for micros

Hints and Tips 51
Get more fun out of the top games with help from our readers

Custom Screen 52
A superb type in utility to give your Atari display a face-lift

Mailbag 57
The chance to get your news, views and name in print

The phenomenal growth in demand for Atari computers means a much bigger home for the BIG show...

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Console campaign continues

A COURT decision in the US has resulted in Atari being able to continue with its TV campaign for the XE video games console

The case was brought by Nintendo who complained that the TV ad was false and misleading by comparing its games machine to Atari's

Mike Katz, of Atari's electronic entertainments division, said 'We are very pleased about the ruling. The commercial was hard hitting but truthful'

New venue for show

THE biggest Atari User Show ever is lined up for the West Hall, Alexandra Palace, London, April 22 to 24

Last November's show at the Novotel in Hammersmith was so successful it smashed all previous attendance records

The rapidly growing army of Atari enthusiasts ensured that a move to an even larger venue was a must for organisers Database Exhibitions

And even after the switch to the spacious Alexandra Palace, increased demand from dealers has meant an extra 30 per cent of exhibition area has had to be provided

Visitors will now have even more to see and more bargains to choose from than ever before with exhibitors already promising price cuts on games, discs, printers, business packages and hundreds of other items

A money-saving advance ticket order form appears on Page 4

Woolworths to stock Atari budget titles

THERE is good news in store for Atari budget software buyers Woolworths is ending its exclusive arrangement with Mastertronic, and stocking a selection of Firebird titles as well

And there is a strong possibility that the High Street giant will also find shelf space for the fast moving Code Masters games

Boots is also expected to rearrange its Mastertronic-dominated shelves and give more exposure to Firebird and Code Masters titles

A company source said there are plans to deal with all its budget software suppliers on an equal basis in future

Meanwhile Activision has agreed to let Mastertronic handle its entire catalogue of hit programs under the newly created budget label Ricochet

Atari 8 bit versions will cost £1.99 on cassette and £2.99 on disc

The vast Activision range includes the Lucasfilm titles and classic hits like Ghostbusters – which will be one of the first Ricochet releases

A Mastertronic spokesman told *Atari User* 'We're delighted to do this deal. The Activision range reinforces our policy of only releasing the very best quality product on the Ricochet label

Activision's Rod Cousins said 'The agreement really demonstrates the importance of secondary marketing opportunities and of building a catalogue that has a worth over a period

In a business where shelf life may be short lived, the ability to recycle programs through budget labels is beneficial to all concerned'



Mark Smith leads the way

Virgin races ahead

VIRGIN Games moves into the fast track this year with motor racing sponsorship

Driving its entry in the Formula First championship will be Mark Smith author of interactive adventure books that have provided the inspiration for several computer games

From those books Virgin Games has produced Falcon the Renegade Lord and will soon release Duelmaster, Challenge of the Magi Gremlin Graphics has published Way of the Tiger and plans a second Duelmaster adventure called Blood Valley

Mark will be sponsored for the Top Gear Formula First series at Brands Hatch – and Atari users will have plenty of chances to see the distinctive Virgin Games logo flashing around the track because the races will be covered by BBC 2's Top Gear programme

Case settled

FOLLOWING an injunction and court case involving Telecomsoft and Hewson Firebird has won the right to publish Morpheus and Megnetron this year

The titles came under contention when Steve Turner boss of Graftgold and author of Magnetron signed a long term programming contract with Telecomsoft for all future products and separate contracts for Morpheus and Magnetron

Prior to this deal, Graftgold had published all its hit titles through Hewson which objected to Turner's new arrangement

It could be several months before the dispute is finally settled but in the meantime the courts say Telecomsoft can go ahead and publish the two contentious titles

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ATU2

Double helping from Red Rat

A DOUBLE helping of entertainment is being served up by Red Rat Software with the release of two twin pack games for the Atari

Both titles come on a single cassette or disc and feature high resolution graphics and scrolling animation

The first release contains Mad Jax and Planet Attack Mad Jax is a wild car game where you have to guide the vehicle through the desert en route to the city

It may sound simple but planes and heavily armed monster cars are out to get you

In planet Attack the object is to destroy enemy alien tripods on a distant planet Following take-off from your landing pad you have to drop bombs and fire lasers to destroy the targets

However hostile flying saucers attempt to thwart your mission

The other double pack from Red Rat (061-835 1055) features Space Wars – a good old shoot 'em up in the style of the classic arcade game Astroblaster – and Dreadnaught

From deep space to the deep blue sea, Dreadnaught follows the theme of the lost city of Atlantis Aliens are



trying to destroy the remains of the city and it is your job to stop them

All double packs are priced at £7 99 on cassette and £9 99 on disc



Zepplin takes off

A WEALTH of new games titles for Atari computers are on the way following the recent formation of Zepplin Games (091 281 4401)

The company was launched last November and boasts a team of highly talented young programmers

Zepplin's software director Brian Jobbling, aged 19, already has some impressive titles under his belt including Phantom, Winter Olympics and Who Dares Wins II His latest offering for the Atari is Speed Ace a motorcycle simulation in which two players can compete against each other or 19 computer riders

The game features some of the world's best known race tracks such as Silverstone Brands Hatch and Monza

Colliding with any of the other riders on the track results in losing temporary control of the motorcycle at simulated speeds of up to 130 mph Price £2 99

THE GALLUP CHART TOP 20 ATARI SOFTWARE

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	2	HENRY'S HOUSE *Mastertronic*	1.99
2	3	PANTHER *Mastertronic*	1.99
3	4	180 *Mastertronic*	2.99
4	6	ON CUE *Mastertronic*	2.99
5	1	DECATHLON *Firebird*	1.99
6	7	FEUD *Mastertronic*	1.99
7	10	TALLADEGA *Top Ten*	2.99
8	12	STORM *Mastertonic*	1.99
9	•	TRANSMUTER *Mastertronic*	1.99
10	•	COLONY *Mastertronic*	1.99
11	9	FOUR GREAT GAMES *Micro Value*	3.99
12	16	GAUNTLET *US Gold*	9.95
13	17	FOUR GREAT GAMES 2 *Micro Value*	3.99
14	13	LEADERBOARD *Access/US Gold*	9.95
15	14	BMX SIMULATOR *Code Masters*	1.99
16	11	MILK RACE *Mastertronic*	2.99
17	•	ACTION BIKER *Mastertronic*	1.99
18	15	DIZZY DICE *Players*	1.99
19	•	MONKEY MAGIC *Alternative*	1.99
20	8	SILENT SERVICE *Microprose*	9.95

Compiled by Gallup/Microscope

Mastertronic dominates this month's chart Not only has it dislodged Firebird's Decathlon from the number one position – replacing it with the excellent Henry's House – the company also has seven titles in the Top Ten

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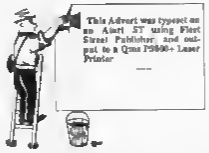
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Light touch in Aquitania

by Rouloc

JUST let me ease off these seven league boots and soak my aching tentsies in this bowl of hot mustard water and I'll be with you. Ahhh! That's better. You see, I've just been playing in the All Dwarfs 26-a-side crystal ball kicking championships and my toes are now the size, colour and consistency of a bunch of over-ripe bananes.

My team – the Adventuring Allsorts – lost 751 nil in the final to the Rough Diamonds – a mixed team of giants and ogres from over the western hills. They were bigger than us – about 15 feet to be precise.

Goodness knows how they were admitted to the competition. They must have bribed the committee with one of their famous dinoeour pies.

Still, enough of my pastimes. Let's get on with the real business – adventuring. I have exciting news of three great new games, all of which may well be on sale by the time you read this column. First following up the superb Guild of Thieves comes Jinxter from Rainbird and Magnetic Scrolls.

This lighthearted and humorous tale is set in Aquitania, a land soaked in luck and happiness where nothing nasty ever happens. A land protected from the naughty Green Magicians by a charm bracelet of magical powers.

But someone has been removing the charms from the bracelet, with the result that the Greenies are gaining power and luck is at a premium. Your task is to recover the missing charms - and so restore Aquitania to its former state of well being.

Written by Michael Bywater and the Magnetic Scrolls development team, Jinxter is a far cry from being another run of the mill adventure. You won't find any obsolete Orcs washed up wizards or hammy Hobbits in this one.

What you will find is an adventure that provides puzzles and giggles in abundance. For instance, *a guardian from beyond the realms of time* is not a cloaked and bearded figure of awesome demeanour but a morose, reluctant time-serving bloke in a herringbone overcoat – a sort of Arthur Daley of Aquitania. 'What's the point of wossname, immortality,' he grumbles, 'if you can't get a decent bit of cheese in your sandwich, narmean?'

And he's pretty naff at helping you learn the magic spells you'll need to succeed in your mission. 'Just find the watchercallit, say the doodah and thingie's your wossname. Cherm. Word Bob. Uncle. Narmean?'

The supporting characters are no less strange. The gardener is a certifiable megalomaniac and the village postmistress thinks she's Calamity Jane. And what is the relationship between her and the thick witted postman? What is going on in your best friend's cellar and what's that pong? Why is everybody so unwilling to give you speedy and polite service?

These and many other pleasures await you in Jinxter – an adventure in which you can't die, except perhaps by laughing yourself silly.

The other two games are new releases from Infocom – they certainly seem to be churning them out these days. The first, Beyond Zork, is a little different from Infocom's usual offering. It combines the traditional type of Infocom text adventure with elements of role-playing.

You can allocate a set number of points between attributes like strength, intelligence and so on, which thus determine how you will fare in certain situations.

The adventure includes combat, and I believe there is even an on screen mapping feature – a new departure for Infocom.

The second Infocom title is Border

Turn to Page 10 ▶



◀ From Page 9

Zone their first tale of International intrigue The plot concerns a rash American spy, a KGB agent and a happy go lucky businessman The trio becomes enmeshed following the assassination of a diplomat and their paths cross as each carries out his particular assignment

You see the story from the three differing viewpoints and to help you on your way on screen hints are available – another new feature

Written by Marc Blank, author of such illustrious adventures as Deadline and the original Zork Border Zone promises to be a treat for all adventurers Watch these pages for a detailed review of all these new products in the near future

And now to your letters, most of which concern The Pawn Dan Proops from London and Jonathan Evans of Pretoria South Africa cannot get past the boulders See the Hints section for instant enlightenment

Among other problems Jonathan doesn t know what to do with the floorboards in the tree and has found that the Guru does not want any Perrier water – what does he want? Help is at hand

Mark Powell of Lewes in Sussex has completed Hollywood Hijinx and I am pleased to publish some of his hints for that adventure since many of you are still struggling gamely with it

Donna Thrasher of Hockley Essex, says she has lost the novella which came with The Pawn and now can t load the game es she doesn t remember the passwords I m not surprised you can t recall the passwords – potentially there as many of them as there are words in the novella

Rainbird use the novella as a sensible and effective anti-piracy measure the reasoning being that if someone hasn t got the documentation they probably didn t buy the original game

It s bad luck on any genuine owner who loses the essential documentation though The only thing I can suggest, Donna is that you write to Rainbird explaining the position and enclosing proof of purchase and perhaps they will be kind enough to let you have another copy of the novella Better take good care of such documentation next time because all Rainbird adventures use this password protection method

Arvin Norris of Cwmbran is having a spot of difficulty with Ultima IV He would like to know the exact position of the mandrake root using the sextant and requires the correct order of the three parts of the word of passage Can any reader help?

Alternate Reality – The Dungeon is causing some anguish to Dave Hall In his own words he s "a somewhat frustrated droopy-eyed adventurer from Sheffield

He wonders how you can get a city character into the dungeon without getting him killed off immediately Why does the oracle tell you of quests that cannot yet be completed? What are the answers to the gargoyle s riddles? And why does the ferryman insist on taking Dave downriver contrary to what the manual says? A tall order – can any player assist?

I'm afraid I've changed my mind about giving a rundown of how all the points are scored in The Pawn I realised after mentioning it in the December issue that to do this in one go would mean giving too much of the game away and spoiling it for players still wrestling with it

Instead, and starting now I am providing a serialised partial solution – so you'll still have some work to do and you won t get all the help at once My thanks for possible solutions go out to many readers but especially to Jason Murphy of Manchester, Phil Latham of Macclesfield and Mark Serul of Barwell Leics Farewell for now Keep those lamps bright!

Hints & tips

HOLLYWOOD HIJINX

● *Need an underwater light source?*
Light one of the candles with the red match and coat the green match with the wax Take another candle with you and light it with the wax coated match when appropriate

● *Don't know what to do with the piano?*
Play the tune that Aunt Hildegard likes Push the piano North and remove the pillar from the south crawl space Push the piano South twice to gain access to another treasure in the crawl space

● *Puzzled in the bomb shelter?*
Push the right end of the plank down pull the chain, stand on the right end of the plank then light the rope

THE PAWN Solution – Part one

Look at your clothes Go East Say to Kronos 'Greetings' Take note Ask Kronos about wristband Take chest Go to palace gardens Look for a key Look in fountain Go to shed Look for a rake hoe, trowel and pot Show something to guards Go to Guru

Cover wristband Go to large boulder Tie rake and hoe together with shirt Lever boulder with rake and hoe Climb rocks When the adventurer appears, give him the chest

Get on horse Get some snow Return to Guru Go to clearing Look at stump Mix items to get a white Go to large tree Unlock door Enter and close door Lift boards Go down stairs

● *Part two is next month*





Calendar maker

Othman Abdul Hamid takes a look backwards and forwards in time

ACCORDING to the book Inventions That Changed The World the present Gregorian Calendar began to be used on Friday October 15, 1582 when Pope Gregory XIII revised the old Julian calendar This then became the standard for most of Europe, although Britain did not begin to use it until 1752

Bringing Pope Gregory up to date, this program will print – on screen or to an Epson-compatible printer – a monthly calendar from October 1582 to any future date you care to enter

When the program is first run you are asked to enter the month and year you wish a calendar for The month must be entered as a number from 1 to 12 For example if you want January you must enter 01 and so on The year must be a four figure number greater than 1582, this being the date of the newly recorded calendar

Once the date has been entered you are asked to enter the size of the calendar you want to print – (S)mall (M)edium or (L)arge You also have the option to have no printer, which means that the calendar is only displayed to screen. This is achieved by pressing any other key other than one that chooses size

When the size is chosen the program will calculate the new calendar If at this point you change your mind just press C to start again, or press P to print the calendar

The program works by counting the days interval between the year 1200 and the date entered – the year 1200 is taken as starting point to simplify calculation The days are then converted into weeks and the remaining days – obviously a number not divisible by seven – determine the position of the last date in the calendar

To check the accuracy of the program I have used it to check many well known historical dates and found it to be accurate every time

FEBRUARY 1988					
SUNDAY		7	14	21	28
MONDAY	1	8	15	22	29
TUESDAY	2	9	16	23	
WEDNESDAY	3	10	17	24	
THURSDAY	4	11	18	25	
FRIDAY	5	12	19	26	
SATURDAY	6	13	20	27	

PROGRAM VARIABLES

LINE$	Screen lines to be dumped to printer
MONTH$	Names of the months
DAY$	Names of the days
MONTH(nn)	Number of days in each month stored in an array
MONT	Month of the calendar .
Y	Year of the calendar
MDAY	Number of days between January 1 and the the last day of the month
LPYEAR	Number of leap years since the year 1200
LCENTURY	Century years (such as 1200 1600 2000) which are leap years
YRDAY	Number of days since the year 1200
LEAP	Extra days in leap years
TOTAL	Actual number of days since the year 1200
LAST	Number to determine position of last date in the calendar

PROGRAM BREAKOOWN

70 200	DIM strings reads and checks inputs
230-310	Counting days adding extra days in leap years
340-350	Convert days to weeks, calculate positions of dates on the calendar
370-460	Print calendar on screen
490-570	Make selection Restart or hard copy
550 890	Trap lines data and printer codes

```
10 REM ****************************
20 REM *     CALENDAR MAKER       *
30 REM *   BY OTHMAN ABDUL HAMID  *
40 REM *      (c) ATARI USER      *
50 REM ****************************
70 DIM LINE$(120),MONTH$(10),DAY$(12),
MONTH(12)
80 ? CHR$(125) POSITION 3,5 ? CALENDA
R MAKER PROGRAM
90 POSITION 10,7 ? BY OTHMAN A HAMID

100 POSITION 11,10 ? MONTH YEAR
 POKE 752,1
110 REM TRAPPING INPUT ERROR
120 TRAP 540 POSITION 11,12 INPUT MONT
 IF MONT<1 OR MONT>12 OR MONT<>INT(MON
T) THEN 550
130 TRAP 570 POSITION 21,12 INPUT Y IF
 (MONT<10 AND Y<15033) OR Y<1582 OR Y<>
INT(Y) THEN 570
140 POKE 752,1 ? " (F YOU USE EPSON
PRINTER SELECT CALENDAR SIZE F
150 ? " S = SMALL M = MEDIUM ? ?
  L = LARGE  ANY KEY NO PRINTER"
160 OPEN #1,4,0,K: GET #1,K CLOSE #1
170 IF K=83 THEN SIZE=1
180 IF K=77 THEN SIZE=36
190 IF K=76 THEN SIZE=48
200 ? CHR$(125) ? "THINKING ..."
210 REM COUNTING DAYS SINCE 1200 A D
220 REM
230 MDAY=0 LPYEAR=0 CENTURY=0 LCENTURY
=0 RESTORE 530 FOR A=1 TO MONT READ D,
MONTH$ MDAY=MDAY+D MONTH(A)=D NEXT A
240 FOR A=1200 TO Y-1 STEP 4 LPYEAR=LP
YEAR+1 NEXT A FOR A=1200 TO Y-1 STEP 1
00 CENTURY=CENTURY+1 NEXT A
250 FOR A=1200 TO Y-1 STEP 400 LCENTUR
Y=LCENTURY+1 NEXT A
260 YRDAY=365*(Y-1200) LEAP=LPYEAR-CEN
TURY+LCENTURY
270 REM
280 REM  ADDING 1 TO FEBRUARY IF LEAP
YEAR
290 IF MONT>1 AND Y/400=INT(Y/400) AND
 Y/100=INT(Y/100) THEN MDAY=MDAY+1 MON
```

Turn to Page 12 ▶

◀ From Page 15

```
TM(2)=MONTM(2)+1 GOTO 340
300 IF MONT>1 AND Y/100=INT(Y/100) THE
N 340
310 IF MONT>1 AND Y/4=INT(Y/4) THEN MO
NTH(2)=29
320 REM
330 REM  TOTALLING DAYS, DETERMINE POS
ITION OF FIRST DATE IN CALENDAR
340 RESTORE 610 TOTAL=MDAY+YRDAY+LEAP
DAY-INT(1.25*YRTOTAL/7-INT(YRTOTAL/7)))
 FOR
 A=8 TO DAY STEP -1 READ LAST:NEXT A
350 DATE=MONTH(MONT)+LAST IF DATE=MONT
H(MONT)>6 THEN DATE=DATE-7 REM  MATCH
DATE WITH CORRECT DAY
360 OPEN #2,5,0,E: REM  OPEN THE SCR
EEN EDITOR FOR FORCED READ MODE
370 ? CHR$(125);POKE 752,1 FOR A=A TO
 18 STEP 2 POSITION 1,A ? "----------
----------" NEXT A
380 RESTORE 620
390 REM
400 REM  PRINT CALENDAR ON SCREEN
410 FOR A=5 TO 17 STEP 2 READ DAYS POS
ITION 1,A ? DAYS NEXT A
420 FOR VLN=37 TO 12 STEP -5 FOR HLN=1
 TO 5 STEP -2 POSITION VLN,HLN
430 IF DATE>0 AND DATE<=MONTH(MONT)+1 T
HEN ? DATE
440 IF DATE>0 AND DATE<10 THEN ?  ;0
ATE
450 DATE=DATE-1 NEXT HLN:NEXT VLN
460 POSITION 20-INT(LEN(MONTH$)/2)-3,2
 ? MONTH$;  ";Y
470 POSITION 7,19 ? "  SWITCH  ON  PR
INTER     FOR A=1 TO 300 NEXT A
480 POSITION 7,19 ? "Press Calendar  P
rint
490 OPEN #1,4,0,"K": GET #1,K CLOSE #1
500 IF K=67 THEN RUN
510 IF K=80 THEN GOSUB 650 GOTO 250
520 GOTO 480
530 END
540 REM  TRAP LINES
550 IF MONT<1 OR MONT>12 THEN POSITION
 8,14 ? CHR$(253), "INCORRECT MONTH
          GOTO 120 REM 11 SPACES
560 POSITION 6,16 ? CHR$(253),"PLEASE
ENTER NUMBERS ONLY  GOTO 120
570 POSITION 6,16 ? CHR$(253),"ENTER 4
-FIGURE/BEYOND 1582 GOTO 150
580 REM
590 DATA 31,JANUARY,28,FEBRUARY,31,MAR
CH,30,APRIL,31,MAY,30,JUNE,31,JULY,31,
AUGUST,30,SEPTEMBER,31,OCTOBER
600 DATA 30,NOVEMBER,31,DECEMBER
610 DATA 2,3,0,4,5,0,6,7,0
620 DATA  SUNDAY    , MONDAY    , TUES
DAY   , WEDNESDAY , THURSDAY  , FRIDAY
    , SATURDAY
630 POSITION 2,19 ?
                        "REM 38 SPACES
640 REM  PRINT HARD COPY
650 POKE 755,2 POKE 82,0 POSITION PEEK
(82),0 FOR A=1 TO 24 TRAP 690
660 REM  FOR EPSON
670 INPUT #2,LINE$:LPRINT CHR$(27),CHR
$(33),CHR$(SIZE);LINE$:NEXT A ? CHR$(1
25):CLOSE #2:RETURN
680 REM  OR SIMPLY  670 INPUT #2,LINE$
:LPRINT LINE$:NEXT A ? CHR$(125):CLOSE
 #2:RETURN  PLEASE  DELETE LINE 680
690 POKE 82,2 ? CHR$(253);GOTO 470
```

Get it right!

```
10 CP1 (XI)     250 BMF (H)     400 45K (G)
20 EP2 (S)      260 RJJ (D)     410 3YE (U)
30 CP5 (X)      270 B01 (2)     500 02R (R)
40 CP6 (A)      280 BUT (C)     510 3KN (T)
50 CP5 (Y)      290 2B0 (7)     520 M1C (F)
70 RM7 (W)      300 KBK (A)     530 0F5 (X)
80 CMF (E)      310 AGR (L)     540 RCW (P)
90 FSH (N)      320 B3U (K)     550 F7L (G)
100 6EJ (G)     330 F7U (L)     560 4ST (S)
110 CTS (T)     340 B5J (I)     570 7AV (E)
120 AR1 (A)     350 LKR (I)     580 6UW (S)
130 FCV (V)     360 6L1 (2)     590 8Z5 (S)
140 RNE (V)     370 1HC (8)     600 TW7 (6)
150 7T5 (H)     380 XEF (A)     610 CNT (W)
160 2WA (6)     390 BYU (8)     620 1K4 (M)
170 EXH (T)     400 CUV (7)     630 MSY (D)
180 FA4 (3)     410 QMB (4)     640 SEX (7)
190 FCV (A)     420 Y3F (9)     650 Y3C (4)
200 JPT (9)     430 MDD (6)     660 DLX (F)
210 CYT (4)     440 2B4 (K)     670 AE3 (P)
220 B3Y (8)     450 3ON (K)     680 DUX (U)
230 1NH (S)     460 C9K (8)     690 1KN (A)
240 BAH (1)     470 L02 (F)
```


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Software Scene

Gunfight at the corral – OK!

Program Gunslinger
Price £14.95 (disc only)
Supplier Datasoft/US Gold, Units 2 & 3 Holford Way Holford, Birmingham B6 7AX
Tel 021 356 3388

IN this graphical text adventure you play Kip Starr, an unemployed Texas ranger who has just received two telegrams from his old buddy, James Badland.

The first tells you that Badland is in a jail south of the border and if this isn't enough the second informs you he is about to hang in two days.

Not wanting to let your old friend down you pack your bags and your trusty six-shooter and get ready to leave. Then out of the blue yet another nasty telegram arrives.

This one is much more sinister. We've escaped from jail. Just a warning for you and that buddy of yours. Signed The Dalton Brothers (all six of us).

Your prospects don't look so bright when you find yourself stranded in the desert after riding your horse to death. But things pick up when a traveller comes across you and offers you a ride into Dawson City.

So there you have it. All you have to do is break into and out of jail. Then you must keep your appointment at the OK Corral for a shoot out with the six Dalton brothers. Simple.

You find adventure in a gold rush ghost town, an Indian village and a US Army fort, all generously scattered on your way to Mexico to save friend James from the hangman's noose.

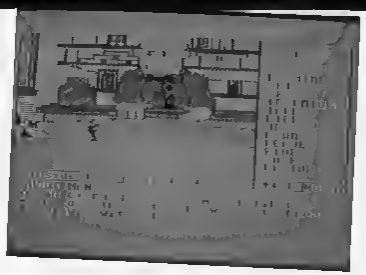
Many other diversions stand in your way in the form of crooked poker games, runaway mine cars, dangerous waterfalls and ambushes. These are all presented using more than 100 very effective hi-res picture screens.

You can enter commands from the keyboard – in a fashion all keen adventure players should now be familiar with – or use a combination of joystick and keyboard inputs. A novel approach and fun.

The screen shows your location on the left and a menu of verbs, nouns and prepositions on the right.

You can also bring a compass on to the screen by moving the on-screen arrow into the area just to the left of the command screen. You can save a game at any time by highlighting the SAVE command in the verbs box. Whatever you do, don't save a game on a master disc.

If you are new to this form of entertainment here are a few hints. Always save at regular intervals – the West is very dangerous and you can be killed at anytime. Make a map – it's always useful to know where you're going. Also watch out for the Indians – they have a habit of collecting scalps.



All the items you find will be used for something, so don't go dropping them. A horse can make all the difference so be careful where you leave one and remember stealing one is a hanging offence.

If you encounter a dishonest character – and there are a few – remember this is the West and your gun speaks the only truth. For example, when I went into the saloon for a game of cards the man opposite me cheated. I didn't ask him to apologise. I just shot him dead – and he turned out to be Jessie Dalton – only another five to go!

This adventure is one of the largest I have ever played. The pictures are excellent and I especially liked the one of the card player staring at me over his hand just before I shot him.

It's a very playable and quite humourous in parts. Although not the most intriguing game ever some thought is needed if you want finish and save James.

If you like adventures and fancy something a little different Gunslinger is a must. It's originality and ease of use makes it a winner.

Neil Fawcett



Presentation	8
Atmosphere	7
Graphics	8
Puzzlement	8
Value for money	8
Overall	8

SoftwarE SCENE

Snazzy but slow

Program Transmuter
Price £1.99
Supplier Code Masters, Lower Farm House Stoneythorpe Southam Warwickshire, CV33 0DL
Tel 0926 814132

IN the past Code Masters has only released two games on the Atari – Red Max and BMX Simulator. They are both graphically excellent, sonically superb and packed with playability. So it came as a welcome sight when I spotted the company's latest offering – Transmuter, a horizontally scrolling shoot-em-up.

The story? Well, it seems that in the future the Sun becomes a red giant, and the extreme cold makes everybody go underground to keep warm. Up top, sentry robots and attack droids are kept in place to defend from possible invasion.

Time passes, and using Earth's resources, the remaining humans build ships and travel out to the stars, seeking a new home.

Settled in their new planet people wonder what became of the Earth, so a single man is sent back to the home world in a new fighter carrying at its core a matter transmuter.

That is a device capable of transforming energy into separate forms for use in attack or defence.

You are that man, and on reaching the Earth you are attacked by the outer defences left a millennium ago. Activating the transmuter, you fly into battle – attack being your only chance of escape.

This story line covers what is actually a version of the Konami arcade game Nemesis. Yes, they're all there – speedups, missiles, double, 45 degree shots, lasers, multiples and shields – all the features of Nemesis.

All except one thing – speed. And unfortunately all the snazzy features in the world can't help if a game is slower than the proverbial tortoise.

Once you complete a level you are confronted with a mother ship just like in Nemesis. When this is destroyed you have a bonus level with all sorts of starships flying at you.

Yet the game gets incredibly easy if you have speeded up firepower and two multiples, because nothing gets past you.

Graphically, Transmuter is not bad, with average sound and gameplay. Though it's slow, if you really are desperate to play Nemesis on your Atari, at £1.99 I don't suppose it'll burn that much of a hole in your pocket.

Robert Swan



Sound	*7*
Graphics	*8*
Playability	*6*
Value for money	*7*
Overall	*7*

There's a mouse loose..



Program Basil the Great Mouse Detective
Price £9.99
Supplier Gremlin Graphics Alpha House 10 Carver Street Sheffield S1 4FS
Tel 0742 753423

221B Baker Street is home to the two greatest detectives in the world. Upstairs is Sherlock Holmes and below in the basement is a mouse named Basil, the most intelligent rodent mind ever.

This keen sharp witted mouse and his colleague – the amiable Dr. Dawson – have solved many a crime. But now the evil Professor Rattigan has kidnapped Dawson, and it is down to you as Basil to find and rescue your friend and partner.

As the game loaded, the distinctive tones didn't sound quite as clear as they should, but then up came the message 'Please wait now loading Basil'. What appeared was a shaded loading screen of Basil in action.

What I certainly was not prepared for was the wait – about 20 minutes after loading started the screen advised 'Please rewind tape to start of side 2 and press spacebar'. Shades of Gauntlet.

After approximately half an hour the game was in so, picking up my trusty joystick I set about it.

The graphics are in 16 shades of brown for the playing area and the score area is blue, red, green and yellow. Need I go on? It's incredible.

The programmers of this visual feast have done some really fantastic work using the limited screen pallette and the sprites are cute and well detailed. The display is clear and easy to see with more than adequate sound. The gameplay is a little difficult to start with – especially finding which items to use and examine – but you get used to it after a while.

What of the baddies? Enemy mice roam the kerbs and gutters of London. Slight contact with them reduces your energy and prolonged contact is lethal.

To reach high places you must leap and bound. Timing the jumps and finding the exact spot to do so takes trial and error – and time.

In fact, my overall impression was one of time. Time to load, time to get used to the controls and gameplay, and time to tackle the game itself.

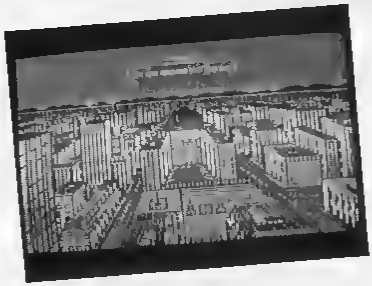
Basil the Great Mouse Detective looks great, plays well, and should have you stuck to your keyboard till the early hours.

Keith Pattison

Sound	*7*
Graphics	*10*
Playability	*7*
Value for money	*8*
Overall	*8*

Adventure of a lifetime

Program Alternate Reality The Dungeon
Price £19.95 (disc only)
Supplier Datasoft/US Gold Units 2 & 3 Holford Way, Holford Birmingham B6 7AX
Tel 021 356 3388



THE Dungeon is the second in the Alternate Reality series of role playing adventure games it's the sequel to the City Part One and is just as much fun

The package contains three discs, a witty and amusing guide book, a basic map of level one, a letter from Trilog – another poor sole lost in Alternate Reality – as well as a complete map of the Dungeon

Though this is of no real use it looks pretty However I would advise everyone to read the guide book diligently if they are to understand the game to the full

The opening sequence which sets the scene is great fun to watch and listen to As the music plays in the background the words are printed on the screen, and all this on top of a 3D rotating star field reminiscent of Dr Who

As in the City, the game begins with you being abducted from Earth in a gigantic spacecraft This all happens on screen with you transported to another planet an Alternate Reality – hence the original title

After this you find yourself in a room with only one exit This faces the Dungeon and is covered by a force field with numbers spinning around above the lintel

As you pass through, the numbers freeze as the Dungeon guide remarks 'As if you had pulled the lever to a cryptic slot machine Their frozen status – referred to as stats for the remainder of the game – determines your levels of stamina charm strength, intelligence, wisdom skill health and hit points

You are now in the Dungeon, which is where the fun starts In this maze of corridors and sewers you can meet all sorts of creatures – and probably will

Near the entrance is the Damon and Pythias shop where you can buy almost anything

And don't forget to barter with the owner – he nearly always gives in

Scattered throughout the Dungeon corridors are lots of doors but if you thought that doors were just doors you're wrong

In this game there are magic doors invisible doors – I never saw one – and those that you can only open from one side

Included in the guide is a grid you can photocopy and draw on – mapping is a must if you don't want to get yourself lost

Eventually as you work your way round you encounter a thief, a giant bat an acolyte and other equally obnoxious creatures When this happens you have various choices Charge, run away transact and so on Fighting is usually the best option because if you win you can loot the body for treasure or weapons – macabre but rewarding

Defeat usually ends in your demise, but you're not really dead – the Dungeon is nice that way and you can be resurrected for a small fee In addition if you are low on hit points you can always go to the Retreat to recoup

Because the Dungeon is so dangerous I found it very useful to save a character at regular intervals Fans of the City will be pleased to know that their existing characters are transferable which gives you a much better chance of survival

Movement is controlled by a joystick in port one or the keyboard All other commands are single key entry My favourite is P, for pause which stops the action at any time without affecting the game

Other commands include U to use any item you are presently carrying and D to drop an item if you get too overburdened with stolen goods

Various menus can be called up at any time and this, mixed with your stats at the top of the screen action sequences in the middle, instructions and information at the bottom and having to flip discs all the time make the gameplay a little confusing

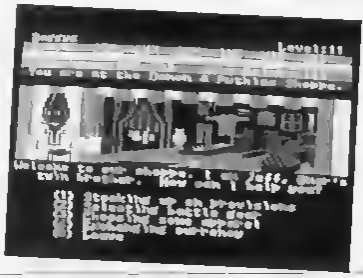
The discs are constantly being swapped – although larger memory machines don't require as much updating

All the on-screen text style is in old English This is very appropriate but a little difficult to read at times without squinting

All in all, this is another superb package from Datasoft and well worth every penny The graphics are superb and the music played throughout the game is stunning

Ruth James

Sound	10
Graphics	9
Playability	10
Value for money	10
Overall	10



Software Scene

Stock car challenge

Program Talledega
Price £1 99
Supplier Top Ten 12 Chiltern Enterprise Centre Station Road Theale Berkshire RG7 4AA
Tel 0734 303663

RICHARD Petty, king of the Nascar Super Stocks race scene, challenges you to a gruelling race against 18 other drivers, each programmed to beat you

This is Top Ten's description of it's latest release Basically it's Pitstop plus a large dose of Pole Position You have to race around a selected track – or choose one at random – inside the time limit to qualify for the main event

You have to beat 19 racers – including Richard Perry in a blue flashing car – in order to win

You can soon learn several tactics to help you beat the others – using turbo boosters which use up a lot of fuel and cut down control on bends or sneaky manoeuvres such as slipstreaming which cut down on fuel used

You can also cut turns which allows you to take a certain line through bends at 250mph – the car will do a four wheel drift but you can retain full speed or even lean on the other cars to shunt them out of the way

For balance there are things to hold you back or even put you out of the race – engine trouble is one but it is quickly remedied by a pitstop

I didn't think Talledega was up to much graphically and its age is showing with old sound and gameplay All in all it's not likely to make you race down to your local stockist to buy

With Pole Position being sold nowadays for about £2 99, I believe you'd be better off spending the extra pound on that **Robert Swan**

Sound	5
Graphics	5
Playability	4
Value for money	4
Overall	5

Jump at this one

Program Twilight World
Price £4 99
Supplier Atari Atari House Railway Terrace Slough Berkshire SL2 5BZ.
Tel 0753 822814

ISN'T it nice to see a familiar face again after so long? Yes it's true Atari is now back in the software field after a long rest

Its last release was the disc only Star Raiders II last Christmas Well now all you proud tape owners can relish in Atari's comeback too, with this new offering from Matthew Trimby – author of Mastertronic's Crystal Raider

Twilight World centres around you as a guy with a gun and the ability to leap over vast pits of flame while avoiding nasties and collecting gems

The nasties come at head chest and feet height and you can duck, jump or blast your way through the caverns ahead A jet pack is also at your disposal a little later in the game

The graphics are very good, and run along the line of the main character in US Gold's older titles such as Scooter Ollie's Follies and Ghost Chaser – except they are much larger

Overall a nice jump shoot collect game A sort of Ollie's Follies in Hell

Robert Swan

Sound	7
Graphics	9
Playability	8
Value for money	8
Overall	9

Jumping back

Program Henry's House
Price £1 99
Supplier Mastertronic 8 10 Paul Street, London EC2A 4JH
Tel 01 377 ####

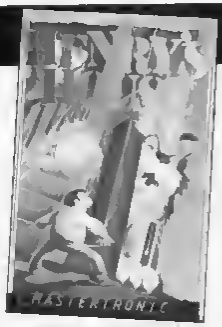
POOR Henry's got a bit of a problem Although daddy happens to be the king this hasn't stopped him from going where he's not supposed to – the royal laboratories Nor has it prevented him from drinking a potion which he shouldn't

All this has resulted in a six inch high prince in a lot of trouble

Henry must now traverse many different rooms, collecting items on the way that will restore him to full size These very from eggs and food mixers, to boots and crowns – and some rooms contain televisions

As you've probably guessed by now, you play Henry in this platform-jump-collect game But somehow this has something which other offerings like Jet Set Willy didn't – it's highly playable In addition control is a lot easier than in similar games

Though the first few screens are a little difficult to start with, once you have managed to navigate your way through them things seem to fall into place and the game gets progressively easier



One thing I didn't like was that you die if you fall from too great a height I can only suppose that if you're six inches tall, everything's a great height

The graphics are excellent and the sound adequate – I especially liked the rendition of Rule Britteria at the beginning The game is certainly worth £1 99 of anyone's loot

While the plot may be pretty thin for what is essentially a platform game with royal overtones this is a must We certainly were amused

Bob Powers

Sound	7
Graphics	7
Playability	9
Value for money	10
Overall	9

A winning combination

NEIL FAWCETT takes a close look at two Atari software giants

A LOT of companies have found success in the world of computer products but perhaps the two largest and best known in the Atari field are MicroProse Software and Origin Systems.

These two giants of the software world have now agreed to unite in a venture and as a result a massive range of quality software will soon be marketed throughout Europe – and that is good news for all of us.

MicroProse is a subsidiary of MicroProse Software Inc. of Hunt Valley, Maryland USA. The parent company was founded by Sid Meier and ex fighter pilot 'Wild' Bill Stealey. Since its formation in 1986 MicroProse has become one of the leading companies in the field of simulation games. The software is of a very high quality and packaging and instructions are consistantly superb.

Some of the titles that made MicroProse famous in the 8 bit Atari world can be seen in the panel below. These products, and many more, have always been a popular choice for software collections. This popularity can be put down to their high quality and availability on both tape and disc – a factor that a lot of companies forget about these days.

All the games are thoroughly researched before being released. For example when Sid Meier was writing F-15 Strike Eagle he read everything available on the American Air Force's most sophisticated multi role combat aircraft.

The cockpit display, performance figures and weapons systems have been duplicated as closely as possible on the computer simulation. If this wasn't enough Stealey hired F-15 pilots to test the final product. Now that's what I call research. This is why MicroProse products are considered to be the Rolls Royce of the software industry.

Origin Systems was founded in 1983 by a team of four. Richard and Robert Garriot, their father Owen and Charles Beuche. Today the company employs around 30 people and uses between 10 and 15 freelance programmers. Anticipated sales figures are over four million dollars a year.

The history of this company goes back long before 1983 to a young Richard Garriot at that time a high school student. For many years he had an interest in fantasy role-playing games – TSR's Dungeons and Dragons. This fascination led to him programming the school's single punchcard operated computer with his own mini adventures.



Richard Garriot, author of Ultima

His first programming experience came when he went to Gunn High School where he logged many hours on an Apple computer. This is also where, on the very first day at school, he picked up his now famous nom de plume – Lord British.

This was because when people greeted him with "Hi" he replied with the unconventional 'Hello'. People said 'What a proper way you have of talking – you must be British!'. The nickname stuck, and later Richard placed the Lord in front. He now uses the name for the main character in his famous Ultima series – but more of that later.

When Richard left school he got a job in a computer store back home in Texas, programming its Apple computers. He wrote quite a lot of graphic adventures and one day his boss – unbeknown to Richard – showed one to an up-and coming software company – California Pacific. In 1979 the

Turn to Page 18 ▶

MICROPROSE/ORIGIN PRODUCTS

Product	Cassette price	Disc price	Company
F-15 Strike Eagle	£9.95	£14.95	MicroProse
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Ultima		£19.95	Origin Systems
Ultima II		£19.95	Origin systems
Ultima III		£19.95	Origin Systems
Ultima IV		£19.95	Origin Systems
Ogre		£19.95	Origin Systems
Autoduel		£19.95	Origin Systems

Some of the products that have made MicroProse famous

◀ From Page 18

company published Richard's first game – Akalebeth – and it sold a very healthy 25,000 copies

Encouraged by this success Richard decided to write another game. This eventually emerged as Ultima, one of the most successful adventure games ever. He sold the rights to Sierra On-Line and it went on to sell around 50,000 copies. After this in 1981 came the sequel Ultima II, which was also licensed by Sierra On-Line, and sold around 100,000 copies.

Richard always had strong feelings as to how his games should be marketed so in 1983, while he was still working on Ultima III: Exodus, he decided to form his own company – Origin Systems – with his brother Robert, who had just come out of business school.

They also asked their father Owen – a former NASA astronaut – and a programmer – Charles Beuche – to join them. Just to show that this is a family business they also got Helen Garriott to do the superb illustrations in the Ultima booklets.

Ultima III was another massive success, far outselling the previous adventures. Now the scene was set for the next challenge – Ultima IV: Quest for the Avatar, which has sold over 200,000 copies.

However, the Ultima series aren't the only packages that Origin are famed for. Admittedly the company's products are what you could call highbrow, needing a lot of thought and time, but they do move from the fantasy adventure theme.

For example, in Ogre you challenge the might of a cybernetic supertank programmed to annihilate anything in its path. The game is set in the 21st Century and you must deploy conventional weapons and infantry to protect a defence post. It's a conversion of a Steve Jackson board game and is a pleasure to play.

In another – Autoduel, classed as a strategic role-playing game – you again enter the 21st Century, this time in the NE of America, where death lurks around every bend of the freeway.

This is the first product to be launched under the MicroProse/Origin banner and is a nice addition to the already impressive joint range. It's based on a Steve Jackson board game called Car Wars and again is a very close translation. As with the Ultima series the packaging is excellent. The box contains a miniature toolkit – a very nice touch.



The world of Sosaria, elegantly portrayed on the cloth cap

But now the 64 million dollar question. How did Origin and MicroProse get together?

This was down to Bill Stealey, president of MicroProse in the USA. Bill is a business associate of Robert Galliott who was intending to set up a UK company with Stewart Bell. He asked if Origin was interested in a joint venture arrangement – the company already had something going in Japan where the Ultima series is very popular.

Initially MicroProse will launch seven Origin titles on the British and European markets, including the Ultima series. They have been revamped and include booklets and a beautifully made cloth map showing the world of Sosaria. It's worth buying for that alone, never mind the playability.

If you're into role playing games and strategic simulations, the future seems very rosy indeed for the Atari 8 bit computers. Ultima V: Warriors of Destiny will hopefully be available around March for around £19.95.

In it the adventure continues with Lord British leaving Britannia to explore the newly discovered underworld, but all contact between the good King and his companions is lost. In Britannia pandemonium breaks out when the sole survivor of the expedition returns to tell the tale.

You are summoned in an attempt to discover what has happened to the King and defeat the evil growing in the lands. Sounds great fun. New features added include eight dungeons, more animated monsters and 30 new towns to explore – some of them with as many as five levels.

You can choose from 10 people to come on the quest with you – up to six at any one time – and it's also possible to have interactive conversations with more than 200 characters. The combat system has been redesigned and should give more realism to the game. With all these options this can only be another winner for Lord British.

MicroProse plans to release a new simulator called Gunship later this year to complement its already large range. And if it is up to the usual quality it will be well worth waiting for.

LIGHT GUN BLASTER

A super shoot-'em-up for the XE games system from ANDRÉ WILLEY

FOLLOWING last month's examination of the new Atari XE Games System with its accompanying light gun, here's something else for you to do with your new found toy. Shooting bugs is all very well, but it certainly doesn't help you to use the gun from within your own software, so Light Gun Blaster was written as part game and part utility.

It's fairly simple – but very playable and quite addictive. I'm not claiming it's going to be another Star Raiders but some of the routines may well be useful to you for your own games.

After keying in the program and checking it with Get It Right! run it and you'll see the main menu screen. You can use the Start, Select and Option keys to adjust the game settings for skill and speed, then simply pull the light gun trigger to commence play.

The aim of the game is very straightforward, but it takes some fast reactions to get a high score on the top level. You will see a grid of coloured squares – with more squares on the higher levels. These will change colour as the game progresses, and all you have to do is decide which colour is the most common and blast away at it. But make sure you aim well – you'll lose points for hitting the less common colours or the border.

So, how does it work? The light gun routine starts at line 100, and this returns two variables – *H* and *V* – which contain the Horizontal and Vertical position of the gun.

You might find that you need to adjust the numbers used to calculate *H* for your own TV, as different sets seem to return different values. The most likely changes will be to the number 89 on line 130 or the number 160 on line 140.

You will notice that the screen flashes white for a moment when you pull the trigger, but that's not just for effect. The light sensitive diode used inside the gun works best when the screen is fairly bright – indeed it won't work at all on a black background.

To get around this little problem all I've done is set the background colour to white and disable the the foreground display with POKE 559,0 while the coordinates are being calculated. If you look carefully you will see that Atari's Bug Hunt does something very similar.

Line 1000 is the start of a machine code routine called *BOX*. No, it isn't Nathan's portable voice operated computer from *Star Cops* – this particular BOX is a high speed plotting routine which changes the colours on the screen. Without this piece of code the program would run far too slowly to be playable.

Line 2000 sets up the screen size and block locations for each of the various levels.

Line 3000 contains a small DLI routine used to reset the GTIA graphics mode when you reach the text window. Some of you might find this useful with your own programs as it enables both Mode 0 text and GTIA graphics to exist on the same screen.

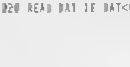
The rest of the program is mainly concerned with altering the colour of the squares and keeping track of the score, so I'll leave you to work these mundane details out for yourselves – well, I must give you something to tax your brains a bit!

● *If you write any software that uses the light gun, why not send us a copy? We'd love to see it – and who knows, you might even get it published!*

Turn to Page 20 ▶

◀ From Page 19

```
10 REM LIGHT GUN BLASTER
11 REM BY ANDRE WILLEY
12 REM (C)ATARI USER
20 DIM SCORE(3),BOX$(70)
30 GOSUB 1000
40 CURR=0 :HIGH=0 :DIFF=3:SPEED=8 :COLS=5
 :FINAL=60
50 REM RETURN TO MENU VIA HERE
60 FOR I=0 TO 6 :SCORE(I)=0:NEXT I
70 GOTO 200
100 REM TEST GUN POSN  & MAKE SOUND
101 POKE 559,0 POKE 704,15 TIME=PEEK(2
0) FOR I=1 TO 1 STEP 0 :IF PEEK(20)=TIM
E THEN NEXT I
110 POP  Y=INT((PEEK(566)-18)/93*191)
H=PEEK(565) :IF H<40 THEN H=H+227
111 IF Y>191 THEN Y=191
112 IF Y<0 THEN Y=0
150 H=H-89 :IF H  THEN H=0
160 H=INT(H/160*79) :IF H>79 THEN H=79
170 POKE 704,0 POKE 559,54
180 FOR I=10 TO 100 STEP 10
178 SOUND 0,I,4,I/100+12 SOUND 1,I,10,
10
180 NEXT I SOUND 0,0,0,0 SOUND 1,0,0,0
190 RETURN
200 REM MAIN MENU
201 GRAPHICS 0 POKE 752,1 POKE 704,255
 POSITION 11,1? "LIGHT PEN BLASTER
205 POSITION 1,4 ? #6;"  for Atar
User by Andre Willey
210 ? " " ? "  START  to fire  Level
 "DIFF
220 ? " SELECT  Number of Players
 ,COLS
230 ? " RETURN  Speed of play
 ,SPEED
240 ? " RETURN  Time Limit (secs)
 ,FINAL
245 ? " " ?  Last Score  ,CU
RR :IF CURR>HIGH THEN HIGH=CURR
250 ? "  High Score  ,HIGH
251 ? " !  (Pull trigger on Gun t
o start)
255 IF PEEK(53279)<7 THEN 255
260 KEY=PEEK(53279)
261 IF PEEK(764)=12 THEN 520
265 IF KEY=7 AND STICK(0)<15 THEN 280
270 IF KEY=6 THEN S=1 :GOSUB 4000 DIFF=
DIFF+1 :IF DIFF=6 THEN DIFF=1
280 IF KEY=5 THEN S=2 :GOSUB 4000 COLS=
COLS+1 :IF COLS=6 THEN COLS=2
290 IF KEY=3 THEN S=12 :GOSUB 4000 SPEE
D=SPEED+1 :IF SPEED=11 THEN SPEED=1
311 IF STICK(0)<15 THEN 205
311 GOTO 400
320 POKE 752,0 POKE 704,255 POSITION 0
,22 ? CHR$(156),"What is the new time
 limit ,FINAL
330 IF FINAL<10 OR FINAL>999 OR FINAL<
>INT(FINAL) THEN ? CHR$(253), GOTO 320
340 POKE 752,1 POSITION 15,22 ? CHR$(1
56):GOTO 205
400 REM INITIALISE GRAPHICS SCREEN,
    SET COLOURS AND DRAW FIRST SCREEN
410 CURR=0 :ACROSS=8:LIFE=2 :SCORE(0)=0:IN
T((DIM(Z$)/53 OK=1
420 GRAPHICS 8 SCREEN=PEEK(88)+PEEK(89
)*256 POKE 87,1 POKE 623,128 POKE 752
,1
500 RESTORE 510 FOR I=704 TO 712 READ
A POKE I,A NEXT I ? "
510 DATA 0,208,84,150,20,11,58,194,0
520 GOSUB 3000 GOSUB 2000
530 FOR J=0 TO ACROSS-2
540 FOR I=0 TO ACROSS-1
550 X=I*(W+1) Y=J*(D+8) ADDR=SCREEN+X/
2+Y*40+DEE
560 COL=INT(RND(0)*COLS+1) COLOR COL
570 A=USR(ADR(BOX$),ADDR,W,D) IF COL>0
 THEN SCORE(COL)=SCORE(COL)+1
580 NEXT I
590 NEXT J
600 POKE 20,0 POKE 19,0
610 REM MAIN PROGRAM LOOP
620 I=INT(RND(0)*ACROSS)*(W+1)
630 Y=INT(RND(0)*(ACROSS-1))*(D+8)
635 LOCATE X+1+(LIFE*2),Y+1,BYTE :IF BYT
E>0 THEN SCORE(BYTE)= SCORE(BYTE)-1
640 ADDR=SCREEN+X/2+Y*40+DEE
645 COL=INT(RND(0)*COLS+1) COLOR COL
650 A=USR(ADR(BOX$),ADDR,W,D) IF COL>0
 THEN SCORE(COL)=SCORE(COL)+1
660 FOR I=1 TO ((10-SPEED)*1) 2 STEP 10
 REM DELAY LOOP
661 TIME=INT(FINAL (PEEK(20)*PEEK(19)+
256)/50) IF TIME/10= INT(TIME/10) THEN
 OK=1
662 IF TIME/10=INT(TIME/10) AND OK=1 T
HEN CURR=CURR+SCORE(0) OK=0 REM TIME R
ELATED SCORE REDUCTION
665 IF CURR<0 THEN CURR=0
664 ? CHR$(28),  TIME LEFT  ,TIME,
  SCORE  ,CURR,
665 IF TIME<1 OR PEEK(764)=28 THEN POP
 :GOTO 50
666 IF STICK(0)=15 THEN POP  :GOTO 620
670 NEXT I
680 GOTO 620
690 GOSUB 100 LOCATE M,V,BYTE CURR=CUR
R+SCORE(BYTE) :IF BYTE=0 THEN GOSUB 500
0
700 IF BYTE=0 THEN GOSUB 6000
710 GOTO 620
1000 REM SET UP M/CODE DRAWBOX ROUTINE
1010 RESTORE 1100 BYTE=1
1020 READ DA1 :IF DA1<0 THEN RETURN
1050 BOX$(BYTE,BYTE1)=CHR$(DA1):BYTE=BY
TE+1 GOTO 1020
1100 DATA 104,201,5,240,9,168,240,5,10
4,104,156,208,251,96,104,133,205,104,1
33,206
1110 DATA 104,104,74,133,205,104,104,1
70,164,205,136,145,205,200,145,205,202
,208,224,96,-1
2000 REM SET UP SCREEN PARAMETERS
2010 RESTORE 2020+ACROSS+10
2030 READ W,D,OFF
2040 RETURN
2050 DATA 25,74,1
2060 DATA 19,47,8
2070 DATA 15,54,8
2080 DATA 11,26,2
2090 DATA 9,20,5
3000 REM SET UP OL1 FOR SPL1T SCREEN
3010 DL=PEEK(560)+PEEK(561)+256
3020 RESTORE 5100 FOR A=1776 TO 1786 R
EAD A POKE 1,A NEXT 1
3030 POKE 512,240 POKE 513,A
3040 POKE 5428,192
3050 POKE DL+146,128+15
3060 RETURN
3100 DATA 72,169,8,141,10,212,141,27,2
08,104,64
4000 REM FUNCTION KEY BEEP SOUND
4010 FOR I=15 TO 0 STEP -2 SOUND 0,I+(
S+31,10,1 NEXT I SOUND 0,0,0,0 RETURN
5000 REM EXPLODE & SOUND
5001 I=INT((H-OFF+22)/(W+1))*(W+1)
5002 Y=INT(V/(D+8)*(D+8)) LOCATE X+OFF
+2,Y,CH IF CH<>BYTE THEN GRAPHICS 0 ?
 "LIGHT GUN/TV ADJUSTMENT ERROR :END
5005 ADDR=SCREEN+X/2+Y*40+DEE
5004 FOR Z=1 TO 5 COLOR 0 A=USR(ADR(BO
X$),ADDR,W,D) COLOR 5 A=USR(ADR(BOX$),
ADDR,W,D) NEXT Z
5005 COLOR 0 A=USR(ADR(BOX$),ADDR,W,D)
 SCORE(BYTE1)=SCORE(BYTE)-1
5010 FOR I=0 TO 15 STEP 0 ? 500+I,I*
(S+53,I,15-I NEXT I SOUND 0,0,0,0 RETU
RN
6000 REM NO SCORE SOUND
6010 FOR I=1 TO 15 STEP 2 SOUND 0,240+
I,10,15-I SOUND 1,233+I,10,15-I NEXT I
6020 SOUND 0,0,0,0 SOUND 1,0,0,0 RETUR
N
```




```
 10 CP1 (Y)  1?0 91J (W)  510 LUB (D)  610 CYK (M)  1000 CXN (H)  5030 KAW (V)
 11 CI1 (O)  190 SA5 (J)  311 QL9 (S)  620 MYP (S)  1010 EY5 (Y)  5040 IAC (A)
 12 CX? (X)  200 CUT (V)  320 MJP (6)  650 5J2 (Y)  1020 SNY (E)  5050 4SA (L)
 20 MLU (M)  201 EMF (T)  330 P6N (8)  655 HML (6)  1030 SNE (D)  5060 VPM (N)
 30 ROL (H)  205 XCY (0)  340 TRN (0)  640 VMH (S)  1100 WIL (W)  5100 SUJ (R)
 40 523 (P)  210 1NP (C)  400 CUV (V)  645 QJ4 (E)  1110 XH7 (N)  4000 CYR (J)
 50 CP5 (E)  220 5A6 (C)  410 4JN (W)  650 QV6 (T)  1120 CLS (T)  4010 MYA (U)
 60 AX8 (M)  230 2HE (D)  420 PN5 (U)  660 34Y (E)  1000 CXP (Y)  5000 CXS (S)
 70 NKN (P)  240 JAL (2)  500 W?7 (S)  661 J0U (X)  2010 NAQ (L)  5001 KB1 (R)
100 CU5 (R)  245 7CC (H)  510 T5K (U)  662 S5A (F)  2050 S2A (2)  5002 T1E (E)
101 J35 (L)  250 9T2 (2)  520 95T (R)  665 H50 (1)  2040 VKL (S)  5005 V32 (6)
110 4U1 (5)  251 T54 (G)  530 E2V C?9  664 SVO (P)  2050 PLH (H)  500+ GLY (W)
111 5TG (Y)  255 LOP (V)  540 FAA (N)  665 02U (S)  2060 PW5 (J)  5005 W5U (5)
112 3P5 (1)  260 7E7 (N)  550 4NP (0)  666 7CT (P)  2070 PMG (5)  5010 ENJ (L)
130 ESO (?)  261 NNG (L?  560 863 (Y)  670 PC4 (N)  2080 PKJ (H)  6000 CXT (K)
140 5U6 (X)  265 ANX (O)  570 14E (4)  690 RN0 (2)  2090 PYH (J)  6010 EPN (J)
150 HSW (G)  270 5LS (V)  580 PG5 (8)  690 W3R (E)  5000 CX0 (W)  6020 7LR (4)
160 H8C (E)  280 9SR (R)  590 PA5 (C)  700 TN5 (1)  3010 PPX (J)
170 67K (2)  290 JVY (U)  600 6AE (W)  710 R5E (P)  3020 G45 (C)
```

Fancy a little sound advice?

LEN GOLDING journeys further into the wonderful world of Atari Basic

No game is complete without the occasional explosion, laser blast or musical theme, and even business software benefits from the odd discreet bleep or two. This month we'll show you how to produce sounds of all kinds, starting with simple musical notes, progressing through chords, phaser blasts, machine gun sounds, explosions and rounding things off with a singing joystick. The new commands we will cover are SOUND, GOTO and FOR NEXT.

First let's look at the SOUND command. It's quite a complex one, since it needs four numbers tagged on to keep the syntax correct. Here's a simple example:

```
SOUND 0,121,10,8
```

If you type this and press Return you will hear a musical note close to middle C. The sound continues, even though the READY message appears on screen. You can turn it off by typing:

```
SOUND 0,0,0,0
```

The obvious question to be asked at this point is: What do the four numbers mean? Well, the first specifies one of four different sound generators or voices; the second is pitch; the third is tonal quality and the last is the volume level.

Let's look at them in order. Unlike humans, your Atari has four separate voices, which it can use independently or all at the same time. Each voice has its own identifying number: 0, 1, 2 or 3, and in the examples above we've specified voice number 0. It's a bit confusing to think of 0, not 1, as the first number in a series, but that's the way computers like to do it.

Try changing the first number after the SOUND command to 1, 2 or 3 and see what happens. You probably won't hear any difference, because the computer is still singing middle C, and it sounds the same no matter which voice is producing it. So why bother having more than one voice? You'll see when we start generating more complex sounds such as explosions and musical chords.

The second number controls the note's pitch – the higher the number, the lower the pitch. Your Atari can produce musical notes which range from one octave below middle C to two octaves above it. Here's a short utility program using some of the things we learned last month:

```
10 PRINT "GIVE ME A NUMBER FROM 0 TO
255"
20 INPUT P
30 SOUND 0,P,10,8
40 GOTO 10
```

When you Run this program, line 10 prints the message asking for a number from 0 to 255. Type the number, then press Return. Your computer takes the number you've typed and calls it P. Then it moves on to line 30, where it sees that P is the pitch value, so it inserts your number just as though you'd typed it directly into the program line.

Line 40 contains a new command – GOTO – which works exactly as you might expect, sending the computer back to line 10 so that the whole process is repeated. This kind of circular movement is called a *loop*, and we'll be saying a lot more about loops of various kinds throughout the series.

The third number after a SOUND command regulates the sound's tonal quality, and it can be any even number from 0 to 14. Numbers 10 and 14 will give you pure musical tones, while 0, 2, 4, 6, 8 and 12 produce pulsing

Turn to Page 22 ▶

◀ From Page 21

hissing or crashing noises which can be used for special effects. Odd numbers will either turn the sound off or produce an annoying little click, so avoid them if you can.

The fourth and final number controls volume and can be any number from 0 to 15. The higher the number, the louder the sound – 15 is about twice as loud as 8 and 0 turns it off completely.

That's voice, pitch, tone and volume dealt with, but there's one more factor that we need to control – duration. In some versions of Basic the SOUND command has a fifth number which controls how long the sound stays on, but unfortunately that's not the case with standard Atari Basic. Once our sound is switched on it will stay that way until you switch it off or until the program comes to an end.

Incidentally, that's why we didn't use a line number in our first example. If we had done so the line would have become a program, instead of a throw-away command, and the computer would have switched off the sound before you could recognise it as a musical note. Try it and see.

To control a sound's duration, we need a separate command to handle the timing. The most common method is to use one or more FOR...NEXT loops. These are quite tricky to understand, but they crop up in all kinds of situations, so it's worth the effort to master them. Here's a simple example:

```
10 FOR W=1 TO 500
20 NEXT W
```

In ordinary English, these two lines mean something like this: Take a variable called *W* and set its value to 1. Now increase its value by one, and continue doing this until the value reaches 500.

Because the computer can process only one Basic instruction at a time, a FOR...NEXT command like this will hold its full attention until the loop has counted itself out. The result, from a user's standpoint, looks like a pause with nothing much happening. Here's an example:

```
10 INPUT P
20 SOUND 0,P,10,8
30 FOR W=1 TO 200
40 NEXT W
```

You will find that lines 30 and 40 hold the sound on for about half a second, giving the effect of a short bleep, before the computer turns it off and the program ends. To get a longer bleep, change the 200 to a larger number, for a shorter bleep make it smaller.

FOR...NEXT loops can do other things with sound, as well as defining its duration. For example:

```
10 FOR P=0 TO 255
20 SOUND 0,P,10,8
30 NEXT P
```

This gives you a tone which falls in pitch from high to low. Can you see how it works? The loop is executed 255 times, with the value of *P* increasing by one each time. Since *P* controls the sound's pitch – the higher its value the lower the pitch – you get a rapidly falling note. You can do the same thing with volume:

```
10 FOR V=0 TO 15
20 SOUND 0,121,10,V
30 NEXT V
```

Here you get a tone which starts quietly, but gets rapidly louder as the value of **V** increases. FOR...NEXT loops need not always count upwards in increments of one. There is a related command – STEP – which gives you a great deal more flexibility. For example:

```
10 FOR P=0 TO 250 STEP 10
20 SOUND, 0,P,10,8
30 NEXT P
```

This program counts to 250 in tens, so instead of a smoothly falling pitch you get a more jerky series of separate notes. However, because each note lasts only a fraction of a second, you don't hear them as separate tones. Instead, the result sounds like some kind of futuristic hand-weapon – let's call it a phaser. You can even use the STEP command to count backwards:

```
10 FOR P=255 TO 0 STEP -1
20 SOUND 0,P,10,8
30 NEXT P
```

In this case the count starts at 255 and reduces by one every time the loop is executed, until it reaches zero. The result is a smoothly rising pitch. Try changing line 10 to:

```
10 FOR P=250 TO 0 STEP -10
```

What would you expect to happen? Atari Basic allows you to put one FOR...NEXT loop inside another. This is called *nesting*, and lets you produce all kinds of special effects. Here's a

Turn to Page 24 ▶

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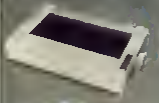


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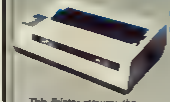


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◀ From Page 22

simple example, based on the *phaser* program

```
10 FOR P=0 TO 250 STEP 10
20 SOUND 0,P,10,0
30 FOR W=1 TO 50
40 NEXT W
50 NEXT P
```

This time, instead of the phaser sound, you get a series of musical notes. Lines 30 and 40 hold the sound at each step long enough for you to hear it as a separate musical tone.

The important thing to remember about nested FOR NEXT loops is that they have to be *un nested* in reverse order – the one which starts first must be terminated last, and so on. In the previous program we introduced the loop containing *P* before the one containing *W*, so to make them unwind correctly we have to insert NEXT W before NEXT P (lines 40 and 50).

Well, that's the difficult bit over for this month – now let's have a bit of fun. Program I shows how you can use all four voices at once, each producing a different note, to make a musical chord.

Programs II and III produce sounds for zapping aliens: while the automatic rifle of Program IV would suit shoot-em-ups of a more terrestrial kind and Program V is an explosion. You could use it for hand-grenades or set it at the end of a falling pitch sound to represent a bomb dropped from an aircraft.

If you're into detective adventure games or police style chases, the sounds in programs VI and VII could add an extra dimension of reality. Program VI is a ringing telephone, while Program VII produces the two-tone siren familiar to British ears.

In all these examples, look at how the FOR..NEXT loops are used to vary pitch and volume, or just to hold the sound on for a predetermined time and experiment to see if you can improve the effects.

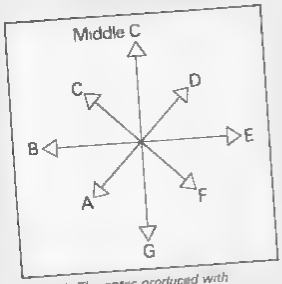


Figure I. The notes produced with the joystick in various positions

Program VIII is a musical joystick and uses some commands which we'll be covering in detail later in the series. Line 20 reads the value returned by your joystick, which must be plugged into port one. Line 30 switches everything off if the stick is centralised. Lines 40 to 110 determine the pitch value, depending on the stick's position, and line 120 generates the sound. The GOTO command at line 130 starts the whole process off again.

The net result is a joystick which can play the scale of C – the positions for each note are shown in Figure I. It won't take the Albert Hall by storm, but you can use it for nursery rhymes, childrens' hymns and other simple tunes.

We'll be returning to sound generation at a more advanced level later, but next month it's time to introduce graphics, and show how you can produce simple movement effects on screen.

```
10 REM Four-note musical chord
20 SOUND 0,121,10,0
30 SOUND 1,96,10,0
40 SOUND 2,81,10,0
50 SOUND 3,60,10,0
60 GOTO 60
```

Program I. Simple musical chord

```
10 REM Phaser
20 FOR A=10 TO 0 STEP -1
30 FOR B=0 TO 100 STEP 10
40 SOUND 0,B,10,A
50 NEXT B
60 NEXT A
```

Program II. Space age gun

```
10 REM Alternative phaser
20 FOR A=12 TO 0 STEP -1
30 FOR B=50 TO 150 STEP 10
40 SOUND 0,B,10,A
50 NEXT B
60 NEXT A
```

Program III. Alternative phaser

```
10 REM Machine gun
20 FOR REPEAT=1 TO 15
30 FOR V=14 TO 0 STEP -2
40 SOUND 0,4,0,V
50 SOUND 1,100,0,V
60 NEXT V
70 NEXT REPEAT
```

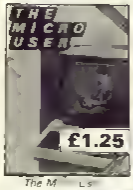
Program IV. Machine gun

```
10 REM Explosion
20 FOR V=14 TO 4 STEP -1
30 FOR W=1 TO 100
40 NEXT W
50 SOUND 0,200,8,V
60 SOUND 1,100,8,V
70 SOUND 2,255,0,V
80 NEXT V
90 FOR V=4 TO 0 STEP -1
100 FOR W=1 TO 200
110 NEXT W
120 SOUND 0,300,4,V
130 SOUND 1,100,4,V
140 SOUND 2,255,4,V
150 NEXT V
```

Program V. Explosion

Turn to Page 26 ▶

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4 From Page 24



```
10 REM Modern ringing telephone
20 FOR REPEAT=1 TO 6
30 FOR RING=1 TO 2
40 FOR SLEEP=1 TO 10
50 SOUND 0,50,14,8
60 FOR W=1 TO 10
70 NEXT W
80 SOUND 0,0,0,0
90 NEXT SLEEP
100 FOR W=1 TO 90
110 NEXT W
120 NEXT RING
130 SOUND 0,0,0,0
140 FOR W=1 TO 400
150 NEXT W
160 NEXT REPEAT
```

Program VI Ringing telephone

```
10 REM British siren
20 FOR REPEAT=1 TO 6
30 SOUND 0,60,10,8
40 FOR W=1 TO 200
50 NEXT W
60 SOUND 0,72,10,8
70 FOR W=1 TO 200
80 NEXT W
90 NEXT REPEAT
```

Program VII British siren



```
10 REM Musical joystick
20 S=STICK(0)
30 IF S=15 THEN SOUND 0,0,0,0:GOTO 20
40 IF S=14 THEN P=121
50 IF S=6 THEN P=108
60 IF S=7 THEN P=96
70 IF S=5 THEN P=91
80 IF S=13 THEN P=81
90 IF S=9 THEN P=72
100 IF S=11 THEN P=64
110 IF S=10 THEN P=60
120 SOUND 0,P,10,8
130 GOTO 20
```

Program VIII Musical joystick

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Those special characters

WE often have enquiries about how to produce the 'special' characters which sometimes appear in our listings. It's because of this uncertainty that we prefer authors not to use such characters.

However, we recognise that sometimes it's the simplest way and occasionally it's the only way of doing something. For this reason we're repeating the two tables below. These show how to produce the special characters from the keyboard and were first printed in the December 1985 issue of *Atari User*.

We've drawn a box around the characters so that you can see their position more clearly. These boxes won't appear either on screen or in the listings we print.

The Control and Shift keys are used by holding them down while you press another key. For example, if you read CTRL A, you hold down the CTRL(CONTROL on XL machines) key and press A.

The ESC key is like a normal key, simply press it. For example, if you read ESC DELETE, you press and release the ESC key and then press and release the DELETE key.

The Reverse Video Mode key has been abbreviated to REV. On early machines this key bore the Atari logo while on XL machines it has a design on it. If this key is pressed and released once, all subsequent input will appear in reverse (or inverse) on the screen. You turn Reverse Video Mode off by pressing the key again.

For example, if you read REV CTRL P the sequence of operations would be:

1. *Press and release the REV key to turn on Reverse Video Mode*
2. *Hold down the CTRL key and press and release the P key*
3. *Release the CTRL key*
4. *Press and release the REV key to turn off Reverse Video Mode*

It's easy to make mistakes with the special characters, which is why we prefer not to use them. If you do use them, take extra care.

NORMAL VIDEO

FOR THIS	TYPE THIS
♥	CTRL ,
♦	CTRL 0
♣	CTRL A
♠	CTRL B
•	CTRL C
▒	CTRL D
▒	CTRL E
▒	CTRL F
▒	CTRL G
▒	CTRL H
▒	CTRL I
▒	CTRL J
▒	CTRL K
▒	CTRL L
▒	CTRL M
▒	CTRL N
▒	CTRL O
▒	CTRL P
▒	CTRL Q
▒	CTRL R

FOR THIS	TYPE THIS
▒	CTRL S
▒	CTRL T
▒	CTRL U
▒	CTRL V
▒	CTRL W
▒	CTRL X
▒	CTRL Y
▒	CTRL Z
▒	ESC ESC
▒	ESC CTRL -
▒	ESC CTRL =
▒	ESC CTRL +
▒	ESC CTRL *
▒	CTRL .
▒	CTRL ;
|	SHIFT =
▒	ESC SHIFT CLEAR
▒	ESC DELETE
▒	ESC TAB

REVERSE VIDEO

FOR THIS	TYPE THIS
▒	REV CTRL ,
▒	REV CTRL 0
▒	REV CTRL A
▒	REV CTRL B
▒	REV CTRL C
▒	REV CTRL D
▒	REV CTRL E
▒	REV CTRL F
▒	REV CTRL G
▒	REV CTRL H
▒	REV CTRL I
▒	REV CTRL J
▒	REV CTRL K
▒	REV CTRL L
▒	REV CTRL M
▒	REV CTRL N
▒	REV CTRL O
▒	REV CTRL P
▒	REV CTRL Q
▒	REV CTRL R

FOR THIS	TYPE THIS
▒	REV CTRL S
▒	REV CTRL T
▒	REV CTRL U
▒	REV CTRL V
▒	REV CTRL W
▒	REV CTRL X
▒	REV CTRL Y
▒	REV CTRL Z
▒	ESC SHIFT DELETE
▒	ESC SHIFT INSERT
▒	ESC CTRL TAB
▒	ESC SHIFT TAB
▒	REV CTRL .
▒	REV CTRL ;
▒	REV SHIFT =
▒	ESC CTRL 2
▒	ESC CTRL DELETE
▒	ESC CTRL INSERT

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ABOUT YOU

How old are you?

Under 11	☐	23 30	☐
11 15	☐	31 39	☐
16 18	☐	40 50	☐
19 22	☐	Over 51	☐

Sex? M / F Occupation?_____

What area of computers or computing interest you?

	Very much	A little	Not at all
Business	☐	☐	☐
Arcade Games	☐	☐	☐
Adventures	☐	☐	☐
Comms	☐	☐	☐
Programming	☐	☐	☐
Hardware	☐	☐	☐
Future Tech	☐	☐	☐
Learning about Programming	☐	☐	☐
Hardware	☐	☐	☐

How do you rate your knowledge of

	None	Poor	Average	Good	Excellent
Basic programming	☐	☐	☐	☐	☐
Machine code	☐	☐	☐	☐	☐
Hardware	☐	☐	☐	☐	☐

ABOUT YOUR MICRO

What m ero(s) do you own or use?

☐ 400 ☐ 800
☐ 600XL ☐ 800XL
☐ 130XE ☐ 65XE

How long have you had your Atari?

☐ Under 1 year ☐ 1 2 years
☐ 2 3 years ☐ 3+ years

Do you have any other computer? Yes/No

Which one(s)?_____

Are you thinking of buying another computer? Yes/No

Which one?_____

What other hardware do you have?

☐ Monitor ☐ Colour ☐ Monochrome
☐ Disc drive ☐ 1050 ☐ XF-551 ☐ 810
☐ Printer
☐ Modem

Please list any others _____

What type of hardware would you like next for your micro?_____

Please indicate which of the following types of software you have

☐ Word processor ☐ Spreadsheet
☐ Database ☐ Other languages
☐ Assembler ☐ Basic utilities
☐ Disc utilities

What type of software are you most likely to buy next for your micro?_____

What do you use your Atari micro for (fill in your own ideas in the spaces at the end of the list)?

	Only	Mostly	Some	Not much	Never
Arcade games	☐	☐	☐	☐	☐
Adventure games	☐	☐	☐	☐	☐
Programming	☐	☐	☐	☐	☐
Business	☐	☐	☐	☐	☐
Own letters	☐	☐	☐	☐	☐
Home accounts	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

What software do you use most frequently?_____

Is there any software (apart from games) you've bought that you never use?_____

THE MAGAZINE

How long have you been reading *Atari User*?

☐ 0 3 months ☐ 4-6 months ☐ 7 12 months
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☐ Computer dealer ☐ A friend

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What other computer magazines do you regularly buy?_____

What do you like most about *Atari User*?_____

What do you like least about *Atari User*?_____

Which program listings do you type in?

	Usually	Sometimes	Never
Games	☐	☐	☐
Utilities	☐	☐	☐
Tutorials	☐	☐	☐
Educational	☐	☐	☐

What is the maximum length of listing you would want to type in?

☐ Half page ☐ 1 page ☐ 2 pages
☐ 3 pages ☐ 4 pages ☐ 5 pages

Please circle the number which matches your level of interest in the following subjects (0 lowest — 9 highest)..

News	0	1	2	3	4	5	6	7	8	9
Software reviews	0	1	2	3	4	5	6	7	8	9
Hardware reviews	0	1	2	3	4	5	6	7	8	9
Gadgets	0	1	2	3	4	5	6	7	8	9
Communications	0	1	2	3	4	5	6	7	8	9
Software solutions	0	1	2	3	4	5	6	7	8	9
Five liners	0	1	2	3	4	5	6	7	8	9
Rouloc	0	1	2	3	4	5	6	7	8	9
Hints and Tips	0	1	2	3	4	5	6	7	8	9
Mailbag	0	1	2	3	4	5	6	7	8	9
Education	0	1	2	3	4	5	6	7	8	9
Business	0	1	2	3	4	5	6	7	8	9
Spreadsheets	0	1	2	3	4	5	6	7	8	9
Games programs	0	1	2	3	4	5	6	7	8	9
Utilities programs	0	1	2	3	4	5	6	7	8	9
Easy programming	0	1	2	3	4	5	6	7	8	9
Maps	0	1	2	3	4	5	6	7	8	9

Indicate any articles or series you would like to see in future editions of *Atari User* _____

Any other comments you would like to make about *Atari User* _____

THE SHOWS

Did you attend any Atari shows in 1987? Yes No

If you attended any which?_____

Please circle the number that matches what would attract you to come to a show in 1988 (0 least – 5 most)?

New products	0	1	2	3	4	5
Bargain offers	0	1	2	3	4	5
Technical advice	0	1	2	3	4	5
Hands on testing	0	1	2	3	4	5
Show themes/theatre	0	1	2	3	4	5

Anything else not mentioned here?_____

Thank you for filling in this survey. Now send it to **Reader Survey, Atari User, Europa House, Adlington Park, Macclesfield SK10 5NP**

5 LINERS

LOGIC PUZZLE
from Robin Edwards

THIS short program is designed to confuse and befuddle you. When it is first run you are prompted to enter a difficulty level from 1 to 50 – 1 being easy and 50 very hard. Enter your choice and then press Return.

After this the screen will clear and a 10x10 box of hearts will appear with various sections inverted. Your task is to return the whole box to the normal – not inverse – state.

You use the joystick to move the cursor around the grid and when the fire button is pressed the square that the cursor is above and the eight adjacent squares will be flipped over. It is a little tricky to get the grid back to normal – but persevere as it's fun trying.

```
10 ? "SKILL LEVEL(1-50)";:INPUT S:PO
KE 85,0 GRAPHICS 0:POKE 752,1:POSITION
 14,4:? "LOGIC PUZZLE" POSITION 0,8
20 FOR T=0 TO 5:? "♥♥♥♥♥♥♥♥♥♥" NEXT T
FOR I=0 TO 3*40:X=.RND(0)*9:Y=.RND(0)*9
+5:POKE 88+ADR( NEXT Z X=.:Y=.:ST=.I
30 LOCATE X,Y,C:POSITION X,Y:? "■" FOR
 T=0 TO 40 NEXT T:POSITION X,Y:? CHR$(
C):S=STICK(0):IF ST=0 THEN SOUND 50
40 X=X+(S=7 AND X<9)-(S=11 AND X>1):Y=
Y+(S=13 AND Y<9)-(S=14 AND Y>1):ST=STR
IG(0):SOUND 50
50 FOR T=.*5 TO 8*5:POKE 0,T:Y I FO Y=1
OCATE T,0,C POSITION T,0:? CHR$( NOT I
(C=128) NEXT 0 NEXT T RETURN
```




```
10 KBS (6)
20 SSB (7)
30 KBN (6)
40 KFR (H)
50 HBS (R)
```

DESCENT
from Andy McAtear

HERE'S a game where you take the role of a chopper pilot who has to fly as far as he can into a mysterious cave. Movement is controlled by a joystick plugged into port one – but you can only move from left to right.

If you press the fire button you will cause the helicopter to descend at a faster speed – but be careful as this is very dangerous. As you get deeper your score increases and is displayed at the end of the game. You only have one life so take care not to crash.

PROGRAM BREAKDOWN

1 Sets up the screen and positions the chopper and the cave. Sets the score to zero and prints the start of the cave. It also sets a TRAP which is needed later.

2 Prints the path of the cave and generates a noise if the fire button is pressed. Also gets the STICK value.

3 Determines the direction of the cave.

4 Sets the speed of the chopper by poking location 622 with a value obtained from the fire button which, when multiplied by 255, gives either 0 for fast scroll or 255 for slow. It also checks the chopper location to see if it has crashed and, if not finds the new location, prints it and branches back to line 2.

5 End of game. The sound channel is set to zero and the score is displayed. Waits for Return to be pressed to start the game again.

VARIABLES

- **S** Score
- **C** Chopper position
- **P** Path of cave
- **T** Random path of cave
- **V** Value obtained from joystick
- **G,H** Values obtained from the LOCATE command
- **D$** Dummy string to force error to enable TRAP statement to be executed
- **N** Value obtained from fire button

```
1 TRAP 1:GRAPHICS 0 POKE 752,1:POKE 75
0,4:S=0 C=47:P=15:POSITION 0,22:? "■■■
■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■
```

IF you've written any useful or interesting five line programs why not send them to us to grace our pages?

We pay £25 for each one published

You should give a full description of the routine and any other details that are relevent. And remember if you want your material returning please enclose a suitably stamped package

Win £25

Simply send a copy of the program on disc or tape together with the documentation – preferably as a word processed file – to:

Atari User, Europa House, Adlington Park, Adlington, Macclesfield SK10 5NP

MASTERMIND
from Paul Soamas

THIS program is a version of the classic board game, but instead of using coloured pegs it uses numbers from 0 to 9

The computer will pick five random numbers for a secret code and give you 10 attempts to guess it Enter numbers at the asterisk by just pressing the appropriate key When you have entered the numbers for one guess, the computer will show you which if any, of your numbers are in the correct positions

It does this by showing a line of five pegs on the right of your guess A filled in one means a correct number in that position and unfilled means an incorrect number If you guess the code in the set number of goes, it will be shown for your confirmation If not it is shown with a rasp and, either way, the program will automatically run again

As the program stands it should always be possible, with logical thinking to guess the code in the 10 guesses allowed The permitted number of guesses can be changed by altering the variable *T* in line 20, to any number you want

PROGRAM BREAKDOWN

10 Dimensions variables, picks the secret code and opens the key board for the GET command The first quotes contain a clear screen character

20 Sets the number of tries allowed, gets the five digits of your guess and increments the number of tries counter

30 Uses a Boolean statement to set the elements of *A$* to equal an o for an incorrect answer and a Control+T for a correct one

40 Prints the number of tries so far, checks to see if you have every digit correct or if you have no more tries left If the guess is incorrect it goes back to line 20 for another try

50 Uses a Boolean statement to either play some notes for a correct answer or play a rasp It waits a while before running the program again

```
10 ? "▮": POKE 710,0:DIM A$(6),G(5),B$(5
),FOR F=1 TO 5:B$(F)=" ":NEXT F:OPEN #1,4
,0,"K:"
20 T=10:POKE 752,1:G=G+1:FOR F=1 TO 5:
POSITION F+24,6+2*T :? #6;CHR$(PEEK(764)
+64);:GET #1,A:? #
30 FOR F=1 TO 5:A=A-(A(F)=G(F))*32+(A=T)
:G(F)=VAL(CHR$(F+48)):NEXT F:POSITION 33,
6+2*T :? A$:
40 POSITION 8,21:? "TRIES ";G:FOR I =1
:A$(I)="00000" AND G<T GOTO 20:FOR F
=1 TO 5:POSITION F+24,7:? CHR$(176+G(
F));
50 SOUND 0,255-(G$="00000")*40+F*2,14,
8,0:FOR F=1 TO 1000 NEXT F:SOUND 0,
```




```
10 V7R (X)
20 99K (T)
30 5HJ (O)
40 RWF (B)
50 QVH (G)
```

ALARM
from Granville Danby

HOW many times have you been programming and your mother or wife has told you that your dinner will be ready in half an hour? But you just keep typing away and end up getting a telling off

Well, now you have a solution to that problem with this simple program When you first run it you must enter the number of minutes before you want the alarm to go off

The program works in the vertical blank period, so once it is installed you can be performing other functions such as entering a Basic program or playing certain games – providing they are written in Basic and don't use the VBI It works by converting the minutes into *Jiffies* – the time units for the internal clock

A small piece of machine code is then initialised to set up a vertical blank interrupt The alarm is then activated and the only way to turn it off is to press Reset or switch the computer off

Because the program uses the internal clock and page 6, any program that also uses these cannot be run while the alarm is working It is accurate to within five seconds whether you set it to one minute or one hour

PROGRAM BREAKDOWN

10 Gets the time in minutes and converts it into Jiffies

20 Reads and pokes in the machine code data

30 Resets the clock and pokes in the VBI location

40 – 50 Data statements for the machine code

```
10 INPUT T$:T=VAL(T$)*3600:A=INT(T/32768
):B=T-A*32768:IF B<0 THEN B=B+32768:A=A+1
20 FOR X=0 TO 33:READ Y:POKE 1536+X,Y
:NEXT X:POKE 1553,A:POKE 1552,B
30 POKE 18,0:POKE 17,0:POKE 20,0:POKE
1566,PEEK(560A):POKE 1565,PEEK(560B)
:A=USR(1536)
40 DATA 104,120,169,16,141,14,2,169,0,
141,15,2,88,96,165,18,201,9,208,17,169
,7,201,0 209,11,233,16,20
0 DATA 208,158,17,201,0,208 240,0R,7B
,216,17Z
```




```
10 37H (K)
20 6FY (A)
30 2V0 (K)
40 Y1W (O)
50 CFH (L)
```



BREAKIN

by STEPHEN WILLIAMSON

IF you are a compulsive games player you will probably remember a game called Breakout. It was probably one of the simplest games ever written – but very addictive. So, to bring back old memories, here is our version of that old classic – Breakin.

The game controls are shown in Table I, and the idea is to keep a ball in play using a bat that moves across the bottom of the screen. At the top are high-scoring moving targets protected by a wall and to reach them you must make a hole by bouncing the ball against the wall to knock out the bricks. Points are awarded as shown in Table II.

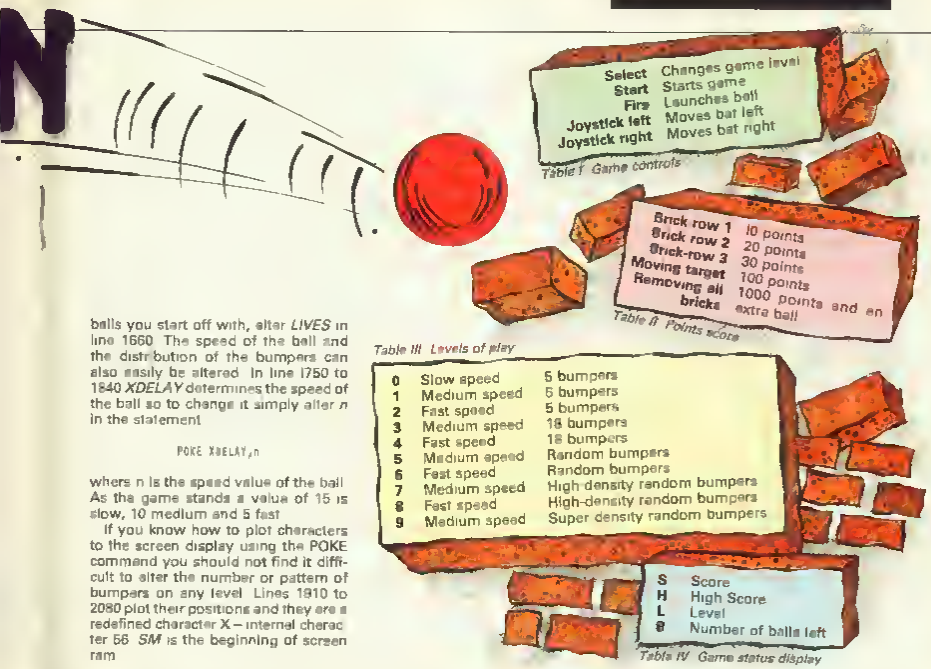
This may sound simple, but in the land of arcade games nothing is ever that easy. So to make things more difficult, pin-table type bumpers appear on the play area to deflect the ball. You need quick reactions and lots of concentration to predict where to place the bat to send the ball up the field of play again.

You start with five balls and one is lost if it travels past the bat. The game ends when all your balls have been used. There are 10 levels of play – shown in Table III – and these determine the speed of the ball and the number and way in which the bumpers are placed. The current level, together with the other information shown in Table IV, is displayed at the top of the screen.

Breakin is written mainly in Basic but plays at high speed due to the use of two short machine code routines that handle all the movement of the bat, the ball and the targets – lines 720 to 830 and 950 to 1050.

If you want to change the number of

```
10 REM BREAKIN
20 REM BY STEPHEN WILLIAMSON
25 REM (C)ATARI USER
30 GRAPHICS 17 GOSUB 1360
40 SM=PEEK(88)+256*PEEK(89)
50 POKE 705,40 POKE 706,50 POKE 710,20
6 MORE 711,96
60 POSITION 0,0 ? #6;"breakin .please
wait"
70 REM DRAW INITIAL BUMPERS
80 POKE SM+248+10,56 POKE SM+288+9,56
POKE SM+248+11,56 POKE SM+328+10,56
90 FOR I=20 TO 39 POKE SM+I,56 NEXT I
100 FOR I=440 TO 479 POKE SM+I,63 NEXT
 I
110 GOSUB 1570
120 REM DRAW SIDES
130 FOR I=SM+20 TO SM+479 STEP 20 POKE
 I,56 POKE I+19,56 NEXT I
140 REM SET UP PM GRAPHICS AND INITIAL
ISE VARIABLES
150 POKE 559,62 PMB=144 POKE 54279,PMB
 PMBASE=PMB*256
160 POKE 704,14 POKE 53256,1 POKE 5327
7,3 POKE 705,150
170 SCORE=0 BCOUNT=0 HOFF=1782 POKE HO
FF,0 HIGH=0
180 DIRECT=1780 BALLV=1788 BALLN=1787
XDELAY=1786 YDELAY 1782
190 POKE BALLV,200 POKE BALLH,124 POKE
 1790,120 POKE YDELAY,200
200 POKE DIRECT,3 BATH=1790
210 BALLON=0
220 BAT=PMBASE+1024 BALL=PMBASE+1280
230 FIELDCOLL=53253 PLAYCOLL=53261
240 FOR I=0 TO 255 POKE BAT+I,0 POKE B
ALL+I,0 POKE PMBASE+1536+I,0
250 POKE PMBASE+1792+1,0 NEXT I
260 POKE BAT+208,129
270 POKE BAT+210,255 POKE BAT+211,126
POKE BAT+212,60
280 POKE BAT+213,60
290 RESTORE 300 FOR I=0 TO 11 READ A P
OKE PMBASE+1,A NEXT I
300 DATA 0,0,0,0,56,56,56,0,0,0,0,0
310 FOR I=0 TO 9 POKE PMBASE+11+I,24 P
OKE PMBASE+21+I,60
320 POKE PMBASE+31+I,126 POKE PMBASE+4
1+I,255 NEXT I
330 GOSUB 960 GOSUB 730 LEVEL=1 LIVES=
5
340 GOSUB 1450
350 REM MAIN LOOP
360 POKE 53278,0 SOUND 0,0,0,0 SOUND 1
,0,0,0 POKE HOFF,0
370 IF BALLON=0 THEN GOSUB 850
380 A=USR(1536) POKE HOFF,1 POKE 77,0
390 GOSUB 410 GOTO 360
400 REM COLLISION DETECTION
410 SOUND 0,PEEK(BALLV),10,14
420 PLAY=PEEK(PLAYCOLL):FIELD=PEEK(FIE
LDCOLL) B=PEEK(BDIRECT):BH=PEEK(BALLH)
430 IF FIELD=1 AND PEEK(BALLV)<43 THEN
 POKE DIRECT,INT(RND(1)*3)+4 RETURN
440 IF FIELD=1 AND B=2 THEN POKE DIREC
T,3 POKE 53249,BH+3 POKE BALLH,BH+3 RE
TURN
450 IF FIELD=1 AND B=3 THEN POKE DIREC
T,2 POKE 53249,BH-3 POKE BALLH,BH-3 RE
TURN
460 IF FIELD=1 AND PEEK(BALLV)>204 THE
N BALLON=0 POKE 53249,0 RETURN
470 IF FIELD=8 THEN GOSUB 1070 RETURN
480 IF FIELD=4 THEN GOSUB 1260 RETURN
490 IF FIELD=2 THEN GOSUB 1320 RETURN
500 IF FIELD=1 AND B=1 AND BH>52 AND B
H<196 THEN POKE DIRECT,INT(RND(1)*2)+2
 RETURN
510 IF FIELD=1 AND B=4 AND BH>52 AND B
H<196 THEN POKE DIRECT,INT(RND(1)*2)+5
 RETURN
520 IF FIELD=1 AND B=4 AND BH<53 THEN
 POKE DIRECT,6 POKE BALLH,BH+3 POKE 532
49,BH+3 RETURN
530 IF FIELD=1 AND B=4 AND BH>197 THEN
 POKE DIRECT,5 POKE BALLH,BH-3 POKE 53
249,BH-3 RETURN
540 IF FIELD=1 AND B=5 THEN POKE DIREC
T,6 POKE 53249,BH+3 POKE BALLH,BH+3 RE
TURN
550 IF FIELD=1 AND PEEK(DIRECT)=6 THEN
 POKE DIRECT,5 POKE 53249,BH-3 POKE BA
LLH,BH-3 RETURN
560 IF PLAY<>0 THEN GOSUB 600
570 RETURN
580 REM COLLISION WITH BAT
590 IF PLAY<>1 THEN 680
600 IF PLAY<>1 THEN 680
610 P=PEEK(BALLN)-PEEK(BATH)
```



Select	Changes game level
Start	Starts game
Fire	Launches ball
Joystick left	Moves bat left
Joystick right	Moves bat right

Table I Game controls

Brick row 1	10 points
Brick row 2	20 points
Brick row 3	30 points
Moving target	100 points
Removing all bricks	1000 points and an extra ball

Table II Points score

balls you start off with, alter *LIVES* in line 1660. The speed of the ball and the distribution of the bumpers can also easily be altered. In line 1750 to 1840 *XDELAY* determines the speed of the ball so to change it simply alter *n* in the statement

```
POKE XDELAY,n
```

where n is the speed value of the ball. As the game stands a value of 15 is slow, 10 medium and 5 fast.

If you know how to plot characters to the screen display using the POKE command you should not find it difficult to alter the number or pattern of bumpers on any level. Lines 1910 to 2080 plot their positions and they are a redefined character X – internal character 56. *SM* is the beginning of screen ram.

Table III Levels of play

0	Slow speed	5 bumpers
1	Medium speed	5 bumpers
2	Fast speed	5 bumpers
3	Medium speed	18 bumpers
4	Fast speed	18 bumpers
5	Medium speed	Random bumpers
6	Fast speed	Random bumpers
7	Medium speed	High-density random bumpers
8	Fast speed	High-density random bumpers
9	Medium speed	Super density random bumpers

S	Score
H	High Score
L	Level
B	Number of balls left

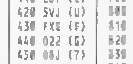
Table IV Game status display

```
620 IF PEEK(BALLV)>206 THEN RETURN
630 POKE DIRECT,1
640 IF P<3 THEN POKE DIRECT,2
650 IF P>5 THEN POKE DIRECT,3
660 RETURN
670 REM HIT TARGET
680 SCORE=SCORE+100
690 GOSUB 1130
700 POKE 705,0 FOR I=0 TO 20 SOUND 0,7
2,10,10 SOUND 2,91,10,10 NEXT I:SOUND
2,0,0,0 POKE 705,155
710 RETURN
720 REM TARGET/BAT VBI ROUTINE
730 RESTORE 750 FOR I=0 TO 168 READ A
POKE 35000+I,A NEXT I
740 A=USR(35000) RETURN
750 DATA 104,169,6,160,195,162,136,32,
92,228,96,236,247,8,173,247,6,201,8,20
8
760 DATA 5,169,1,141,247,6,201,1,208,2
,162,11,201,2,208,2,162,21,201,3
770 DATA 208,2,162,31,201,4,208,2,162,
41,201,5,201,2,162,31,201,6,208,2
780 DATA 162,21,201,7,208,2,162,11,169
,0,169,0,144,153,50,150,153,68,151,232
790 DATA 208,192,10,208,241,238,249,6,
173,249,6,141,2,208,206,248,6,175,248,
6
800 DATA 141,3,208,238,194,2,238,195,2
,173,120,2,173,248,6,201,1,240,3,76
810 DATA 95,228,173,120,2,201,11,208,3
,206,254,6,201,7,208,5,238,254,6,173
820 DATA 254,6,201,56,208,5,169,57,141
,254,6,201,184,208,5,169,183,141,254,6
830 DATA 173,254,6,141,0,208,76,95,228
840 REM LAUNCH BALL
850 L=PEEK(BALLV) FOR I=L TO L+11 POKE
 BALL+1,0 NEXT I
860 POKE MOFF,1
870 IF SFLAG=0 THEN LIVES=LIVES-1:GOSU
B 2100
880 IF LIVES=0 THEN GOSUB 2010 GOSUB 1
650 GOTO 360
890 SFLAG=0
900 IF STRIG(0)=1 THEN 900
910 POKE BALLH,PEEK(MATH)+4 POKE BALLV
,196 POKE 53248,PEEK(MATH)+4
920 POKE DIRECT,INT(RND(0)*3)+1
930 BALLON=1 POKE MOFF,0
940 RETURN
950 REM BALL/BAT MC ANIMATION ROUTINE
960 RESTORE 980 FOR I=0 TO 159 READ A
POKE 1536+I,A NEXT I
970 RETURN
980 DATA 104,169,0,141,30,208,173,120,
2,201,11,208,3,206,254,6,201,7,208,5,2
36,254,6,173,254
990 DATA 6,201,56,208,5,169,57,141,254
,6,201,184,208,5,169,183,141,254,6,173
1000 DATA 254,6,141,0,208,173,253,6,20
1,1,208,3,206,252,6,201,2,208,6,206
1010 DATA 252,6,206,251,6,201,3,208,6,
206,252,6,236,251,6,201,4,208,3,230
1020 DATA 252,6,201,5,208,6,236,252,6,
206,251,6,201,6,208,6,236,252,6,230
1030 DATA 251,6,174,252,6,160,0,185,0,
144,157,0,149,232,208,192,11,208,244,1
73
1040 DATA 251,5,141,1,209,172,246,6,17
4,250,6,202,208,253,136,208,247,173,5,
208
1050 DATA 201,0,208,10,175,15,208,201,
0,208,3,76,1,6,96
1060 REM BRICKHIT ROW1
1070 W=INT((PEEK(BALLH)-55)/7-8)
1080 F=PEEK(SM+141+W) E1=PEEK(SM+142+W
)
1090 IF F=0 AND E1=250 THEN POKE SM+14
2+W,0 SCORE=SCORE+10 BCOUNT=BCOUNT+1
1100 IF F=250 THEN POKE SM+141+W,0 SCO
RE=SCORE+10 BCOUNT=BCOUNT+1
1110 GOSUB 1130 RETURN
1120 REM CHANGE BALL DIRECTION AFTER B
RICK HIT
1130 POSITION 1,0 PRINT #6;SCORE
1140 IF BCOUNT=54 THEN GOSUB 2170 GOSU
B 340 RETURN
1150 SOUND 1,PEEK(BALLV)-8,10,10 POKE
53248,16
1160 IF B>0 AND B<4 THEN POKE BALLV,PE
EK(BALLV)+5
1170 IF B=1 THEN POKE DIRECT,4 RETURN
1180 IF B=2 THEN POKE DIRECT,5 RETURN
 190 IF B=3 THEN POKE DIRECT,6 RETURN
1200 POKE BALLV,PEEK(BALLV)-5
1210 IF B=4 THEN POKE DIRECT,1 RETURN
1220 IF B=5 THEN POKE DIRECT,2 RETURN
```

Turn to Page 34 ►

◀ From Page 33

```
1230 IF B=0 THEN POKE DIRECT,3 RETURN
1240 RETURN
1250 REM HIT BRICK ROW2
1260 M=INT((PEEK(BALLH)-55)/7.8)
1270 F=PEEK(SM+121+M) F1=PEEK(SM+122+M
)
1280 IF F=B AND F1=186 THEN POKE SM+12
2+M,B SCORE=SCORE+20 BCOUNT=BCOUNT+1
1290 IF F=186 THEN POKE SM+121+M,0 SCO
RE=SCORE+20 BCOUNT=BCOUNT+1
1300 GOSUB 1130 RETURN
1310 REM HIT BRICK ROW 3
1320 M=INT((PEEK(BALLH)-55)/7.8)
1330 F=PEEK(SM+181+M) F1=PEEK(SM+182+M
)
1340 IF F=0 AND F1=122 THEN POKE SM+18
2+M,B SCORE=SCORE+30 BCOUNT=BCOUNT+1
1350 IF F=122 THEN POKE SM+181+M,B SCO
RE=SCORE+30 BCOUNT=BCOUNT+1
1360 GOSUB 1130 RETURN
1370 RETURN
1380 REM REDEFINE CHARACTER SET
1390 DIM M$(40)
1400 M=152
1410 POKE 106,M-1
1420 CHBASE=256*(M)
1430 RESTORE 1440 FOR L=1 TO 36 READ A
1440 M$(L,L)=CHR$(A) NEXT L REM COPY
ROM CHARACTER SET TO RAM
1450 A=USR(ADR(M$),M) POKE 756,M
1460 DATA 104,104,104,133,204,169,224,
133,205,162,8,160,0,177,205,145,203,20
8,208,249
1470 DATA 164,204,200,132,204,164,206,
200,132,206,232,224,5,208,232,96
1480 FOR I=0 TO 7 READ B REM BRICK
1490 POKE CHBASE+(56+8)+I,B NEXT I
1500 DATA 254,254,254,254,254,254,254,
0
1510 FOR I=0 TO 7 READ B REM BORDER
1520 POKE CHBASE+(56*8)+I,B NEXT I
1530 DATA 0,16,56,56,16,0,0,0
1540 RETURN
1550 RETURN
1560 REM DRAW ROWS OF BRICKS
1570 SOUND 0,0,0,0 SOUND 1,0,0,0
1580 POKE 53249,0
1590 FOR I=141 TO 158 POKE SM+I,250 NE
XT I
1600 FOR I=121 TO 138 POKE SM+I,180 NE
XT I
1610 FOR I=181 TO 118 POKE SM+I,122 NE
XT I
1620 BCOUNT=0
1630 RETURN
1640 REM START/RESTART GAME
1650 GOSUB 1540 GOSUB 2100
1660 LIVES=5 SFLAG=1 SCORE=0
1670 IF PEEK(53279)=5 THEN LEVEL=LEVEL
+1 FOR B=1 TO 20 NEXT B
1680 IF LEVEL=10 THEN LEVEL=0
1690 POSITION 16,0 ? #6;LEVEL;
1700 IF PEEK(53279)=6 THEN GOSUB 1730
RETURN
1710 GOTO 1670
1720 REM SET LEVEL PARAMETERS
1730 POSITION 6,9 ? #6;                RE
M 18 SPACES
1740 SFLAG=1 SCORE=0.BCOUNT=0 LIVES=5
GOSUB 1870
1750 IF LEVEL=0 THEN POKE XDELAY,15 GO
SUB 2050
1760 IF LEVEL=1 THEN POKE XDELAY,10 GO
SUB 2050
1770 IF LEVEL=2 THEN POKE XDELAY,5*GOS
UB 2050
1780 IF LEVEL=3 THEN POKE XDELAY,10 GO
SUB 1920
1790 IF LEVEL=4 THEN POKE XDELAY,5 GOS
UB 1920
1800 IF LEVEL=5 THEN POKE XDELAY,10 N=
20 GOSUB 1970
1810 IF LEVEL=0 THEN POKE XDELAY,5 N=2
0 GOSUB 1970
1820 IF LEVEL=7 THEN POKE XDELAY,10 N=
40 GOSUB 1970
1830 IF LEVEL=8 THEN POKE XDELAY,5 N=4
0 GOSUB 1970
1840 IF LEVEL=9 THEN N=40 GOSUB 1920 G
OSUB 1970 POKE XDELAY,10
1850 GOSUB 2100 RETURN
1860 REM CLEAR BUMPERS
1870 FOR I=8 TO 20 POSITION 1,I ? #6;
                        REM 17 SPACES
1880 SOUND 0,INT(RND(1)*128)+60,14,10
1890 NEXT I SOUND 0,0,0,0
1900 RETURN
1910 REM PLOT BUMPERS LEVELS 3-4
1920 FOR I=SM+202 TO SM+217 STEP 3
1930 FOR I=SM+202 TO SM+217 STEP 3
1940 POKE I,58 POKE I+39,58 POKE I+81,
58
1950 NEXT I RETURN
1960 REM PLOT RANDOM BUMPERS LEVELS 6-
9
1970 FOR I=1 TO N*R=RND(1)*200 IF PEEK
(SM+120+R)=0 THEN POKE SM+120+R,56
1980 NEXT I
1990 RETURN
2000 REM GAME OVER
2010 POSITION 6,9 ? #6;"game over"
2020 IF SCORE>HIGH THEN HIGH=SCORE
2030 GOSUB 2100 RETURN
2040 REM PLOT BUMPERS LEVELS 0-2
2050 POKE SM+240+10,56 POKE SM+280+9,5
6 POKE SM+280+11,56 POKE SM+320+10,56
2060 POKE SM+240+30,56 POKE SM+280+9,5
6 POKE SM+280+11,56 POKE SM+320+10,56
2070 POKE SM+282,56 POKE SM+287,56
2080 RETURN
2090 REM PRINT TOP STATUS DISPLAY
2100 POSITION 0,0 ? #6;
     " REM 19SPACES
2110 POSITION 0,0 ? #6;"  SCORE
2120 POSITION 7,0 ? #6;"  HIGH
2130 POSITION 15,0 ? #6;"  LEVEL
2140 POSITION 18,0 ? #6;"  LIVES
2150 RETURN
2160 REM RESTORE WALL AND ADD BONUS
2170 LIVES=LIVES+1 SCORE=SCORE+1000 SF
LAG=1 BCOUNT=0
2180 POSITION 1,0 ? #6;SCORE;
2190 FOR I=58 TO 50 STEP -1
2200 FOR B=1 TO 5 NEXT B
2210 POSITION 6,9 ? #6;"bonus 1000
2220 SOUND 1,I,14,14
2230 SOUND 0,I-6,14,14
2240 FOR B=1 TO 5 NEXT B
2250 POSITION 6,9 ? #6;"BONUS 1000
2260 NEXT I SOUND 0,0,0,0 SOUND 1,0,0,
0 GOSUB 1570 GOSUB 2100
2270 POSITION 6,9 ? #6;                R
EM 10 SPACES
2280 RETURN
```




```
10 CM1 (Y)   380 3W3 (G)   760 ENH (W)
20 CM2 (S)   390 4MJ (P)   770 EJH (W)
25 BA2 (W)   400 CUV (W)   780 RKG (K)
30 GRN (O)   410 L67 (L)   790 TRN (V)
40 LKM (M)   420 5VJ (U)   800 GW4 (2)
50 026 (7)   430 FXE (F)   810 61R (V)
60 A52 (Y)   440 022 (G)   820 T2N (B)
70 CM7 (6)   450 08J (7)   830 X7G (9)
80 Y19 (D)   460 GUN (F)   840 88O (E)
90 93L (8)   470 E2A (F)   850 FS4 (L)
100 55R (S)  480 66T (S)   860 YHA (V)
110 PE1 (U)  490 69A (X)   870 UEK (B)
120 B35 (M)  500 AYK (4)   880 48V (J)
130 UY7 (F)  510 47A (P)   890 RAJ (V)
140 B45 (2)  520 6HL (4)   900 JJA (F)
150 7TU (9)  530 GP2 (S)   910 X1L (S)
160 OGM (D)  540 02K (K)   920 UEB (A)
170 TRJ (F)  550 NL1 (J)   930 AT6 (7)
180 UB1 (W)  560 RHJ (8)   940 RPE (5)
190 X9H (G)  570 S2F (7)   950 8H1 (1)
200 QUH (8)  580 BUN (9)   960 LFU (J)
210 U9J (8)  590 FF5 (F)   970 S2E (K)
220 9TT (K)  600 EAT (F)   980 JE9 (K)
230 52H (3)  610 UHL (G)   990 UGH (K)
240 TE8 (3)  620 5HH (V)   1000 A4N (V)
250 O59 (G)  630 XF5 (G)   1010 C2T (E)
260 HGN (A)  640 UAG (8)   1020 AYA (K)
270 W2A (J)  650 V41 (R)   1030 RVK (D)
280 7FP (F)  660 RXA (K)   1040 NAU (E)
290 RQF (1)  670 BBK (R)   1050 KAT (8)
300 GY1 (V)  680 7KX (C)   1060 BAN (C)
310 4A6 (3)  690 R76 (A)   1070 SXM (O)
320 AYK (F)  700 7UL (5)   1080 BKH (1)
330 EVH (F)  710 RAE (E)   1090 OAF (D)
340 P53 (S)  720 35Y (2)   1100 VEH (8)
350 8GU (2)  730 MEW (W)   1110 BAN (M)
360 55Y (G)  740 CEY (V)   1120 DIM (K)
370 X7L (Y)  750 TF2 (G)   1130 YYM (R)
```

```
1140 93O (X)  1530 E9F (F)  1920 Y8U (R)
1150 M8V (M)  1540 W4K (B)  1930 YFU (G)
1160 XRP (3)  1550 WRK (F)  1940 8UE (1)
1170 KH1 (B)  1560 IRN (C)  1950 46E (A)
1180 KW2 (B)  1570 MY1 (E)  1960 EFN (O)
1190 KSA (O)  1580 GHH (M)  1970 WES (U)
1200 SSH (Y)  1590 EMY (K)  1980 PCS (W)
1210 KF2 (E)  1600 F4X (L)  1990 XOK (X)
1220 KKA (7)  1610 E3Y (P)  2000 CRP (U)
1230 KPK (5)  1620 XL0 (P)  2010 8N9 (H)
1240 VTK (B)  1630 WBK (H)  2020 BCA (H)
1250 SWH (6)  1640 2RK (M)  2030 877 (L)
1260 FAH (B)  1650 LXW (3)  2040 98P (E)
1270 9OF (3)  1660 WB5 (F)  2050 M1F (V)
1280 QJY (B)  1670 3N5 (L)  2060 B3F (B)
1290 WHK (B)  1680 2K5 (G)  2070 OMR (9)
1300 99X (A)  1690 YF2 (W)  2080 WTL (E)
1310 88M (E)  1700 T4C (X)  2090 BHP (A)
1320 TOH (6)  1710 42J (M)  2100 5HX (B)
1330 3RB (1)  720 IRN (L)   2110 SYW (M)
1340 9BH (E)  1730 YSW (V)  2120 SNQ (V)
1350 W3H (E)  1740 2IX (A)  2130 7PH (C)
1360 3RR (K)  1750 NVK (W)  2140 8K2 (Y)
1370 W4K (N)  1760 MMP (G)  2150 V8L (R)
1380 DFN (H)  1770 S5A (Y)  2160 8FF (V)
1390 W51 (G)  1780 NRX (T)  2170 BTF (V)
1400 K54 (V)  1790 SMK (K)  2180 YUF (O)
1410 PR7 (M)  1800 74U (P)  2190 KMM (1)
1420 AYA (N)  1810 642 (A)  2200 BAU (3)
1430 34V (Y)  1820 7VC (X)  2210 HAV (K)
1440 RCH (1)  1830 AA1 (A)  2220 4E8 (D)
1450 8G4 (G)  1840 YOU (T)  2230 666 (2)
1460 Y4C (K)  1850 ECE (U)  2240 BKU (1)
1470 92T (K)  1860 EAN (B)  2250 51V (G)
1480 V28 (2)  1870 58N (J)  2260 E3T (7)
1490 V64 (1)  1880 817 (V)  2270 XRT (2)
1500 T5H (V)  1890 4CW (B)  2280 W2L (7)
1510 UR4 (F)  1900 WFK (E)
1520 UT4 (F)  1910 E4N (G)
```

Melody Maker

BRUCE WOODLAND starts you on the right note with this musical program

THIS superb utility is designed to allow you to write simple tunes on to an on-screen simulated music sheet and play it back in a choice of voices. You also have full disc handling of the music files and a special facility which allows simple access to one from within your own programs.

Music is often added to programs either to provide mood or to fill in those tedious intervals when data is being processed and nothing exciting is happening on screen.

Atari computers contain a versatile sound generator, but unfortunately the resident Basic suffers from complicated sound handling commands. Production of even simple tunes may require much trial and error.

Furthermore, since it takes a significant time to run the SOUND command, program operation is slowed or even stopped while music is being played, and this defeats the object of its inclusion.

Melody Maker presents an attractive solution to both these criticisms and is also fun and educational. Music is written on to a music sheet on the screen using a few logically chosen keys. Standard musical notation is used, so composition or copying from sheet music is simplicity itself.

Disc handling routines allow music files to be saved or loaded and they can be added to or played in a choice of voices. An interrupt driven machine code routine is used to play the music, so it will continue playing during most Basic operations. This option may be saved separately so it can be added to your own programs.

When you run the program the options available – shown in Figure I – are displayed. Select W for the edit mode and enter the music using the keys shown in Figure II.

Position on the music sheet is marked by a player missile cursor which can be moved vertically on the staves by the arrow keys. You don't need to press Control. Its position is translated to the appropriate pitch. The sharp and flat keys, which modify the pitch slightly up or down, have to be selected before the note is written.

Keys 1 to 4 will write a note of the correct type (length) at the cursor's position. The note length can be prolonged by 50 per cent by preselection of the full stop. The correct note will sound and be stored in memory. It is also possible to delete notes if necessary.

A key signature may be set up at the start of the composition or this can be bypassed if desired. The various key functions – shown in Figure II – can be displayed on screen by pressing the I key, and these are usable at any point during composition. Only valid keys are accepted, so if you avoid Reset and Break you can't go far wrong.

The Basic END command will turn off any music, as will Reset and any disc accessing. No provision is made for accented beats, so the normal bar structure of music is conveniently ignored. In other respects Melody Maker follows standard musical notation very closely.

Key	Note	Length
1	Semiquaver (♬)	1
2	Quaver (♪)	2
3	Crotchet (♩)	4
4	Minim (𝅗𝅥)	8

Table I. The notes available

The program is very user-friendly and very little musical knowledge is required for its use, so an absolute novice can create superb music.

However, the complexity of the program renders it unsuitable for the smallest Atari machines such as an unmodified 400 or 600XL and cassette storage is too slow, which means a disc drive is essential to store files.

Turn to Page 38 ▶

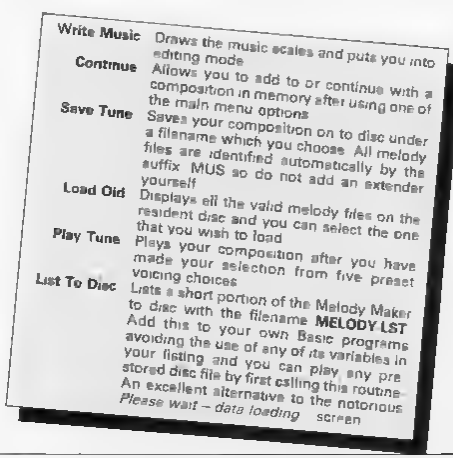


Figure I. Main menu options

◀ From Page 38

Cursor up/down Move the cursor to the required position on – or slightly above or below – the staves

S Sounds the note represented by the position of the cursor on staves without writing or storing it – useful for trial and error composing

P Plays the notes entered so far. Cursor position and store are unaltered and a single voice is used to avoid confusion

I Cycles between different on screen instruction sets

1-4 Write a note to the screen of the desig noted type shown in Table I and store its sound in memory. The cursor will then advance automatically. They are also used after the spacebar. Note identities are as follows

#,B,N Give a sharp, flat or normalised note if it has been preset to sharp or flat in the key signature. These keys must be selected before the note is written

Spacebar Allows the insertion of a musical rest or pause with length equal to the note type (1-4) selected thereafter. Dotted rests are possible. The cursor moves one place to the right after an appropriate symbol has been drawn

Delete Erases the last note entered from screen and memory – multiple uses are possible

Full stop This should be used before the note and causes its length to be increased by 50 per cent, it's total length depending on the note type

Return Returns you to the main menu from where you may play or store your composition

PROGRAM VARIABLES

TUNE$	Music storage string
IOV$	Machine code file handling
NREF$	Reference list of note frequencies
KSG$	Key of note identities for key signature translation
FN$	Disc filename string
K$	Valid keypress check list
I$	Machine code for playing tune
CAP	Maximum storage capacity of tune store
KEY	Ascii code of key presses
BAS	Start address in ram of PMG cursor
DUR	Note length
LNE	Stave group offset value
NTE	Note frequency value
TAD	Ram start of tune store
MC	Ram start of various machine code routines
KP	Positional translation of *KEY*
X	Horizontal screen index pointer
Y	Vertical screen pointer
T	Length of current tune file

Figure II Key commands available

```
0 REM ********************
1 REM *  MELODY MAKER    *
2 REM BY MUSICAL UTILITY*
3 REM *  (c)ATARI USER  *
4 REM ANY ORDER 0000LONG#
5 REM ********************
6 MESM=106:DEMO=300:MODE=500:MENU=700
10 REM MAIN PROGRAM
20 GOSUB DESM:REM RESERVE MEMORY
30 GOSUB DEMO:REM SETUP DEMO PLAY
50 GOSUB MODE:REM SETUP MC ROUTINE
70 GOSUB MENU:REM MAIN ROUTINE
80 GOTO 70
90 REM ********************
100 REM RESERVE MEMORY ETC
110 CAP=1024:REM Max tune length
120 A=PEEK(106)-36:GRAPHICS 0
130 POKE 54279,A:MC=256*A:BOS=9324-MC
140 DIM K$(18),NREF$(45),KSG$(15)
150 DIM PICK$(20),SCALE$(15)
160 DIM TUNE$(CAP),TEMP$(255)
180 OPEN #1,4,0,"K:":TOO=USR(TUNE$)
190 GETUSR
450 REM ********************
500 REM LOAD CODE ETC
510 K$="-=#%1234 MD  N(P)SI$"
520 KSG$="  @CDEFGABCDEFG@@"
530 RESTORE 650:FOR A=1 TO 45
540 READ D:D
550 SCALE$(LEN(SCALE$)+1)=CHR$(D+D)
600 DEMO A:NREF$=SCALE$
610 RESTORE 5000:FOR A=6 TO 247
620 READ D:D=D+POKE A+MC,D:D NEXT A
600 C=MC+47:B=C+42:M=B+130
621 REM CLEAR SPRITE
630 POKE 704,236:POKE 53256,5
640 POKE 53248,B:RETURN
650 REM SOUND VALUES FOR SCALE
660 DATA 31,35,40,45,47,53,60,64
670 DATA 72,81,91,96,108,121,128
680 REM SPRITE CURSOR DATA
690 DATA 96,144,144,96
695 REM ********************
700 REM MAIN MENU
710 GRAPHICS 17:POKE 710,236
720 POKE 711,22:POKE 708,160
730 POKE 709,102:POKE DL+3,7
750 POKE 87,0:RESTORE 910
770 ?  ?  "  MELODY  MAKER"
780 ? " FOR ATARI BOOKS"
790 FOR A=1 TO 8:READ PICK$
800 POSITION 5,2+A:? PICK$:NEXT A
810 ? " option or start"
820 MX=4:MY=3
830 POSITION MX,MY:? " ";
840 IF PEEK(53279)=6 THEN 890
850 IF PEEK(53279)>5 THEN 810
860 IF PEEK(53279)<7 THEN 860
870 MY=MY+1:IF MY>3+8 THEN 820
880 GOTO 830
890 GOSUB MY*1000
900 RETURN
910 DATA Write Music,Continue
```

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◀ From Page 36

```
900 DATA Save tune,Load file
910 DATA View tune,List a list
995 REM ************************
3000 REM BATTLE MUSIC
3010 T=0 REM Clear tune store(HC)
3020 FOR A=0 TO CAP STEP 256
3030 X=USR(CK,ADR(TUNE$),255,0)
3040 NEXT A
3050 AVE 3500 PLOY=7300:BOM=8600
3060 WSHP=8500 SBB=4750 EX1=8650
3070 HFLT=4700 PAU=4900 SHOOP=0
3080 OEL=4000 WHITE=4100 OSIG=3700
3090 INS7=3800 PFUE=7400
3100 GRAPHICS 0 X=52 Y=26 LNE=0
3105 CALL=USR(CK,885,255,0)
3110 GOSUB 3300 REM Draw screen
3120 STRT=PEEK(88)+PEEK(89)*256
3130 POKE 559,46 POKE 53277,1
3140 KP=4 GOSUB AVE GOSUB 6SIG
3150 GET 01,KEY:KP=0 SOUND 1,0,0,0
3155 IF KEY=42 OR KEY 43 THEN 3150
3160 IF KEY()155 THEN 3130
3170 GOSUB 3650 POKE 559,39
3180 POKE 53277,0 POKE 53248,0 RETURN
3190 KP=USR(CK,908(K$),LEN(K$),KEY)
3200 IF  007 KP THEN 3150
3210 SCRN=STRT+CX-480/4+CY 15+LNE)*40
3220 N=KP-0 IF KP(6 THEN R=2
3230 IF KP(5 THEN N=1
3240 ON N GOSUB AVE WHITE,PAU,WSHP,HFLT
,EXT,NRM,OEL,PLOY,540,SWSF,PFVE
3250 IF LOE(=57 THEN 3150
3260 POKE 559,39 POKE 53277,0
3270 POKE 53248,0 GOTO 3100
3291 REM ************************
3300 REM DRAW MUSIC SHEET
3310 POKE 710,5 POKE 709,8.COLOR 1
3320 FOR A=12 TO 130 STEP 30
3330 FOR B=0 TO 16 STEP 4 PLOT 0,B+A
3340 DRAWTO 319,B+A DRAWTO 319,A+12
3350 PLOT 16,A+A,DRAWTO 16,A+12
3360 NEXT B:SOSUB 3400:NEXT A
3370 RETURN
3390 REM ************************
3400 REM DRAW CLEFS
3410 PLOT 4,A+B RESTORE 3450
3420 FOR CL=0 TO 10 READ CX,CY
3430 DRAWTO CX,CY+Q-20:NEXT CL
3440 RETURN
3450 REM Data for Clef data
3460 DATA 0,16,0,15,10,10,12,20
3470 DATA 5,20,1,12,0,6,13,12
3480 DATA 13,10 0,29,0,12,10,11
3490 REM ************************
3500 REM MOVE
3510 IF KP)5 THEN RETURN
3520 P=1 IF KP)2 THEN P=0
3530 IF KP=1 OR KP=1 THEN P=-P
3540 GOSUB 3560
3550 IF A05(P))1 THEN N=N+P
3570 IF A05(P)(2 THEN Y=Y+P
3580 IF Y=17 OR Y=32 THEN Y=Y-P
3590 IF X)200 THEN X=60.LNE LNE+19
3600 RESTORE 680
3610 POKE 53248,N.FOR A=0 TO 3
3620 READ B POKE 0454+A+Y0LME,B
3630 NEXT A RETURN
3640 REM BLANK CURSOR
3650 RESTORE 680 FOR A=0 TO 3
3660 POKE 0A5+LOE+84+Y,0 NEXT A
3670 RETURN
3690 REM ************************
3700 REM PLAY KEY SIGNATURE
3710 ? "Key signature? (S/N)":GET #1,A
3720 IF A()83 THEN KP 0 GOTO 3750
3730 K5( 1 ? CHR$(125);"Right--"
3740 ? "Position with cursor keys "
3750 ? "Then write in with N or B "
3760 GET #1 A RETURN
3790 REM ************************
3800 REM INSTRUCTIONS
3810 IF KP 4 THEN GOSUB AVE
3820 POKE 82,1 POKE 752,1
3830 RESTORE 3902+INS:? CHR$(125),
3840 ? "                Instructions"
3850 READ TEMP$:? TEMP$
3860 INS=INS+2 IF INS=12 THEN INS=0
```


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- 4 types of procedure PROC FUNC FUNC$ and INTERRUPT
- 4 primary variable types BYTE INT POINTER and STRING + absolute BASED and arrays
- Structured program flow statements
  IF THEN ELSE ENDIF
  WHILE DO ENDWHILE
  REPEAT UNTIL/FOREVER
  FOR TO/DOWNTO STEP NEXT
  CASE OF ENDOF ELSE ENDCASE
  ON GOTO
  + unrestricted GOTO s for those who can't break the habit
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```
3870 IF INT(2)2 THEN ? " Key I-More ",
3880 POKE 82,2 POKE 752 0 RETURN
3890 REM ***************************
3900 REM USER INSTRUCTIONS
3902 DATA Press I for keycode informat
ion
3904 DATA 1=5/Quaver 2=Quaver 3=Crotch
et 4-Minim These keys write to the not
es
3906 DATA #-Sharp b Flat =Long Note R
=Natural  Press these before writing
note
3908 DATA P=Play Stored Tune S=Sound N
ote Only  Delete=Rubs Out Last Note
3910 DATA Cursor UP/Down moves the cur
sor to the required position on Staves
3912 DATA Space Bar-set length of MUS
ical rest  Return-Back to the main Men
u
3990 REM ***************************
4000 REM CONTINUE
4020 T=-1
4030 T=T+1
4040 IF PEEK(1100+T)<>0 THEN 4030
4050 GOTO 3050
4052 REM ***************************
4100 REM SCREEN MATTE
4110 VOT (KP 51*25 OFS=400
4120 IF Y-16<9 THEN VOT=VOT+10 OFS=0
4130 Z=USR(ADR,15,ADR(VOT,SCRN-OFS)
4140 GOSUB 4200 SHARP=0 N5 0
4150 KP 6 GOSUB AVE RETURN
4198 REM ***************************
4200 REM FIGURE MATTE
4210 B=Y-16 NTE USC(SCALE$(0,0))
4220 IF  NOT SHARP THEN 4250
4230 NTE=NTE+SHTE*SHARP*40 0451
4240 IF SHARP=2 THEN NTE=ASC(NAREF$(0,0
1))
4250 DUR=2^(KP-5)*40
4260 IF LATH THEN DUR=DUR*3/2
4270 SOUND 1,NTE,10,15
4280 IF N5=1 THEN RETURN
4290 REM SLURS
4300 IF I<DUR)<>40 THEN RETURN
4310 POKE TAD+T,NTE POKE TAD+T+1,DUR
4320 T=T+2 POKE TAD+T,0
4340 LNTH=0*SHARP=0 RETURN
4490 REM ***************************
4500 REM SHARPS
4510 SHARP=-1 OFS=121
4520 IF X5&)0 OR Y/2)INT(Y/2) THEN OF
S=120
4530 Z=USR(ADR,10,AD,SCRN-OFS)
4540 IF K5&=1 THEN 7500
4560 RETURN
4590 REM ***************************
4600 REM NORMALISE
4610 OFS=41 SHARP=2
4620 Z=USR(ADR,7,ADR(24,SCRN OFS)
4630 RETURN
4648 REM ***************************
4650 REM ENTENCER
4660 Z=USR(ADR,3,ADR(10,SCSB+61)
4670 LATH=1 RETURN
4690 REM ***************************
4700 REM CLAIS
4710 SHARP=1 OFS=161
4720 IF K9&)0 AND Y/2)INT(Y/2) THEN OF
S=160
4730 Z=USR(ADR,10,ADR(14,SCRN-OFS)
4740 IF K5&=1 THEN 7500
4750 RETURN
4758 REM ***************************
4760 REM SOUND ONLY
4770 N5=1 GOSUB 4200 N5=0 RETURN
4790 REM ***************************
4800 REM DELETE
5005 IF K<LNE-60 AND I)0 THEN 4850
4810 IF K>60 AND LNE>0 THEN RETURN
4830 IF X)60 THEN 4840
4835 GOSUB 3640 K=704 LNE=LNE-19
4840 DTE=STOT*GN 561/4*(3+LNE)+300
4850 FOR A=0 TO 16 POKE DTE+A*40,0
4860 NEXT A:FOR A=0 TO 22 STEP 4
4870 POKE DTE+A*40,255 NEXT A
4880 DP=I:GOSUB AVE
4890 T=T-2:POKE TSOT,T,0.RETURN
4898 REM ***************************
4900 REM REST LENGTH
4910 ? CHR$(125),"Rest length?(1-5)"
4920 ? "Rest  length of note type '
4930 GET N1 L L=L-48
4940 IF L(1 AND L)4 THEN 4930
4950 VO=(L-1)*9+150
4960 SCRN=STAT*(K-401/4+(LNE+0)*480
4970 Z=USR(ADR,9,80+VO,SCRN) RTE=1
4980 DUR=2^L*5 GOSUB 4300 KP=4
4990 GOTO 1050
5000 REM SAVE TUNE
5010 MDE=0 GRAPHICS 0
5020 POSITION 5 0
5030 ? "SAVE MELODY AT DISK FILE"
```

This is one of hundreds of programs now available FREE for downloading on MicroLink

```
5040 ? :? "FILENAME ", INPUT PICK$
5050 IF LEN(PICK$)(2 THEN ?  RETURN
5060 IF LEN(PICK$)7 THEN 5000
5070 FN$="D  " FN$(3)=PICK$
5080 FN$(LEN(FN$)+1)=" MUS'
5090 GOSUB 9180 RETOON
5098 REM ***************************
6000 REM LOAD FILE
6010 GRAPHICS 0 MDE=4.0=0
6020 OPEN #2,0,0,"D  MUS"
6030 ? CHR$(125) POSITION 12,0
6040 ? "MELODY FILE"
6050 INPUT #2 TEMP$
6060 IF TEMP$(5,8)="FREE" THEN 6110
6070 A=A+1 ?  "           ",A;
6080 ? TEMP$(1,10):IF A(10 THEN 6050
6090 ? "START For More "
6100 GET #1,5 IF A=32 THEN 6010
6110 TRAP 40000 CLOSE #2 TRAP 6120
6120 ? "Select Tune  ", INPUT FN$
6130 S=VAL(FN$) IF S)0 THEN 6220
6140 OPEN #2,6,0,"D:* MUS'
6150 FOR B=1 TO 5 INPUT #2,TEMP$
6160 NEXT B CLOSE #2 A=1
6170 A=A+1
6180 IF TEMP$(8,8)="0" THEN 6170
6190 FN$=TEMP$(1,A-1) FN$(LEN(FN$)+1)=" "
6200 FN$(LEN(FN$)+1)=" MUS"
6210 GOSUB 9180
6220 TRAP 40000:RETURN
6390 REM ***************************
7050 REM PLAY TUNE
7010 GRAPHICS 0
7020 ? CHR$(125) POSITION 16,0
7030 ? "MELODY MAKER" POSITION 10,3
7040 ? " Play Resident Tune"?
7050 ?  ? "Select  1  And Voice"
7060 ? "           8  Low Voice"
7070 ? "           9  Three Voices"
7080 ? "           0  Hi/Lo Voices"
7090 ? "           8  Lo/Mid Voice"
7100 ?  ? "Your Choice  ",
7110 GET N1,8:? CHR$(30)0=8-48
7120 IF 0(1 OR 0)5 THEN 7020
7130 HI 0 MID 0 LO 0
7140 IF A)1 THEN LO=10
7150 IF INT(A/2)(0/2 THEN MID=10
7160 IF 0=4 OR A=3 THEN HI=10
7170 SOUND 2,0,HI,HI
7180 SOUND 1,0,MID,MID
7190 SOUND 0,0,LO,LO
7200 Z=USR(ADR(I5),TAD)
7210 ?  ? "MORE  ", GET N1,A
7220 IF A=89 THEN 7020
7230 RETURN
7250 REM ***************************
7300 REM PLAY
7310 SOUND 1,0,10,12
7320 Z=USR(ADR(I5),TAD)
7330 RETURN
7350 REM ***************************
7400 REM PLAY LAST
7410 A=0 IF T)10 THEN A=10
7430 SOUND 1,0,10,12
7430 Z=USR(ADR(I91,TAD A+T)
7440 RETURN
7500 REM WAIT FOR KEY SIGNATURE
7510 TEMP$=K5&5(Y 16,Y 16):P=1
7520 IF KP=10 THEN P=-1
7530 FOR A=1 TO LEN(K5&5)
7540 B1E=ASC(NAREF$(A,A))
7550 IF TEMP$(A)K5&5(B,B) THEN 7570
7560 SCALE$(0,B1)=CHR$(NTE+NTE*(B 84SHP
))
7570 NEXT A:? "Finished",
7580 GET #1,A IF A=70 THEN RETURN
7590 SOUND 0 K5&.0 KP-4:SOTO 1000
7850 REM ***************************
8000 REM USER LIST
8010 GRAPHICS 0 POSITION 3,0
8020 ? "USER FILE TO LIST"
8030 ? :? "Insert disk then Press ";
8040 ? "any key  "; GET N1,A
8050 LIST "D  DELODY LST",8100,9750
8060 ?  ? :? "SAVED AS 'MELODY LST'"
8070 GET N1,0 RETUSR
9000 REM DATA
9001 REM SCREEN MATTE & OR DATA
9002 DATA 104,42 170,202,104 169,210
9003 DATA 224,0,208,240,100,0,177,210
9004 DATA 17,211,145,210,24,105,210
```

Turn to Page 40 ▶

◄ *From Page 39*

```
9005 DATA 105,40,133,210,144,2,230
9006 DATA 211,24,165,212,105,1,133
9007 DATA 212,144,2,230,211,232,224
9008 DATA 216,208,227,96
9010 REM CLOSE
9011 DATA 104,42,170,104,149,203,202
9012 DATA 208,250,165,204,208,10,166
9013 DATA 0,145,208,208,196,206,208
9014 DATA 249,96,164,206,165,204,209
9015 DATA 208,248,3,136,16,207,208
9016 DATA 132,212,169,0,133,211,96
9100 REM Note Shape data
9110 DATA 0,30,17,29,31,17,25,25,24,2
4,120,120,252,120,111,96,96,100,96,102
,120,122,102,124,120
9120 DATA 0,30,19,26,25,24,24,24,24,24
4,56,120,252,120,111,96,96,96,96,96,96
0,90,102,124,120
9130 DATA 24,24,24,24,24,24,24,24,24,2
4,56,120,252,120,112 96,96,96,96,96,96
,96,96,96,96
9140 DATA 24,24,24,24,24,24,24,24,24,24
4,44,72,204,72,112,96,96,96,96,96,96,9
6,96,96,96
9150 REM Pause Symbols data
9160 DATA 4,52,52,12,4,4,52,52,4
9170 DATA 4,82,52,12,8,8,6,4,4
9180 DATA 32,44,44,44,46,32,32,32,32
9190 DATA 0,0,62,62,0,0,0,0,0
9200 REM Note Modifier data
9210 DATA 10,10,31,31,10
9220 DATA 10,31,31,10,10
9230 DATA 64,224,64
9240 DATA 3,3,0,0,0,0,15,9,9,15
9250 REM ************************
9260 REM USER LISTING
9305 CODE=2048 DIM TUNES(CAP) TAD$(CAP)
UNES$)
9310 DIM CIOV$(40),I$(1061),FN$(20)
9320 FN$="D:M MUSIC.MODE=4
9330 RESTORE 9500
9340 FOR A=0 TO 111 READ D$
9350 POKE ADR(CIOV$)+A,DTA NEXT A
9360 TRAP 9400 OPEN #2,MODE,0,FN$
9370 M=INT(CAP/256) L=CAP-M*256
9380 POKE 877,L POKE 878,M
9410 M=INT(TOD/256) L=TOD-M*256
9420 POKE 868,L POKE 869,M
9430 MODE=MODE+3:POKE 666,MODE
9440 COLL=USR(ADR(CIOV$))
9450 CLOSE #2 IF PS THEN RETURN
9460 SOUND 0,0,10,14 SOUND 2,0,10,12
9470 CALL=USR(ADR(CI$),TOD)
9480 TRAP 40000 CLOSE #2 RETURN
9500 REM CIOV
9510 DATA 104,162,32,76,86,228
9600 REM PLAY ROUTINE
9610 DATA 104,104,133,203,104,133,204
9620 DATA 24,165,212,108,88,141,40
9630 DATA 2,169,0,133,207,101,211
9640 DATA 141,41,1,169,1,101,26
9650 DATA 2,56 72,152,72,165,207
9660 DATA 240,10,168,0,177,200,240
9670 DATA 52,201,1,240 15,24,42
9680 DATA 141,0,210 106,141,1,210
9690 DATA 74,141,4,210 240,10,24
9700 DATA 200,177,200,72,105,208,105
9710 DATA 2,133 208,144,2 230,209
9720 DATA 104 240,2,169,1 141,26
9730 DATA 2 165,207,75,1,133,207
9740 DATA 104,168,104 96,141,1 210
9750 DATA 141,3,210,141,5 210 240 232
```



0 CAM (V)	491 EGL (Z)	990 EMT (N)	
1 CAJ (T)	500 CUM (J)	3070 CXU (J)	
2 CAK (Y)	510 FHW (W)	3010 T01 (R)	
5 CAL (O)	520 EYE (W)	3020 U16 (S)	
6 CAM (R)	530 X2Z (R)	3030 HLD (A)	
5 CAN (T)	540 VK9 (Z)	3040 MGU (C)	
8 FY1 (R)	550 5A2 (Z)	3050 X55 (U)	
10 CP1 (T)	560 GY2 (B)	3060 X1H (W)	
20 YW4 (O)	580 Z22 (W)	3070 X20 (Z)	
30 X05 (B)	590 U5W (B)	3080 V03 (6)	
50 XK3 (Z)	600 4KN (H)	3090 EBC (S)	
70 Y8P (C)	621 95X (B)	3100 VJE (T)	
80 KKU (G)	630 A6Z (9)	3105 PSU (E)	
90 DP9 (V)	640 EC6 (I)	3110 ZCR (5)	
100 CUS (K)	650 9GX (A)	3120 F1G (J)	
110 RRR (J)	660 J85 (S)	3130 FHY (P)	
120 SHT (B)	670 KR6 (2)	3140 W4F (G)	
130 72C (4)	680 8UX (G)	5150 V0A (V)	
140 R4G (P)	690 71S (X)	3155 4B6 (W)	
150 452 (B)	700 EGX (H)	3160 QMC (T)	
160 RA6 (K)	700 CUY (R)	3170 FAB (6)	
170 Y29 (S)	710 TPL (4)	3180 RL0 (H)	
180 5A5 (M)	720 PSW (V)	3190 EHQ (5)	
190 EGS (W)	750 Q6F (B)	3200 N2M (R)	
200 CUD (J)	750 FB0 (B)	3210 SK0 (A)	
210 PAG (1)	770 F0N (F)	5220 04L (B)	
220 UG7 (W)	780 9H4 (M)	5250 9A5 (F)	
250 S7W (Z)	790 S0C (4)	5240 NHA (F)	
240 P86 (9)	800 T9Y (L)	5250 G7W (B)	
250 PFL (U)	810 S15 (W)	3260 PSF (W)	
260 3KR (3)	820 XGF (O)	3270 HP1 (T)	
270 OKL (W)	830 HAX (P)	3295 E0R (V)	
290 E6U (B)	840 L1R (W)	3300 0AG (S)	
400 CUV (V)	850 L0E (N)	3310 W8R (3)	
410 4UT (5)	860 A59 (X)	3320 J1L (M)	
420 X0R (B)	870 P4Y (C)	3330 756 (3)	
440 83L (X)	880 0YF (H)	3340 4FW (K)	
450 UNX (B)	890 TEH (4)	3350 PZA (R)	
460 EVW (A)	900 R4E (4)	3360 NSM (M)	
470 Y4G (X)	910 A5T (W)	3370 WEM (L)	
480 SM9 (8)	920 DEZ (W)	3395 EF6 (N)	
490 SA8 (6)	930 A9C (N)	3400 0F6 (L)	
3410 W6K (V)	3905 ENE (H)	4600 EHR (F)	
3420 UEW (L)	3908 97K (V)	4700 0TR (F)	
3430 XF8 (H)	3910 E0K (N)	4710 9HL (C)	
3440 W2M (N)	3912 864 (6)	4720 W7H (W)	
3450 0RE (L)	3930 EVD (N)	4730 1NV (1)	
3460 G2P (G)	4020 CXR (6)	4740 F9A (E)	
3470 GE6 (E)	4020 R3L (P)	4750 WHN (G)	
3480 F9U (7)	4050 KFU (Y)	4758 EER (G)	
3490 EA8 (2)	4040 WVU (U)	4760 E08 (F)	
3500 RK0 (4)	4050 PCG (W)	4770 UQ1 (S)	
3510 CW2 (G)	4060 0AR (R)	4780 EM6 (6)	
3520 HL1 (E)	4100 02R (W)	4800 0XK (1)	
3530 UJ1 (0)	4110 FTX (S)	4805 S9E (0)	
3540 TAZ (1)	4120 9P1 (Z)	4810 SX8 (3)	
3550 U88 (2)	4150 OVV (H)	4820 SMK (Y)	
3570 U07 (A)	4160 UCM (U)	4830 S0V (N)	
3580 PPN (K)	4150 V2U (Y)	4840 VJY (L)	
3590 GHU (X)	4170 DVR (Y)	4850 SCG (T)	
3600 YC1 (S)	4200 00R (3)	4860 NJ3 (V)	
3610 M50 (G)	4210 PKN (M)	4870 RKH (S)	
3620 UGV (A)	4220 U7M (2)	4880 E6S (J)	
3630 S46 (7)	4230 SLU (P)	4890 XH3 (F)	
3640 0X0 (1)	4240 C90 (W)	4895 ERR (A)	
3650 2K7 (G)	4250 ATQ (5)	4900 E2R (E)	
3660 R8W (P)	4260 4EH (J)	4910 ORG (5)	
3670 WHN (L)	4270 4FF (P)	4920 CRJ (J)	
3680 EH6 (8)	4280 CW5 (Y)	4930 2XF (O)	
3700 0T0 (H)	4290 DKR (Y)	4940 M6A (5)	
3710 CRY (0)	4300 V0Y (3)	4950 SRJ (A)	
3720 Y76 (4)	4310 GFJ (4)	4960 S9M (K)	
3730 XW4 (H)	4330 4VC (P)	4970 XYR (E)	
3740 72N (M)	4340 P5R (6)	4980 OKA (0)	
3750 RHE (N)	4490 EMR (4)	4990 TSK (X)	
3760 ATE (E)	4500 TKR (5)	5000 CKS (V)	
3790 EM0 (4)	4510 AUC (E)	5010 AMN (4)	
3800 0X0 (9)	4520 LAP (2)	5020 YP8 (3)	
3810 TH5 (U)	4530 OFX (7)	5030 G64 (0)	
3820 S6K (G)	4540 F14 (A)	5040 SWP (T)	
3850 G91 (U)	4550 WEN (9)	5050 EK8 (1)	
3860 220 (L)	4599 EER (C)	5060 LU7 (Y)	
3870 RWE (N)	4600 OP6 (C)	5070 RMG (5)	
3880 SL5 (T)	4610 5FG (A)	5080 P0E (M)	
3890 E0R (2)	4620 WE5 (N)	5090 RMS (F)	
3900 E2R (2)	4650 EQR (A)	5100 F5U (X)	
3902 Z12 (W)	4660 URK (N)	5020 5LL (C)	
3904 N5U (G)	4670 R0H (E)	5030 RTV (X)	
5040 AWV (X)	7350 VVR (9)	9140 FVF (X)	
5050 7YK (0)	7360 E4U (C)	9170 F9P (N)	
5060 0AU (0)	7400 EFU (9)	9180 SX6 (F)	
5070 CAY (R)	7410 P5H (A)	9190 EUP (G)	
5080 2S8 (7)	7420 4E5 (W)	9200 R0W (C)	
5090 HA1 (E)	7450 W4G (K)	9210 76E (N)	
5100 W2U (5)	7440 W2M (K)	9220 2GJ (6)	
5110 2TG (8)	7500 0KU (H)	9230 0WK (U)	
5120 C04 (H)	7510 K02 (N)	9240 GY0 (8)	
5130 U80 (F)	7520 EE5 (N)	9290 E0W (U)	
5140 5UL (F)	7530 E2K (4)	9300 0AW (R)	
5150 T0H (H)	7540 B0 (C)	9305 GFT (V)	
5160 2PQ (R)	7550 5J5 (H)	9310 0UT (H)	
5170 KMY (F)	7560 8X5 (0)	9320 AMC (T)	
5180 SCC (Y)	7570 U54 (L)	9330 Y75 (L)	
5190 22E (4)	7580 WWP (R)	9340 RRA (Y)	
5200 NXF (P)	7590 YRE (X)	9350 SE2 (J)	
5210 5WH (5)	7600 E0U (X)	9380 PA7 (8)	
5220 9E8 (K)	8000 CXV (H)	9390 WJO (S)	
5300 E6T (J)	8010 V0X (R)	9400 L5K (S)	
7000 CKU (J)	8020 M5G (W)	9410 RRR (S)	
7010 WKS (W)	8050 37V (Q)	9420 LCT (L)	
7020 RTW (W)	8040 TWY (2)	9450 UJ4 (U)	
7030 75P (Y)	8050 U5H (Q)	9440 0I2 (O)	
7040 4HW (M)	8060 8X5 (H)	9450 Y5T (8)	
7050 TWL (5)	8070 40K (1)	9460 XCH (1)	
7060 4TW (5)	9000 CXV (G)	9470 GVW (8)	
7070 1AF (5)	9001 CYV (1)	9480 WMV (2)	
7080 0W2 (7)	9002 SMV (4)	9500 0KW (F)	
7090 SMT (E)	9003 T72 (N)	9510 FTR (2)	
7100 0D1 (E)	9004 RC0 (6)	9400 0PW (G)	
7110 WYC (C)	9005 RO9 (5)	9410 S40 (0)	
7120 J7G (N)	9006 NG3 (E)	9420 MMT (C)	
7130 CTE (F)	9007 0UK (U)	9430 F0F (X)	
7140 R0R (5)	9008 248 (L)	9440 GJZ (N)	
7150 SM2 (E)	9010 N0W (W)	9450 GH0 (3)	
7160 PWY (R)	9011 T2K (X)	9460 PF7 (6)	
7170 GLD (M)	9012 4T4 (4)	9470 G0L (C)	
7150 9P8 (A)	9013 SAY (V)	9480 GTC (M)	
7190 73T (8)	9014 T8X (T)	9490 GWM (0)	
7200 9HK (W)	9015 MWC (T)	9700 T2T (9)	
7210 MT4 (M)	9016 NFQ (M)	9710 GTG (N)	
7220 51H (C)	9100 D2W (W)	9720 F8G (T)	
7230 VER (D)	9110 HU6 (S)	9750 GTU (N)	
7240 EOU (C)	9120 HCH (W)	9740 N4G (2)	
7500 0AU (A)	9150 GAZ (J)	9750 SYE (N)	
7310 475 (X)	9140 7AX (7)		
7320 9RK (C)	9150 0BW (0)		

SOFTWARE Solutions

Your programming problems solved by ANDRÉ WILLEY

WHETHER you're a first time user or a seasoned professional I've no doubt that your Atari played a big part in the recent seasonal fun – but most likely as a games machine rather than a computer Even I must admit to having spent a fair bit of time on the old joystick myself – which brings me round to our first question, from Kumar Neppalli of Mid-Lothian in Scotland who writes

It is really amazing how few books there are that deal with the technical aspect of Atari 8 bit machines It has been frustrating me for some time now to find out how the joystick port works and what its configuration is

My main questions are

- *What is the joystick pin configuration?*
- *How does the touch tablet work?*

Let's tackle the joystick connections first Looking towards the side of the computer the pins are numbered as follows



1 Forward movement (Up)
2 Backward movement (Down)
3 Left
4 Right
5 Paddle A (0 or 2)
6 Trigger button
7 +5 volts
8 Ground
9 Paddle B (1 or 3)

Figure 1 The joystick connector

The first four pins are detected by four bits within location 54016 ($D300) The lower four handle joystick socket one while the high four bits handle socket two Bits 0/4 function with pin 1 1/5 with pin 2 2/6 to pin 3 and 3/7 with pin 4 Each of these are normally set to 1, and they drop to zero to indicate a movement of the stick

The trigger button status may be found at location 53264 ($D010) for socket one and at 53265 ($D011) for socket two These addresses are normally zero and they change to one when the relevant trigger is pressed By using POKE 53277 4 you can *latch* both of the trigger buttons This means that once pressed, the value will remain in the register until it is specifically cleared – even after you have released the trigger

These locations are the actual hardware addresses but you will find it more convenient to use the shadow registers lower in memory which are updated automatically by the OS 50 times a second

Joysticks one and two show up separately at 632 and 633 respectively and the trigger buttons show up at 644 and 645 From Basic these values can be read by using STICK(0) STICK(1), STRIG(0) and STRIG(1)

Additionally to the digital (on/off) joystick system the Atari also boasts four analogue-to-digital converters These are used to detect the movement of paddles – such as those used to play Breakout – and each contains a resistor giving a continuously variable voltage on pins five and nine of each joystick connector

The computer converts the values from each of the four paddle controllers into numbers between 0 and 228 which may then be found at locations 53760 to 53763 ($D200 – $D203) As before, shadow locations are available at 624 to 627 and the Basic functions PADDLE(0) to PADDLE(3) are also available

Because there are two paddles connected to each joystick socket they can't be connected to the single trigger line – so pin three gives the Paddle 0 trigger and pin 4 gives that of Paddle 1 These may also be read using PTRIG(0) to PTRIG(3)

Now on to part two of your question The touch tablet contains two resistance pads – one going from top to bottom and the other from left to right

The slightest pressure at any point on the pad connects a given resistance value to the paddle A and B connections so they are converted to digital values between 0 and 228 for both directions The three buttons show up on pins one three and four and may be picked up using STICK(0)

Here is a small program to illustrate the use of the touch tablet

```
10 GRAPHICS 8 SETCOLOR 2,0,0 SETCOLOR
1,0,14 POKE 752,1
20 X=PADDLE(0)*319/228
30 Y=159-PADDLE(1)*159/228
40 S=STICK(0)
50 SOUND 0,228-PADDLE(0),10,10
60 SOUND 1,228-PADDLE(1),10,10
70 IF S=14 THEN COLOR 1 PLOT X,Y
80 IF S=11 THEN COLOR 0 DRAWTO X,Y
90 IF S=7 THEN COLOR 0 PLOT X,Y
100 ? CHR$(125), IF S=15 THEN 20
110 IF S=14 THEN ? PEN BUTTON (PLOT)
120 IF S=11 THEN ? LEFT BUTTON (DRAW)
130 IF S=7 THEN ? RIGHT BUTTON (ERASE)
140 IF S=10 THEN ? PEN/LEFT BUTTON
150 IF S=6 THEN ? PEN/RIGHT BUTTON
160 IF S=3 THEN ? LEFT/RIGHT BUTTON
170 IF S=2 THEN ? ALL THREE BUTTONS
180 GOTO 20
```

Printer problems

The next letter is from **Mr Hill** from Stranraer

Having written a program which determines the solution to a problem dependent on the input from the user I would like to dump the displayed solution to my 1029 printer

Also when I write software and run into difficulties I would like to be able to print selected lines or groups of lines for later examination

I am at present unable to do either of these, and any screen dump programs previously published are only intended for use with graphics screens and are not really suitable I do hope you will be able to help me with this problem

The listing problem is the easiest one to answer – all you need to do is use the LIST "P:" command to list to the printer Follow it with two optional

Turn to Page 42 ▶

◀ *From Page 41*

line numbers. The starting line number for the listing and the last line number to print. If you only give one number you'll get a single line listed to the printer.

For example:

```
LIST P,100
```

would list line 100 on the printer while

```
LIST P,500,1000
```

would list all the lines from number 500 to 1000.

There are two possible solutions to your other question. One is to print the answer to the printer instead of the screen – which will only work if you print the lines sequentially rather than using a lot of POSITION statements to move about the screen. My series on I/O channels gave some information on re-vectoring the screen output to the printer, but you will probably find it easier to alter your program slightly.

Firstly you must remember to OPEN a channel to the printer at the start of your program, and CLOSE it again at the end. Assuming we will use channel 1 for these examples, you would use:

```
OPEN #1,8,0,P:
```

and

```
CLOSE #1
```

If you want to print lines on the printer rather than the screen you should replace any PRINT or ? statements with PRINT #1.

You could, for example, use the following routine:

```
10 OPEN #1,8,0,P
20 GRAPHICS 0:LIST  LIST
30 X1=5:X2=25
40 Y1=5:Y2=15
50 GOSUB 1000
60 CLOSE #1
70 END
1000 REM PRINTOUT ROUTINE
1010 FOR Y=Y1 TO Y2
1020 FOR X=X1 TO X2
1030 LOCATE X,Y,CH
1040 PRINT #1,CHR$(CH),
1050 NEXT X
1060 PRINT #1
1070 NEXT Y
1080 RETURN
```

Variables *X1* and *X2* are used to specify the horizontal size of the text dump – use X1=0 and X2=39 for the full line width. *Y1* and *Y2* perform the same task for the vertical axis – with Y1=0 and Y2=23 giving the full height of the screen.

Don't forget that you must have issued a GRAPHICS command before LOCATE can work – so the routine won't function correctly without the GRAPHICS 0 command somewhere earlier in the program.

You could have PEEKed the values of the characters directly from the screen rem but then you'd have to convert them back to standard Ascii codes before the printer would accept them – all of which would slow the routine down considerably.

The only disadvantage with using LOCATE is that it will corrupt the current cursor position so don't forget to reset it with the POSITION command before you print any more text to the screen.

● *I'll be back next month with more answers to your technical queries, so keep them coming in. And how about all you new users who've just received an XE system for Christmas – what problems are you facing right now? Write in and let me know.*

ADVENTURE PROBLEMS?

AT LAST!! Help is at hand with this new all in one programme.

C.A.B. – Cassette Adventure Breaker – is designed to display hints on the screen to assist you to conquer those obstacles you can't overcome. Simply load CAB into your Atari before loading your adventure. Clues will then be displayed: verbs, nouns and locations but in such a way that it won't ruin your game – almost an adventure within itself !! And at an adventurous price of £4.99 inc. p & p it must be the ULTIMATE UTILITY.

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COLOUR PUZZLE

GAMES of strategy have always intrigued the human mind and this one – an advanced version of the old sliding block puzzle – certainly has you in all sorts of trouble

After the title screen is displayed press Start to begin. The display will go blank then a 5 x 5 colour grid will be drawn, giving you 24 coloured squares and one black one.

The middle nine squares are surrounded by a white line – remember that these are the important squares in the puzzle. In the bottom right corner of the screen a smaller nine square grid displays the pattern you are required to create.

These small squares can't be moved, but you can move the large ones in Rubik cube style – after plugging a joystick into port one. It is possible to move the blank square in four directions – up, down, left and right. When this is done the blank square will swap places with the square adjacent to it in the direction indicated by joystick movement. The only requirement for movement is that the blank square is in the direction of travel.

At first the movement of the squares seems strange, but you will soon get used to it. Also note that it is possible to move all 24 coloured squares and not just the middle nine.

When you have got the nine large squares to match the small ones press the fire button. The program will then shuffle the colours of the squares for a new game. You will then be given your time and the number of moves you needed to finish the puzzle.

Each time the puzzle is played the starting positions and colours of the large and small squares will be different.

PROGRAM BREAKDOWN

55 – 160	Think of a new screen
165 – 210	Draw screen
220 – 320	Main loop
999 – 1040	Set up small squares
2000 – 5040	Movement of squares
6000 – 6220	Title screen

PROGRAM VARIABLES

puz(9)	Colours of the small nine squares
col(25)	Colours of the large 25 squares
btime	Best time so far
c0	Position of the black square
x,y	Corner of the black square
go	Number of moves the player has taken so far

By MICHAEL O'CONNOR

```
1 REM COLOUR PUZZLE
2 REM BY MICHAEL O'CONNOR
3 REM (C)ATARI USER MAGAZINE
10 DIM PUZ(9),COL(25) BTIME=1000 TIME=1000
20 GOSUB 6000 GRAPHICS 0 POKE 82,0 REM TITLE SCREEN
30 DATA 10,20,58,24,106,120,15
40 RESTORE 30
50 FOR T=0 TO 8 READ C POKE 705+T,C NEXT T
55 REM SET UP RANDOM COLOURS
60 C1=4 C2=6 C3=8 C4=6 C5=8 C6=6
70 FOR T=1 TO 24
80 Z=INT(RND(0)*63)+1
90 IF Z<21 AND C1>0 THEN C1=C1-1 GOTO 160
100 IF Z<42 AND C2>0 THEN C2=C2-1 GOTO 160
110 IF Z<63 AND C3>0 THEN C3=C3-1 GOTO 160
120 IF Z<84 AND C4>0 THEN C4=C4-1 GOTO 160
130 IF Z<105 AND C5>0 THEN C5=C5-1 GOTO 160
140 IF Z<126 AND C6>0 THEN C6=C6-1 GOTO 160
150 GOTO 80
160 COL(T)=Z NEXT T COL(25)=0 TIME=1
165 REM DRAW BOARD
170 FOR X=0 TO 50 STEP 10 FOR Y=1 TO 170 STEP 34
180 COLOR COL(T)*5 T=T+1 PLOT X+1,Y DRAWTO X+10,Y+32 NEXT Y NEXT X
190 FOR X1=X TO X+10 PLOT X1,Y DRAWTO X1,Y+32 NEXT X1
200 NEXT Y NEXT X COLOR 7 PLOT 11,34 DRAWTO 47,34 DRAWTO 47,136 DRAWTO 11,136 DRAWTO 11,34
210 GOSUB 1000 REM SET UP PUZZLE
220 REM START
230 C0=25 X=48 Y=137 POKE 18,0 POKE 19,0 POKE 20,0
240 POKE 77,0 S=STICK(0) S7=STRIG(0) SOUND 0,0,0,0
241 IF PEEK(53279)=1 THEN 550
250 POKE 77,0 IF PEEK(53279)=6 THEN 200
260 IF ST=0 THEN 500
270 IF S=15 THEN 260
280 GO=GO+1 IF S=13 AND Y>34 THEN LOCATE X+3,Y-10,Z C0=C0-1 GOSUB 2000 REM DOWN
290 IF S=14 AND Y<127 THEN LOCATE X+3,Y+38,Z C0=C0+1 GOSUB 3000 REM UP
300 IF S=7 AND X>10 THEN LOCATE X-5,Y+5,Z C0=C0-5 GOSUB 4000 REM RIGHT
310 IF S=11 AND X<48 THEN LOCATE X+15,Y+5,Z C0=C0+5 GOSUB 5000 REM LEFT
320 GOTO 240
499 REM FINISHED??
500 T1=0
510 FOR W=15 TO 39 STEP 12 FOR W=36 TO 136 STEP 34 T1=T1+1 LOCATE W,W,Z IF Z<>PUZ(T1) THEN POP GOTO 270
520 NEXT W NEXT W
530 TIME=(PEEK(19)*256+PEEK(20))/50
540 FOR A=0 TO 255 STEP 5 POKE 711,255-A SOUND 0,A,8,10 SOUND 1,255-A,10,10
550 Z=PEEK(705) FOR P=705 TO 711 POKE P,PEEK(P+1) NEXT P POKE 712,Z NEXT A.S
OUND 0,0,0,0 SOUND 1,0,0,0
560 GOSUB 600 REM GIVE TIME ETC
580 GOTO 20
600 GRAPHICS 0 POKE 710,55 POKE 709,15 POKE 712,148 POKE 752,1
605 ? " "; T; " "
610 ? "Well done you have completed the puzzle in ";TIME; " seconds and ";GO; " moves"
620 FOR BE=1 TO 750 NEXT BE IF TIME<BTIME THEN BTIME=TIME
630 RETURN
999 REM PUZZLE
1000 FOR N=1 TO 9 A=INT(RND(0)*63)+1 PUZ(N)=A NEXT N
1010 W=15 FOR N=83 TO 73 STEP 5 FOR M=172 TO 184 STEP 8 COLOR PUZ(W) W=W+1 FOR M1=M TO M+3 PLOT M1,N DRAWTO M1,N+6
1020 NEXT M1
1030 NEXT M NEXT N
1040 RETURN
1999 REM MOVEMENT
2000 REM DOWN
2010 COLOR Z FOR X1=X TO X+10 PLOT X1,Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT X1
2020 Y=Y-34
2030 COLOR 0 FOR X1=X TO X+10 PLOT X1,Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT X1
```

Turn to Page 44 ▶

◀ From Page 43

```
2040 RETURN
3000 REM UP
3010 COLOR Z FOR X1=X TO X+10:PEDT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
3020 Y=Y+56
3030 COLOR 0 FOR X1=X TO X+10 PLOT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
3040 RETURN
4000 REM RIGHT
4010 COLOR Z FOR X1=X TO X+10 PLOT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
4020 X=X-12
4030 COLOR 0 FOR X1=X TO X+10 PLOT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
4040 RETURN
5000 REM LEFT
5010 COLOR Z FOR X1=X TO X+10 PLOT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
5020 X=X+12
5030 COLOR 0 FOR X1=X TO X+10 PLOT X1,
Y DRAWTO X1,Y+32 SOUND 0,X1,10,10 NEXT
 X1
5040 RETURN
6000 REM TITLE SCREEN
6010 GRAPHICS 17
6020 ? #6;   COLOUR PUZZLE
6030 ? #6;
6040 ? #6;
6050 ? #6;
6060 ? #6;   M[illegible]RA-[illegible] L[illegible]U[illegible]c
6070 ? #6;
6080 ? #6;   E[illegible] [illegible]M [illegible]SE
6090 ? #6;
6100 ? #6;   Ma[illegible]K M[illegible]
6110 ? #6;
6120 ? #6;
6130 ? #6;   LAST TIME TIME
6140 ? #6;
6150 ? #6;   BEST TIME,BTIME
6160 ? #6;
6170 ? #6;   press start
6180 A=0
6190 POKE 708,PEEK(20) POKE 709,A POKE
 710,255-PEEK(20) POKE 711,255-A
6200 A=A+1 IF A>255 THEN A=0
6210 IF PEEK(55279)=6 THEN RETURN
6220 POKE 77,0 GOTO 6190
```




```
 1 LAA (K)    [illegible] (E)   630 WKA (Z)   5040 VKM (E)   6060 YGI (W)
 2 LAX (B)    [illegible] (F)   999 EKI (Z)   4080 CXR (S)   6070 HZA (L)
 3 EAC (V)    [illegible] (G)   310 WWZ (W)   4010 SIS (A)   6080 3WK (7)
 1D LAL (T)   165 DWS (E)   320 WJO (F)   4020 WCS (J)   6090 DCA (A)
 20 V6R (D)   170 SBG (K)   490 EJV (S)   4030 1U5 (C)   6100 PSG (J)
 30 JGJ (F)   180 NHS (D)   500 9RJ (W)   4040 3IG (4)   40=0 VKN (K)   6110 CYA (X)
 40 SUV (V)   190 ZUI (W)   510 UDN (E)   4050 VKK (O)   5000 CKS (W)   6120 DIA (J)
 50 JUN (F)   200 WLB (K)   520 YRP (N)   1999 EWN (I)   5010 51A (X)   6130 W40 (H)
 55 DA5 (0)   210 PLS (A)   550 YHJ (C)   2000 CNP (4)   5020 NKG (2)   6140 D5A (X)
 60 PKP (0)   220 D5T (0)   540 HBE (K)   2010 S15 (E)   5030 1U6 (1)   6150 D5Y (1)
 70 RYV (C)   230 W5T (5)   550 C5G (W)   2020 NXE (T)   5040 VKP (1)   6160 U9A (G)
 80 R56 (Y)   240 DCK (L)   560 BCA (V)   2030 1U5 (X)   5000 CXT (D)   6170 27N (E)
 90 5FK (J)   241 KKE (H)   570 PJC (9)   2040 VRL (S)   5010 WPA (7)   6180 3HK (J)
 100 7KA (S)   250 9RB (1)   600 RWY (X)   3000 CXR (W)   4020 TD2 (N)   6190 1X1 (U)
 110 ARL (R)   260 5WV (V)   605 SP4 (J)   3010 314 (M)   4030 CYA (T)   6200 WDI (F)
 120 RKV (S)   270 4B5 (E)   610 US9 (X)   3020 NXB (5)   4040 5LT (J)   6210 XUN (G)
 130 1W5 (J)   280 R21 (C)   620 DAV (0)   3050 1U4 (0)   4050 D5A (Y)   6220 58X (6)
```

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WHILE STOCKS LAST

MONITOR THE MUSIC

THE two main features people notice first about Atari computers are their sound and graphic capabilities. Even though internally generated computer music can sound superb, you can never get a micro to create accurately the sound of your favourite rock mega star.

But with this fun and very easy-to use program you can put your own pop, rock or classical music tapes in any Atari tape recorder and hear the music through the TV speaker.

The program also controls the movement of five vertical bouncing bars – which simulate the peak scan on a hi fi – in time with the music.

Type in the program – remembering to check it using Get it Right! – then save a copy to tape or disc. To use it all you have to do is press Reset, place the music cassette of your choice into the tape recorder and press play.

Now run the program. The main screen is drawn and then the tape motor is turned on by the command POKE 54018,52. Music will now come through the micro to the TV speaker.

The program looks at 16 locations between lines 53775 to 54015 to see if a value of 239 is found – this figure is present if a sound of a strong enough level exists. These are then used to control the movement of the bars up and down the screen, so the louder the music the more the bars beat to the music.

The routine can be easily modified to create other interesting effects such as flashing lights or drawing graphical designs in time with the music. So Roll over Beethoven – let's have some music.

CRAIG SMITH and MARK HARRIS scan the channels to give some amazing rhythmical displays

```
1 REM GRAPHIC EQUALISER
2 REM (C)ATARI USER
3 REM C SMITH AND M HARRIS
4 GOSUB 1500 REM DRAW LINES
10 ? CHR$(125) REM CLEAR SCREEN
15 ? CHR$(253) REM BLEEP
17 POKE 709,8 REM CHARACTER BRIGHTNESS
 LEVEL
20 POKE 710,0 REM SCREEN COLOURS
25 POKE 752,1:REM REMOVE CURSOR
25 LET L1=8 LET L2=8 LET L3=8 L4=8 L5=8 L6=8 L
7=8 GIM 725(50),725(55),725(80),725(85
),T$(70)
27 REM TYPES AT 24 SPACES FROM SCREEN
40 T1$="  TITLE:  ";T2$="  CRAFTY
" T3$="  ATARI  ";T4$="  M HARRIS
55 T5$="  (C) C SMITH  "
50 POSITION 12,0,? T2$
54 L1=L1+1
54 IF L1=25 THEN GOTO 60
56 GOTO 50
60 POSITION 12,0 ? T2$
62 L2=L2+1
64 IF L2=15 THEN GOTO 70
66 GOTO 60
70 POSITION 13,0 ? T3$
72 L3=L3+1
74 IF L3=5 THEN GOTO 80
76 GOTO 70
80 POSITION 8,L4 ? "  POSITION 25,L5
 ? "
90 L4=L4+1 L5=L5+1
100 IF L4=22 THEN GOTO 120
110 GOTO 80
120 POSITION L6,21 ? T4$
125 L6=L6+1
130 IF L6=20 THEN GOTO 150
135 GOTO 120
150 POSITION L7,21,? T5$
155 L7=L7+1
160 IF L7 2 THEN GOTO 200
185 GOTO 150
200 POSITION 1,1 ? "  POSITION 30,1 ?
 "  POSITION 1,20:? "  :POSITION 30,2
0:? "
210 POSITION 5,1 ? "  :POSITION 12,1
 ? "  POSITION 19,1:? "  POSITIO
N 26,1 ? "  POSITION 33,1 ? "
220 POSITION 5,10 ? "  POSITION 12,
10 ? "  POSITION 19,10:? "  POSI
TION 26,10:? "
```

Turn to Page 46 ▶

PROGRAM BREAKDOWN

10–35	Set up variables, turn cursor off and alter screen display
40–250	Draw the main screen
290	Turns the cassette motor on
300–350	Set the calculated GOTO statements
400–650	Peek the locations to detect if any music is present
700–1420	Draw the bars that beat to the music
1500–1550	Draw black lines across the screen

◀ From Page 45

```
230 POSITION 33,18 ? "└┘"
240 FOR F=4 TO 17 POSITION 5,F:? "|":P
OSITION 7,F:? "|":POSITION 12,F:? "|":
POSITION 14,F:? "|"
250 POSITION 15,F:? "|":POSITION 21,F
? "|":POSITION 28,F ? "|":POSITION 29,
F ? "|" POSITION 33,F ? "|"
260 POSITION 35,F ? "|":NEXT F
270 POSITION 4,2 ? "400Hz" POSITION 11
,2 ? "500Hz" POSITION 18,2 ? "1KHz":PO
SITION 25,2 ? "5KHz"
280 POSITION 32,2 ? "10KHz"
290 POKE 54018,52 REM ENABLE DOITA SEQU
ENCER
300 REM SET GOTO VALUE 5
310 B1H1 700:B1H2 750 B1H3=800
320 B2H1=850 B2H2=900 B2H3=950
330 B3H1=1000:B3H2=1050 B3H3 1100
340 B4H1 1150 B4H2=1200 B4H3=1250
350 B5H1=1300 B5H2=1350 B5H3=1400
400 REM DETECT MUSIC BEATS
405 IF PEEK(53279)=3 THEN GOTO B1H1
410 IF PEEK(53761)=235 THEN GOTO B1H2
420 IF PEEK(53007)=235 THEN GOTO B1H3
430 IF PEEK(53023)=235 THEN GOTO B2H1
440 IF PEEK(53295)=235 THEN GOTO B2H2
450 IF PEEK(53055) 235 THEN GOTO B2H3
460 IF PEEK(53071=235 THEN GOTO B3H1
470 IF PEEK(53087)=235 THEN GOTO B3H2
480 IF PEEK(53903) 235 THEN GOTO B3H3
490 IF PEEK(53951=235 THEN GOTO B4H1
500 IF PEEK(53951)=235 THEN GOTO B4H2
510 IF PEEK(53967) 235 THEN GOTO B4H3
520 IP PEEK(53903)=235 THEN GOTO B5H1
530 IF PEEK(53951)=235 THEN GOTO B5H2
540 IF PEEK(54015) 235 THEN GOTO B5H3
550 POKE 77,0 GOTO 500
700 REM BAR 1 ALTITUDE 1
710 FOR L 17 TO 12 STEP -1 POSITION 6,
L ? "■" COLOR 3 NEXT L
720 FOR L=12 TO 17:POSITION 6,L ? " "
NEXT L
730 GOTO 500
750 REM BAR 1 ALTITUDE 2
760 FOR L=17 TO 8 STEP -1.POSITION 6,L
? "■" NEXT L
770 FOR L=8 TO 17 POSITION 6,L:? " ":N
EXT L
780 GOTO 500
800 REM BAR 1 ALTITUDE 3
810 FOR L 17 TO 4 STEP -1 POSITION 6,L
:? "■" NEXT L
820 FOR L=4 TO 17 POSITION 6,L ? " " N
EXT L
830 GOTO 500
850 REM BAR 2 ALTITUDE 1
860 FOR L=17 TO 12 STEP -1 POSITION 13
,L ? "■" NEXT L
870 FOR L=12 TO 17 POSITION 13,L ? " "
:NEXT L
880 GOTO 500
900 REM BAR 2 ALTITUDE 2
910 FOR L 17 TO 8 STEP -1 POSITION 13,
L ? "■" NEXT L
920 FOR L=8 TO 17 POSITION 13,L ? " "
NEXT L
930 GOTO 500
950 REM BAR 2 ALTITUDE 3
960 FOR L 17 TO 4 STEP -1 POSITION 13,
L ? "■" NEXT L
970 FOR L=4 TO 17 POSITION 13,L ? " "
NEXT L
980 GOTO 500
1000 REM BAR 3 ALTITUDE 1
1010 FOR L 17 TO 12 STEP -1 POSITION 2
0,L:? "■" NEXT L
1020 FOR L 12 TO 17 POSITION 20,L:? "
" NEXT L
1030 GOTO 500
1050 REM BAR 3 ALTITUDE 2
1060 FOR L 17 TO 8 STEP -1 POSITION 20
,L ? "■" NEXT L
1070 FOR L=8 TO 17 POSITION 20,L ? "
NEXT L
1080 GOTO 500
1100 REM BAR 2 ALTITUDE 3
1110 FOR L=17 TO 4 STEP -1:POSITION 20
,L ? "■" NEXT L
1120 FOR L=4 TO 17 POSITION 20 L ? " "
NEXT L
1130 GOTO 600
1150 REM BAR 4 ALTITUDE 1
1160 FOR L=17 TO 12 STEP -1 POSITION 2
7,L ? "■" NEXT L
1170 FOR L 12 TO 17 POSITION 27,L ? '
' NEXT L
1180 GOTO 500
1200 REM BAR 4 ALTITUDE 2
1210 FOR L 17 TO 8 STEP -1 POSITION 27
L:? "■" NEXT L
1220 FOR L=8 TO 17 POSITION 27,L ? " "
NEXT L
1230 GOTO 500
1250 REM BAR 4 ALTITUDE 3
1260 FOR L=17 TO 4 STEP -1:POSITION 27
,L ? "■" NEXT L
1270 FOR L=4 TO 17 POSITION 27,L ? " "
NEXT L
1280 GOTO 500
1300 REM BAR 5 ALTITUDE 1
1310 FOR L 17 TO 12 STEP -1 POSITION 3
4 L ? "■" NEXT L
1320 FOR L=12 TO 17 POSITION 34,L ? "
" NEXT L
1330 GOTO 500
1350 REM BAR 5 ALTITUDE 2
1360 FOR L 17 TO 8 STEP -1 POSITION 34
,L ? "■" NEXT L
1370 FOR L 8 TO 17 POSITION 34 L ? " "
NEXT L
1380 GOTO 500
1400 REM BAR 5 ALTITUDE 3
1410 FOR L=17 TO 4 STEP -1 POSITION 34
,L ? "■" NEXT L
1420 FOR L=4 TO 17 POSITION 34,L ? " "
NEXT L
1430 GOTO 500
1450 REM SET UP SCREEN
1500 FOR N=0 TO 54 DEAD 0 POKE 1536+N,
0 NEXT N
1510 DATA 16,16 00 66,255,255,0 2,0,2,
0 2,0,2,0,2,0,2,0,2,0,2,0,2,0,2
1520 DATA 0,2,0,2,0,2,0,2,0,2,0,2,0,2,
0,2,0,2,0,2,0,2,0,2,0,2,0,2,0,0
1530 POKE 1538+0,PEEK(106) POKE 1536+5
PEEK(89)
1540 POKE 560,0:POKE 561,6
1550 RETURN
```



1 CAJ (W)	60 05E (B)	150 85W (A)	520 N6H (N)	610 7K0 (P)	850 QJL (I)	1050 MVV (Y)	1230 P4V (B)	1430 P0V (R)
2 CAK (S)	62 KGW (N)	155 N6P (H)	530 L8T (V)	620 7WR (G)	850 8HO (F)	1060 CA0 (A)	1240 C44 (V)	1450 0RN (W)
3 CAL (V)	64 CM3 (S)	160 EAH (L)	540 M9L (E)	630 02K (F)	860 HLA (O)	1070 VFA (B)	1250 VLR (H)	1500 WSY (A)
4 779 (L)	66 LAP (J)	165 K97 (Z)	550 MKA (V)	640 85N (V)	870 T6J (W)	1080 P8V (S)	1260 VLR (H)	1510 8LH (R)
10 P01 (I)	70 06Q (X)	200 1T7 (T)	400 CUV (Q)	650 922 (W)	880 REF (Q)	1090 02M (T)	1270 VLR (H)	1520 S1N (S)
15 0QT (J)	72 KHH (G)	210 XLF (X)	500 7EG (E)	700 CUY (W)	900 CV1 (R)	1100 02M (T)	1280 EAN (E)	1530 MVD (J)
17 77P (7)	74 0PJ (V)	220 50M (X)	510 7JY (Y)	710 NR5 (2)	910 3WT (U)	1110 AMA (P)	1310 0G3 (L)	1540 K8T (S)
20 S17 (3)	76 LA1 (M)	230 HA8 (S)	520 7P7 (M)	720 KLT (N)	920 K4V (C)	1120 V40 (Z)	1320 UMG (4)	1550 W8K (Y)
25 T50 (Q)	80 A4Y (E)	240 13G (F)	530 7U7 (Y)	730 G6E (Z)	930 G5G (K)	1130 POV (U)	1330 P8Y (V)	
55 G71 (N)	90 05J (R)	250 RWR (N)	540 711 (G)	750 0GY (G)	950 0M1 (P)	1140 U3N (V)	1350 UMN (Z)	
57 0K3 (C)	100 E61 (W)	260 X5D (5)	550 R4G (G)	780 529 (Z)	960 4QP (4)	1150 U37 (G)	1360 CUV (S)	
60 WAF (G)	110 PE7 (E)	270 C6A (B)	560 0P6 (F)	770 EAC (M)	970 KPV (W)	1160 U6L (W)	1370 VUP (V)	
50 06R (K)	120 C5N (V)	280 X20 (C)	570 0F7 (7)	780 REE (6)	980 REG (8)	1170 PAV (F)	1380 PKV (B)	
52 KGA (S)	125 N55 (C)	290 8WV (Y)	580 0K7 (9)	800 CVO (I)	1000 C3N (G)	1180 U8N (W)	1400 RFN (2)	
54 CQV (9)	130 EM6 (A)	300 CUU (L)	590 E0G (B)	810 2F0 (F)	1010 R2L (6)	1210 CA4 (3)	1410 C1V (5)	
56 LAP (1)	135 0B7 (R)	310 NLK (K)	600 7MO (P)	820 0V0 (L)	1020 U80 (6)	1220 VEA (G)	1420 VJP (3)	

Van Gogh junior

MATTHEW AUGIER

presents a fun art package for youngsters



RECENTLY my young brother has decided that he wants to be another Van Gogh. He uses my commercial art packages all the time to draw his masterpieces, but has problems with the complex range of commands designed for older age groups.

We looked around for a package aimed at young children but couldn't find any, so we created Child Artist. It is designed to be simple and easy to use for children of any age – providing they are old enough to be using a computer in the first place.

It's a four colour art program and nearly all the drawing options can be used by just pressing the function keys and moving the joystick, although some keyboard input is needed.

Figure I shows the drawing options available by pressing the function keys while Figure II shows the keys used to scroll through the available colours – the defaults are red, white, blue and green.

Once the program has initialised you are presented with a blank graphics Mode 2 screen with a triangular cursor at the top left. This is joystick controlled and can have a variety of shapes and colours which you can use to design any pictures you want by just moving the cursor around the screen and pressing the fire button to leave the shape.

Pictures can be saved on disc and each one only takes up two sectors, containing the screen information followed by the colour register information – 708 to 711 – and the colour of the cursor – 704. A picture can have a filename of eight characters and the program automatically adds the extender of .CPC to the name.

It is important to note that before a file can be loaded the cursor must be positioned at the top of the screen. This prevents the accidental erasure of a drawing by loading a file on top of it.

The program's player missile graphics are written in machine code so that movement is smooth and easy to see. The date for the shape of the cursor can be easily changed so you can have hours of fun creating your own designs. Break has been disabled so you can't accidently lose your picture, and the attract mode has been switched off.

Key	Function
Start	Alters colours using the keys in Figure II. Spacebar exits this mode
Start+Select	Saves picture
Start+Option	Loads picture
Start+Select+Option	Clears screen

Figure I. Options available

Colour	1 2 3 4
Luminance up *	O E T U
Luminance down *	A D G J
Escape	Makes the cursor invisible. Speceber brings it back
Spacebar	Allows you to alter the shape and colour of the cursor by moving the joystick – pressing the spacebar again exits this mode

** These keys scroll through the brightness level of the corresponding colour*

Figure II. Keyboard controls

```
10 REM ********************
20 REM *   CHILD ARTIST    *
30 REM *        BY         *
40 REM *  MATTHEW AUGIER   *
50 REM *                   *
60 REM *  (C)ATARI USER    *
70 REM ********************
80 GRAPHICS 2+16 POKE 710,119 POKE 709
,14 POKE 708,57 GOSUB 1500
90 POKE 711,187 DIM COL(4),CUE(15),C
OL(2),12),COL(23),117,COL(4),105:CH=1:CL
=1:CO=32
100 DIM LT$(11,8),WC(30),FL$(20)
110 GOSUB 540:GOSUB 940:GOSUB 330
120 POKE 704,COL(CO):POKE 708,155:? #6
;CH$;CL;25)
130 S=STICK(0):IF PEEK(764)=33 THEN GO
SUB 370:GOTO 130
140 POKE 16,64:POKE 53774,64:POKE 77,0
:POKE 834,0:POKE 702,64
150 IF PEEK(1766)=28 THEN POKE 764,0
160 IF PEEK(532791)=6 THEN GOSUB 1006:R
EM CHANGE COLOUR
170 IF PEEK(532791)=7 THEN GOSUB 1250:0
EM LOAD SCREEN
180 IF PEEK(532779)=6 THEN GOSUB 1330:0
EM SAVE SCREEN
190 IF PEEK(532779)=0 THEN ? #6,"A":REM
 CLEAR SCREEN
200 IF STRIG(0)=0 THEN GOSUB 290
210 IF S<15 THEN 120
220 FOR P0=1 TO 2 SOUND 1,8+Y/2,10,15
:FOR P0=1 TO 2:NEXT P0
230 IF S=11 AND X>40 THEN GOSUB 1020:G
OTO 120
240 IF S=7 AND X<280 THEN GOSUB 1040:G
OTO 120
250 IF S=14 AND Y>15 THEN GOSUB 1050:G
```

Turn to Page 48 ▶

◀ From Page 47

```
070 RETURN
080 IF S=11 AND Y(101 THEN GOSUB 1000
GOTO 110
270 GOTO 130
280 REM PRINT SHAPE ON SCREEN
290 X1=(X-40)/8:Y1=(Y-15)/8
300 IF CH=22 THEN COLOUR 0:PLOT X1,Y1:G
OTO 110
```




```
 10 CP1 (Y)
 20 CP2 (I)
 30 CP5 (X)
 40 CP4 (G)
 50 CP5 (T)
 60 CP6 (7)
 70 CP7 (X)
 80 ALC (M)
 90 SP1 (H)
100 HAM (W)
110 UUC (Z)
120 JPJ (U)
130 Q7O (F)
140 EHQ (H)
150 SP5 (V)
160 3P1 (X)
170 3CT (X)
180 3DT (S)
190 Y92 (C)
200 XXC (C)
210 3SS (S)
220 D3T (Z)
230 AEJ (M)
240 90N (B)
250 AMC (V)
260 K91 (B)
270 QYM (T)
280 0U1 (L)
290 HOT (G)
300 GSG (A)
310 JHO (G)
320 RF7 (4)
330 37U (9)
340 PUL (S)
350 1M5 (E)
360 OLU (2)
370 THE (7)
380 BJ2 (J)
390 5C6 (S)
400 42M (F)
410 M3P (9)
420 G9R (O)
430 7JI (U)
440 HS1 (P)
450 A4H (B)
460 MKB (B)
470 BUF (4)
480 ASP (S)
490 AJP (S)
500 A3B (1)
510 A9Q (4)
520 GWC (H)
530 07W (U)
540 L8L (E)
550 V6G (E)
560 RHO (D)
570 07H (G)
580 S6U (L)
590 SA9 (U)
600 CUK (K)
610 H6H (S)
620 XLH (E)
630 XKT (V)
640 JPE (J)
650 Y9B (G)
660 J5K (H)
670 XLN (4)
680 JYM (W)
690 K3M (4)
700 XAS (M)
710 HYE (V)
720 V2K (M)
730 VJJ (5)
740 V46 (F)
750 Y6U (U)
760 Y2G (M)
770 UHA (R)
780 V05 (P)
790 02A (9)
800 UK4 (D)
810 AH2 (S)
820 XAA (D)
830 DBO (A)
840 PNR (V)
850 Y1R (C)
860 HH3 (D)
870 AFL (U)
880 1BZ (U)
890 Y1M (W)
900 NAE (X)
910 WW4 (3)
920 PF5 (B)
930 046 (L)
940 039 (7)
950 JHE (X)
960 5FE (K)
970 HN5 (7)
980 A57 (M)
990 E01 (P)
1000 EHV (C)
1010 TGE (X)
1020 5V4 (L)
1030 46A (N)
1040 AD7 (S)
1050 A57 (N)
1060 5A0 (S)
1070 03N (X)
1080 0AG (Y)
1090 VPR (K)
1100 HA5 (N)
1110 83 (,
1120 0YG (W
1130 DKT (H)
1140 UH1 (3
1150 D75 (N)
1160 14U (C)
1170 0GM (D)
1180 T9V (J)
1190 QJ0 (T)
1200 UDG (5)
1210 F91 (E)
1220 WX0 (G)
1230 V0K (C)
1240 0FN (E)
1250 SVO (W)
1260 PTH (0)
1270 LAE (5)
1280 0G2 (K)
1290 1A4 (R)
1300 XPJ (D)
1310 XAF (S)
1320 1MF (1)
1330 4VV (7)
1340 8GU (L)
1350 0MN (K)
1360 72N (E)
1370 AFA (V)
1380 4TU (M)
1390 75K (G)
1400 5CE (W)
1410 8TH (F)
1420 HKN (K)
1430 Y6T (L)
1440 GXW (Y)
1450 10P (X)
1460 EAA (P)
1470 4A5 (E)
1480 0L0 (0)
1490 Y2O (5)
1500 HY9 (T)
1510 RPV (N)
1520 DW7 (N)
1530 C0E (3)
1540 UPO (3)
1550 O0N (7)
1560 V9Y (N)
1570 E0N (H)
1580 0TE (M)
1590 0YX (0)
1600 4CT (U)
1610 95C (0)
1620 MW0 (C)
1630 H5M (0)
1640 WAK (H)
```

```
110 COLOUR CH*16 PLOT X1,Y1
120 RETURN
130 REM SHOW PLAYER MISSILE
140 GOSUB 850
150 E=USR(&,0,C*Y,0) POKE S3240,M:RETU
RN
160 REM CHANGE SHAPE
170 POKE 784,255
180 S$=STRING$(8) IF PEEK(784)=11 THEN PO
KE 784,255 RETURN
190 IF S=15 THEN 180
200 FOR P%=1 TO 5 SOUND 1,200,30,10 NE
XT P% SOUND 5,0,0,0
210 IF S=7 THEN CH=CH+1 IF CH=21 THEN
CH=1
220 IF S=11 THEN CH=CH-1:IF CH=0 THEN
CH=22
230 LT$=CHR$(CH) GOSUB 1000 GOSUB 240:
REM SET CHAR$ + REDEFINE PM
240 IF S=7 OR S=11 THEN 300
250 IF S=14 THEN CL=CL+1 IF CL)4 THEN
CL=1
260 IF S=13 THEN CL=CL-1 IF CL=0 THEN
CL=4
270 POKE 704+CL,CL(CL)
280 IF CL=1 THEN C0=32
290 IF CL=2 THEN C0=4
300 IF CL=3 THEN C0=128
310 GOTO 180
320 REM REDEFINE CHAR SET
340 CH=(PEEK(106)-8)*256 CHOOS=(PEEK(7
58)*256) FOR I=0 TO 511 SOUND 0,I/4,10
,10 POKE CH+I,PEEK(CHOOS+I) NEXT I
350 FOR CHAR=13 TO 22 FOR V=0 TO 7 SOUND
 0,(CHAR*7+V+1)*3/1 22,10,10
360 POKE 16,84 POKE 17,CH-64
370 REDIM NUM *POKE CH*CHR$(V),NUM NEXT
 V NEXT CHR
380 POKE 756,CH/256 LT$="" SOUND 0,0,
0,0
390 RETURN
840 REM DATA FOR CHR$
850 DATA 1,1,7,15,31,63,127 255
860 DATA 255,255,252 248,240 224,192,1
28
870 DATA 128,192,224,240,248,252,254,2
55
880 DATA 255 127,63,31,15,7,3,1
890 DATA 255,255,255,255,0,0,0,0
900 DATA 255,231,195 129 129,195 231,2
55
910 DATA 0,24,60,126,126 60 24,0
920 DATA 24 60,126 255,255,126,60,24
930 DATA 128 85 170 85 170,85,170,85
940 DATA 1,15,31,63,127 127,255,255
950 DATA 192,240,240 252,254,254,255 2
55
960 DATA 255,255,254,254,252,248,240,1
92
970 DATA 255,255,127,127,63,31,15 3
980 DATA 252,240 224,192 128 128,0,0
990 DATA 63,15,7,3,1,1 0 0
000 DATA 0,0,128 128,192,224,240,252
010 DATA 0,0,1,1,3 7,15,63
020 DATA 254,129,129,129,129,129,129,2
55
030 REM PLAYER MISSILE GRAPHICS
040 GOSUB 780
050 TEMP=PEEK(106)-8 PMBASE=256*TEMP N
=40 Y 15
060 POKE 65 64 POKE 53774,64
070 S=USR(ADR(POKE$),54279,TEMP 559 46,
53277 3,53248 K,704 216+
080 POKE PMBASE+512,0 0 USR(ADR(MOVE$),
PMBASE+512 PMBASE+513,128)
090 S=ADR(MOVE$) S=USR(PLAYER$) S=PMBAS
E+512 0 10 POKE 623,1 RETURN
100 RESTORE 110 DIM POKE$(25) FOR I=1 T
O 25 READ A POKE$(I,I) CHOOS(N) NEXT I
110 DATA 104,74,170,260 0 104,111,255,
104 133,254,104,240,4 208,100,254,136,
104 145,254,202,208,237,96
120 RESTORE 130 DIM MOVE$(39 FOR I= 1 T
O 39 READ A MOVE$(I,I)=CHR$(N) NEXT I
130 DATA 104 104,133 215,104,133,254,1
04,133 247,100,133,216,104,133,210 104
,170,100,0 177 214,145 216,200,200,4
940 DATA 210,215 200 217,202,208 242,1
90 210,96 216 96
950 RESTORE 960 DIM PMVUS(471 FOR I=1
TO 47 READ A PMVUS(I,I) CHOOS(N) NEXT I
960 DATA 104 104 133,255,104,133,254 1
04,133,252 104,111 252,104,170 20,101
255,133,255 138 24,101 253 133,253
970 DATA 104,150,177 254,145,252 136,1
92,208 248,247,190,251,190,255 202,224
 255 208,230 96
980 DIM PLAYER$(180 GOSUB 1000:RETURN
990 REM DEFINE PM
1000 PLAYER$(4,)="" PLAYER$(18,18)=
""
1010 FOR S=0 TO 7 PLAYER$(0+2,0+2)=CHR
$(PEEK(CH+(OSC(LT$)*4+0+1) NEXT 0 RETU
RN
1020 FOR T=0 TO 7 X=X+1 GOSUB 130 NEXT
 T RETURN
1030 REM MOVE PM GRAPHICS
1040 FOR S=0 TO 7 X=X+5 GOSUB 130:NEXT
 T:RETURN
1050 FOR T=0 TO 7 Y=Y-5 GOSUB 130 NEXT
 T:RETURN
1060 FOR T 0 TO 7 Y=Y+1 GOSUB 130 NEXT
 T RETURN
1070 REM CHANGE COLOUR
1080 POKE 764,255
1090 A=PEEK(764)
1100 POKE 16 84 POKE 53774 64
1110 IF 0 33 THEN POKE 704,255 GOTO 12
20
1120 IF 0=255 THEN 1090
1130 IF 0=47 AND PEEK(7699)255 THEN PO
KE 709,PEEK(709)+1 POKE 764,255
1140 IF 0=63 AND PEEK(7699)=1 THEN POKE
 709,PEEK(709) 1.POKE 764,255
1150 IF A=62 AND PEEK(710)=250 THEN PO
```

```
RE 710,PEEK(710)+1:POKE 704,255
1160 IF A 64 AND PEEK(710)>2 THEN POKE
 710,PEEK(710)-1 POKE 704,255
1170 IF A 45 AND PEEK(711)<255 THEN PO
KE 711,PEEK(711)+1 POKE 704,255
1180 IF A=11 AND PEEK(710)>2 THEN POKE
 711,PEEK(711) 1 POKE 704,255
1190 IF A=12 AND PEEK(708)<255 THEN PO
KE 708,PEEK(708)+1 POKE 704,255
1200 IF A 1 AND PEEK(708)>2 THEN POKE
708,PEEK(708) 1 POKE 704,255
1210 GOTO 1090
1220 FOR A 1 TO 4 COL(0)=PEEK(708+A-2
 NEXT A POKE 704 COL(CL)
1230 RETURN
1240 REM LOAD
1250 GOSUB 1320
1260 POSITION 6,6 ? #6; "ENTER NAME
    ";:GOSUB 1410
1270 TRAP 1310 OPEN #1 4 0,FL$
1280 FOR A=0 TO 21 FOR G2 0 TO 19 GET
 #1,A COLOR A PLOT G2,A2 NEXT A2 NEXT
A1
1290 FOR T 708 TO 711 GET #1 A2 POKE 1
 A2 NEXT T GET #1 A2 POKE 704 A2
1300 CLOSE #1 GOSUB 1220 RETURN
1310 TRAP OFF GOSUB 1330 RETURN
1320 FOR AP 1 TO 20 LOCATE AP-1,0,ZX #
#(AP)=ZX: NEXT AP GOTO 1340
1330 FOR AP 1 TO 20 COLOR #(AP):PLOT
```

This is one of hundreds of programs now available FREE for downloading on MicroLink

```
AP-1,A NEXT AP
1340 POKE 16,64 POKE 53774,64 RETURN
1350 REM SAVE
1360 GOSUB 1320
1370 POSITION 0,0 ? #6;"ENTER NAME
    ";:GOSUB 1410 GOSUB 1310
1380 OPEN #1,8,0,FL$
1390 FOR A1 0 TO 21 FOR A2 0 TO 19 LOC
ATE A2,A1,A3 PUT #1 A3 NEXT A2 NEXT A1
1400 FOR T=708 TO 711 PUT #1 PEEK(T) N
EXT T PUT #1 PEEK(704)
1410 CLOSE #1 RETURN
1420 REM GET FILE NAME
1430 CLOSE #1 OPEN #1 4 0 "K:":PO ?
1440 GET #1 AL IF AL 27 THEN POP :POP
 GOTO 1330 GOTO 1340
1450 POKE 16,64 POKE 53774,64 POKE 694
,0 POKE 702,64
1460 IF AL>155 THEN 1520
1470 IF AL 126 AND PO)7 THEN PO PO-1 P
OSITION PO 0 ? #6;" " GOTO 1440
1480 IF PO>14 THEN 1440
1490 IF AL<65 OR AL>90 THEN 1440
1500 POSITION PO,0 ? #6;CHR$(AL) PO PO
+1
1510 GOTO 1440
1520 LOOP 6 FL$ "D:"
1530 LNOP-LOOP+1:LOCATE LOOP,0 LF IF L
F=IZ THEN 1550
1540 FL$(LOOP 4 LOOP #):CHR$(LI) GOTO
1530
1550 FL$(LOOP 4,LOOP I$ CPC
1560 CLOSE #1:POKE 16,64 POKE 53774,64
 RETURN
1570 REM TITLE PAGE
1580 POSITION 6 0 ? #6;"ÉÉÉ
```

MicroLink
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TELECOM GOLD
NEWSLETTER

NOW FT BUSINESS REPORTS GO ON LINE

THE Financial Times Business Reports database is now part of Profile Information – the online service formerly known as Datasolve International – which is obtainable through MicroLink It is the first venture between Profile and its new owner, The Financial Times, which recently acquired the company from Datasolve for £10 million

Based on the highly regarded FT newsletter service the new database provides the full text of 22 regular newsletters covering technology business, finance media and energy

Profile is best known to MicroLink subscribers for its World Reporter database containing the complete text of more than 25 worldwide newspapers periodicals and news services

As well as the world's leading business newspapers – the Financial Times and the Wall Street Journal – Profile also offers publications such as the Washington Post the Guardian and the Daily and Sunday Telegraph

Several major international news services such as Associated Press and Asahi are included along with a wide range of authoritative sources on international politics business markets and finance

Profile also offers access to McCarthy Online which contains full text articles selected for their relevance to business and commerce from more than 60 of the world's top business publications

It's the Tory line

TORY politicians and party workers all over the country are being urged to join MicroLink

The Conservative Computer Forum, an organisation formed 10 years ago to promote computing among party members, is behind the campaign

Committee member Warwick Childs said 'Perhaps the greatest potential a computer can offer – electronic communications – has up to now been sadly neglected in the Conservative Party In this respect we are well behind the other main political parties

"At present we have something approaching 200 CCF members – think what an advantage it would be if they were able to provide a nation wide electronic mail network for the benefit of their constituencies

"These people are our prime targets for linking together electronically Eventually we hope to see all constituencies MPs, party officials and offices on the MicroLink system'

Software speed-up

IT s now quicker and easier to use the massive MicroLink library of free computer software

With the number of titles available for downloading fast approaching the 600 mark, subscribers were in danger of experiencing difficulty locating specific programs As a result MicroLink has completely redesigned the filesoftware database to speed up the process of selection

Users can now choose from a menu a complete database of program titles suitable for their own particular make of computer

The social side wins

MICROLINK subscriber Nigel Inwood temporarily abandoned a career in accountancy and law to help his parents open a business Fourteen years later he very much doubts he ll ever return to the office

The business his family took over was Judges Bakery in the High Street of Hastings old town near the harbour

With the addition of a restaurant, it became the only bakery to be listed in tourist guides such as Egon Ronay and the Good Food Directory

'I'm on MicroLink for pleasure, because computing is my hobby ', said Nigel Inwood 'Despite its international fame this is still a one-shop business – my Email communications are more likely to be social than official

"I chose MicroLink because it offered more interesting and entertaining features than the other systems available'

Third World connection

A LEADING independent authority on conditions in Third World countries has joined MicroLink to improve its international communications

The Overseas Development Institute was formed nearly 30 years ago to study and monitor economic and agricultural development abroad

At any one time it has as many as 20 research projects underway in different parts of the world As well as publishing vital information about conditions in various countries, the ODI also tries to influence the decisions of policy makers around the world

"We have an ongoing need to communicate with researchers and other institutions worldwide" said ODI spokesman Peter Gee

"As part of a project to improve communications we are looking at electronic messaging and MicroLink is as good a base as any to start with its excellent Email and telex facilities '

YOUR chance to join MicroLink – Page 6

Your HINTS & TIPS

Escape from Traam

IF you are having trouble with this superb science fiction adventure don t panic – help s at hand When you crash your ship, look at it get the nylon rope push the ship and get the laser

Go South and tie the rope to the bush then climb up and talk to the alien warrior – you have to talk to him twice Now go South then West into the dark cave and once you re inside it keep moving until you bump into an object – the rest is up to you – **Patrick Brown, Newton, Leicestershire**

Donkey Kong Junior

WHEN the game has loaded press Start Then press shift and hold it down as you type the word BOOGA If you now press K you will never be killed as you play the game and if you press S you will be able to skip levels – **George Boyle, Livingston, West Lothian**

Spiderman

HERE is the complete solution to this addictive adventure

Walk along the walls, go West, look in the crib and take the formula Now look in the crib again before taking the first gem Go N, N and drop the gem followed by the formula then go S, S, E and open the doors

Enter the shaft and have a look around especially in the niche, and get the gem Now go up the shaft and have a look around in another niche before getting the gem Go up again and search around for another gem Push the shaft and go up take another look before getting the next gem

You are now in the Penthouse so lower the thermostat twice before reading it then open the desk and get the sixth gem Take the painting and pull it then get the paper and drop the picture Go back into the shaft and go D, D, D W, W, N, N and drop a gem six times

Go S, E and take the aquarium Go W, S, E and enter the shaft again Go U, U U, W and raise the temperature Empty the aquarium and take the gem then drop the aquarium Lower the temperature, take the desk and couch and go back into the shaft

Go D, D D, W, W, N N and drop a gem then go S Next move E and take the statue and go W, S, E Go into the shaft climb up and go W where you drop the statue, couch and desk.

Enter the shaft again, go U, W, W and close your eyes Go W then push the knob open your eyes and get the gem Type RUN and go E, S to get the acid and calcium then go S, S and get the other chemicals Go N, N and mix the chemicals first and then get the calcium – then call

Go S, S and take the chemicals before going N, N, now make a web Drop the paper then go S, E and enter the shaft Go D, D, W, W then South before dropping the calcium. Have a look in the corners and take the gem you find there then go N, N, N and drop the gem twice

Go S and shoot your web at the gem before you get it, then go N and drop the gem before going S, S, S Take the corners and go N, E to get to the roof Open the mesh and then drop it, go down the duct and get the gem.

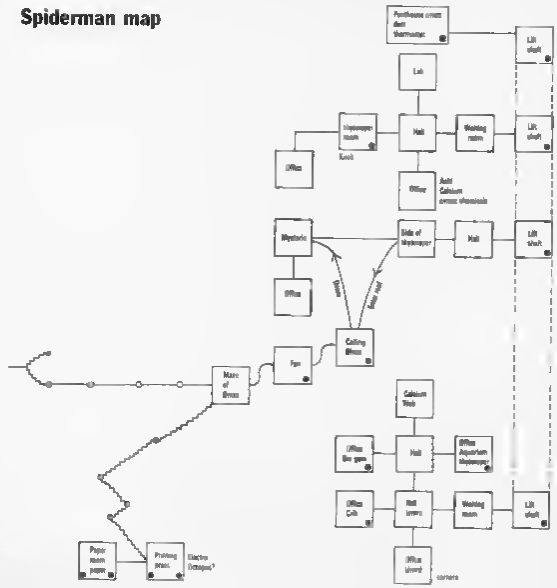
Examine the fan before shooting your web at the button five times then enter the fan to take the gem before going D, D, D, D, D Get octo and hit electro then go W and read the dial – it should say 957 Go E, U, U, U, U, U enter the fan go down and feel N before you take the gem

Go S and then feel S and take the gem before going N, E, E Enter the shaft and go D, W, W, N, N so you can drop the gem seven times Go S, S, E and enter the shaft before going U, U W, W, W and type RUN

Go E, E, enter the shaft, then go D, W, W and enter the roof Now enter the duct then the fan before going D, D, D, D, D and take the newspaper Open it and take the gem Go U, U, U, U, U and enter the fan before going D, D, E, E so you can enter the shaft

Go D, W, W, N, N and drop the gem – now ask for your score and it will print MICAH 100% – you have just finished the game – **Lee Harding, Bradford, West Yorkshire**

Spiderman map



Customising the default screen

KEN BREARLY gives you a superb autoboot program that could brighten up your Atari

HAVE you reached the stage in your programming career when a standard blue and white screen no longer fills you with inspiration? Perhaps you've envied other makes of computer which use different colours or formats for their programming screens. Or maybe you just want to give your loveable old Atari a face-lift, and impress your friends with its new customised appearance

If so this autoboot program is for you. It lets you override the operating system so that whenever you switch on or press Reset, a different screen layout with lots of new features appears instead of the boring old blue one.

What new features? Well, for starters the new screen can be any colour you like with or without a border and the text can be brighter or dimmer than usual. The left and right margins can be set at any positions you choose – perhaps to give balanced margins at either side rather than the standard right heavy effect.

The cursor can be adjusted so that it zips around at up to four times its normal speed, while still allowing precise single-step positioning and without affecting the auto repeat on any other keys. You can also have it flashing on and off at whatever rate you choose and, unlike most flashing cursors, this one stays visible whenever it moves – so you will never lose track of it no matter how quickly it whizzes about.

If you like the BBC Micro display with thin lines under each line of text, you can incorporate a similar effect in your new custom screen. And, if you adopt this feature, you can move the whole text area up or down to centralise it, should your TV be slightly out of adjustment.

A feature unique to the Atari is the attract mode colour rotation – that is, when you don't touch the keyboard for about 10 minutes, the screen colours will start to change randomly every few seconds. This can be very irritating when you're programming, so the autoboot routine gives you the option of switching it off.

There's even an extra feature for advanced programmers, which allows you to reserve a safe area of memory below the *MEMLO* pointer. This area can be used to store display lists, character sets, player missile graphics tables, machine code routines or any other data that you want to keep out of Basic's clutches but which won't fit on page six.

Because the routine is written entirely in machine code and installs itself before Basic takes control, it behaves just as though it were part of the built-in operating system.

You can load, save and modify your Basic programs without affecting it in the slightest, and even typing NEW won't erase it. The new screen will disappear, of course, when you select any new graphics mode, and you can change the colours using SETCOLOR in the usual way. But if you press Reset, everything will be automatically restored to its former glory.

The machine code is quite complex, and would take too long to discuss in detail, so we'll just look at the Basic versions and how to customise them.

Program I is for disc users. When you run it, it creates an AUTORUN.SYS file containing all the routines and data for your new customised screen. Make sure, though, that the disc you're saving it to contains a copy of Dos, and doesn't contain an existing AUTORUN.SYS file that you want to keep.

Program II is similar, but creates an autoboot cassette file. Insert a blank, rewound cassette, Run the program and proceed as for CSAVE when you hear the familiar double beep. To get the new screen routine installed and working, you now follow the normal boot procedure.

With a disc drive, simply insert the disc containing your AUTORUN.SYS file and switch the computer on. To load the cassette version, insert the fully rewound autoboot cassette, switch power on while holding down the Start key, then follow the usual CLOAD procedure.

If you keep the routine in its present form, you will get a green screen with blue-grey lines under each line of text, margins set at 1 and 38, a cursor which flashes twice per second and moves twice as fast as normal, and no attract mode colour rotation. The disc version also gives you a protected area of ram between addresses 7991 and 9216, while the cassette version gives you 2092 to 3072 – see Figure I.

All these parameters can be altered by changing a few numbers in either program, then making a new autoboot file containing the customised data.

Numbers on line 230 or 300	Function	Existing number	Permissible range
1st	Background colour	194	Even numbers from 0 to 254
2nd	Border colour	176	Even numbers from 0 to 254
3rd	Character brightness	10	Even numbers from 0 to 14
4th	Left margin	1	0 to 38
5th	Right margin	38	1 to 38
6th	Attract mode on/off	0	0 = off, 1 = on
7th	Flashing cursor on/off	1	0 = off, 1 = on
8th	Cursor flash rate	14	1 to 255
9th	Cursor movement rate	2	1 to 6
10th	Underlines on/off	1	0 = off, 1 = on
11th	*MEMLO* pointer, low byte	0	Best left at 0
12th	*MEMLO* pointer, high byte	38 (disc) 12 (cass)	Minimum 32 (see text) Minimum 8 (see text)

Table I. The possible program changes and their effect

It s quite easy to do

Look at line 230 in Program I or line 300 in program II Each of those 12 numbers controls some aspect of the new default screen For example, the first three — 194, 178 and 10 — affect screen colours Table I shows what each number does together with the renge of numbers you can use as alternatives to customise the screen

You can experiment with most of these numbers while your new screen is in place First install the autoboot file to get the green screen and so on, then experiment by POKEing different numbers into the control registers as follows

Background colour POKE 710 with any even number from 0 to 254

Border colour POKE 712 with any even number from 0 to 254 If you do not want a visible border, make it the same colour as the background

Character brightness POKE 709 with any even number from 0 to 14 If you accidentally make the text invisible against the background just press Reset

Left margin POKE 82 with any number from 0 to 38

Right margin POKE 83 with any number from 1 to 39

Colour rotation POKE 7680 (disc) or 1805 (cassette) with 0 to cancel the attract mode colour rotation or 1 to enable it

Fleshing cursor POKE 7681 (disc) or 1806 (cassette) with 0 to stop the fleshing or 1 to start it again

Cursor flash rate POKE 7682 (disc) or 1807 (cassette) with any number from 1 to 255 The higher the number the slower the flash rate

Cursor movement rate POKE 7683 (disc) or 1808 (cassette) with any number from 1 to 6 Numbers above 6 will not slow the cursor down any further

Text up/down movement POKE 7687 and/or 7688 (disc) or 1812/1813 (cassette) with 0 16, 32 48 64 80, 96 or 112 These pokes will have no effect unless the thin lines are present on screen

Underlining POKE 7988 (disc) or 2089 (cassette) with 0 to turn the lines off or 1 to turn them on then press Reset

The one parameter which you cannot change in this way is the *MEMLO* pointer It can be altered only by changing the last two numbers in line 230 or line 300 – see Table I – and

Turn to Page 54 ▶

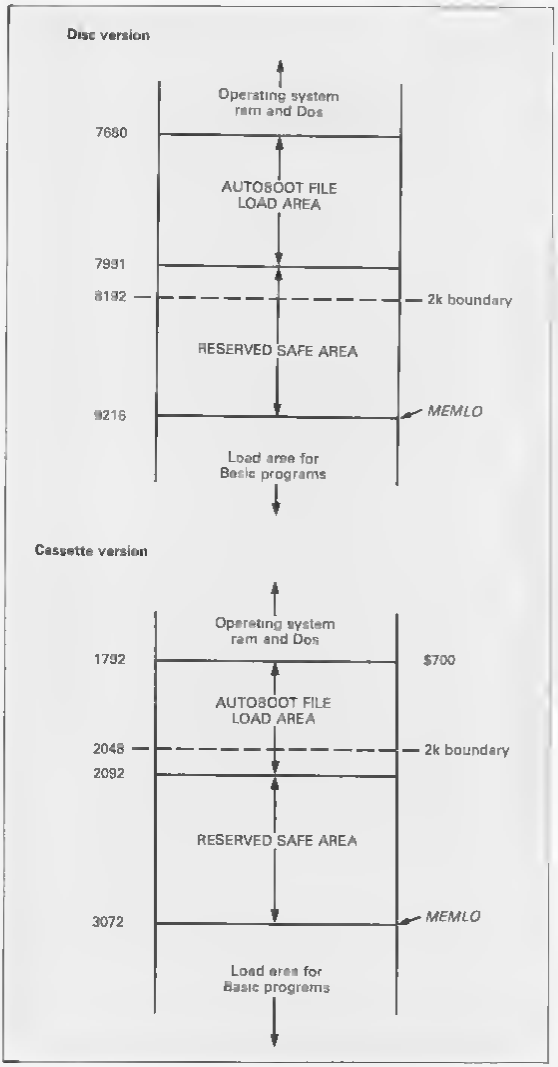


Figure I Memory maps

◀ From Page 53

making a new autoboot file. Unless you're an advanced programmer, it's best not to attempt this.

You can now proceed to make the new file, incorporating your chosen settings. Load Program I or II and insert your new numbers in place of the existing ones on line 230 or 300.

If you have decided to retain the underlining feature and have adjusted the text area to centralise it, you will need to change the first, and/or second number on line 80 – Program I – or line 160 – Program II – to your new values. Do not alter any other numbers in the program or the autoboot routine won't work properly, and may lock up.

Finally. Run the modified Basic program to make a new autoboot file incorporating your changes. That's all there is to it. If you're an advanced programmer, however, you may be interested in some extra information.

First the routine doesn't occupy any of page six but it does use two page zero addresses – 203 and 204 – during power up and reset. At all other times these addresses are available for your own use. The routine is executed during Stage 1 vertical blank, so you can't use Immediate VBI routines in your own Basic programs. The more useful Stage 2 vertical blank period is, however, available as usual.

The reserved area below *MEMLO* is illustrated in Figure 1. With the values shown in Program I – low byte = 0, high byte = 36, the disc version gives you 1225 bytes of reserved memory, 1024 of which are above a 2k boundary. It can therefore be used for any data tables which need to start on a 1k or 2k boundary, such as player missile – PM – graphics.

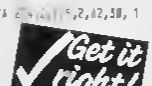
For cassette users, the *MEMLO* value in Program II (low byte = 0, high byte = 12) gives you 980 bytes of reserved memory, stretching from 2092 to 3072. This overlaps the nearest 2k boundary (2048) by 44 bytes, but the reserved area can still hold PM data, since the first 256 bytes of any PM table are never used by the PM system.

It can also hold a Graphics 1 or Graphics 2 character set, as you're allowed to start these on a 512 byte boundary (2560).

However, you may prefer to change *MEMLO* as described above, so that it points to a higher address – say 6144 (0.24). This reduces the amount of memory available for Basic programs, of course, but it releases boundaries at 1k (3072) and 2k (4096), for your player missile data or character sets.

Program I: Creates an AUTORUN.SYS disc file

```
10 REM Program 1  Creates an AUTORUN.S
YS disc file which will install the ne
w default screen
20 TRAP 40
30 OPEN #1,8,0,"D:AUTORUN.SYS"
40 READ D:IF D=-1 THEN 50
50 PUT #1,D:GOTO 40
60 END
70 DATA 255,255,7,30,54,31
80 DATA 40,16,80,96,0,0,0,2,0,2,0,2,0,
2,0,2,0,2,0,2
90 DATA 0,2,0,2,0,2,0,2,0,2,0,2,0,2,0,
2,0,2,0,2
100 DATA 0,2,0,2,0,2,0,2,0,2,0,2,65,7,
30,165,12,141,84,30
110 DATA 165,15,141,85,30,169,85,155,1
2,169,30,133,15,76,30,30,32,184,30,162
120 DATA 0,160,0,142,5,30,142,6,30,174
,4,30,189,19,31,133,203,232,189,19
130 DATA 31,133,204,232,142,6,30,174,5
,30,189,43,31,145,203,232,142,5,30,224
140 DATA 12,208,222,173,4,30,240,28,16
5,88,141,11,30,165,89,141,12,30,169,7
150 DATA 141,48,2,169,30,141,49,2,162,
30,160,165,141,6,32,92,228,96,173,0
160 DATA 30,208,2,133,77,173,1,30,240,
25,173,5,30,240,6,206,5,30,76,202
170 DATA 30,173,245,2,75,2,141,243,2,1
73,2,30,141,5,30,173,15,210,41,4
180 DATA 208,53,169,2,141,243,2,173,1,
30,6,128,141,1,30,173,9,210,201,142
190 DATA 240,12,201,143,240,8,201,135,
240,4,201,134,208,31,173,43,2,201,32,1
76
200 DATA 24,205,3,30,144,19,173,5,30,1
41,43,2,76,18,31,173,1,30,16,5
210 DATA 43,127,141,1,30,76,95,228,198
,2,208,2,197,2,82,0,85,0,0,50
220 DATA 1,30,2,50,5,30,4,30,251,2,252
,2
230 DATA 194,170,10,1,30,0,1,14,2,1,0,
30
240 DATA 2[illegible],2,82,30, 1
```



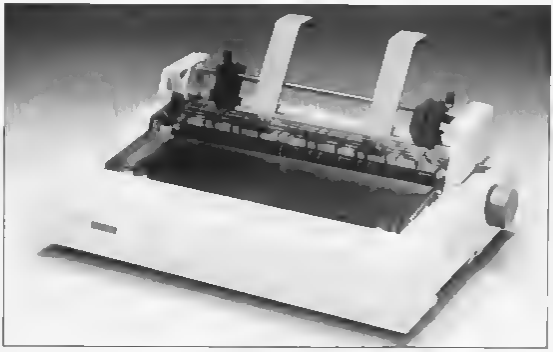
10 CP1 (Y)	90 S65 (S)	170 ERW (D)
20 KVH (G)	100 N7K (R)	180 HRE (4)
30 RF6 (M)	110 TUY (O)	190 S2F (E)
40 PEU (W)	120 B4H (8)	200 DEK (R)
50 4ZK (S)	130 SU9 (V)	210 ECF (V)
60 H2P (E)	140 RL5 (J)	220 UM1 (U)
70 ATC (M)	150 GK1 (U)	230 VAT (8)
80 HU4 (R)	160 FH7 (C)	240 M9N (J)

Program II: Creates an AUTOBOOT cassette file

```
10 REM Program 2  Creates an autoboot
cassette file which will install the n
ew default screen
20 BFR=(PEEK(106)-24)*256 REM reserve
a safe area at the top of RAM as a tem
porary buffer
30 FOR X=0 TO 40 READ D POKE 1536+X,D
NEXT X REM load the new SAVE routine i
nto page 6
40 DATA 104,104,133,204,104,133,203,10
4,133,205,104,133,206,162,10,169,11,15
7,66,3
50 DATA 165,203,157,68,3,165,204,157,6
9,3,165,205,157,72,3,165,206,157,73,3
60 DATA 32,86,228,96,67,58,155
70 REM Load the program temporarily in
to the reserved buffer space
80 RESTORE 150
90 FOR X=0 TO 209:READ D
100 POKE BFR+X,D NEXT X
110 REM Now read the data from the tem
porary buffer into an Autoboot cassett
e file
120 OPEN #1,8,128,"C:"
130 X=USR(1536,BFR,PEEK(BFR+1)*128)
140 END
150 DATA 0,5,0,7,75,7,189,88,141,2,211
,24,96,0,0,0,0,0,0,0
160 DATA 48,16,80,64,0,0,0,2,0,2,0,2,0
,2,0,2,0,2,0,2
170 DATA 0,2,0,2,0,2,0,2,0,2,0,2,0,2,0
,2,0,2,0,2
180 DATA 0,2,0,2,0,2,0,2,0,2,0,2,65,20
,7,142,0,160,0,142
190 DATA 10,7,142,19,7,174,19,7,189,0,
4,133,203,232,189,0,4,133,204,232
200 DATA 142,19,7,174,18,7,189,32,0,14
5,205,232,142,18,7,224,12,208,222,173
210 DATA 17,7,240,20,165,88,141,24,7,1
65,89,141,25,7,169,20,141,48,2,169
220 DATA 7,141,49,2,162,7,160,154,169,
4,32,92,228,96,173,13,7,208,2,133
230 DATA 77,173,14,7,240,25,173,18,7,2
40,6,206,18,7,76,191,7,173,243,2
240 DATA 75,2,141,245,2,173,15,7,141,1
8,7,173,15,210,41,4,208,53,169,2
250 DATA 141,243,2,175,14,7,9,128,141,
14,7,175,9,210,201,142,240,12,201,145
260 DATA 240,8,201,135,240,4,201,154,2
08,31,173,43,2,20 270 DATA 144,19,173,
14,7,141,43,2,76,5,8,173,14,7,16,5,41,
127,141,1A
280 DATA 7,79,95,228,198,2,208,2,197,2
,82,0,83,0,15,7,14,7,15,7
290 DATA 16,7,17,7,251,2,232,2
300 DATA 194,170,10,1,30,0,1,14,2,1,0,
12
```



10 CP1 (Y)	120 1J1 (M)	230 H39 (M)
20 02U (O)	130 3VF (M)	240 FJL (L)
30 VMO (7)	140 DK5 (O)	250 BSJ (W)
40 0EW (S)	150 U4D (Y)	260 0FK (M)
50 WFZ (1)	160 L16 (T)	270 DIT (S)
60 J7K (U)	170 7CY (7)	280 3LR (M)
70 CM7 (2)	180 W4S (D)	290 KE2 (Y)
80 T0H (E)	190 H5H (S)	300 UTC (D)
90 F0G (5)	200 8D3 (K)	
100 H01 (6)	210 HTM (M)	
110 CY5 (1)	220 B5G (X)	



Yes, it's a pretty solid citizen

NEIL FAWCETT examines the new LSP-100 printer

THE LSP-100 bi-directional dot matrix printer is Citizen's latest addition to an already impressive range of products. As with most printers, you have the option of friction or tractor feed and this can be selected easily by moving a lever on the top right of the casing.

You also have the option to load paper from underneath the printer using a process called bottom feeding (see Figure 1). Loading paper this way can only be done when your printer is mounted on a stand. The tractor feed mechanism must be attached to the printer and you must use continuous stationary. Loading paper is just like setting the tractor feed up, except the paper comes from underneath.

The printer will connect to your micro via an Atari 850 interface box, but you will need to buy a lead to connect them – or a Centronics to Atari interface cable, which costs about £50.

On the front right side of the printer are three buttons controlling the online status, form feed and line feed. The printer must be brought offline before the feed buttons will work – rather annoying, but this is the case with several printers. Next comes a panel with three small lights – power, paper out and ready.

The DIP switches are easy to access. You simply switch the printer off and remove a cartridge style interface located on the right of the printer as you look at it. You can then alter the switches to suit your micro. Instructions on how to do so are very well documented in the manual.

Now for the all important question. Is it Epson compatible? The answer is yes, and it is also switchable to IBM compatible, not that this will affect Atari owners.

Citizen says that the LSP-100 is an 80 column printer and the print head has nine pins which are used to give you a 9x9 matrix. When used in NLQ mode a double pass of the head allows the matrix to change to 17x17 and this gives you a wide variety of styles and typefaces.

The print speed is 150/175 characters per second (cps) at 10/12 cpi (characters per inch) in draft mode and 40 cps in NLQ mode. Now that is quite a mouthful, but it gives you an idea of the capabilities of this machine.

It is interesting to note that although this is quite a fast printer it is also very quiet. Even when doing a screen dump I could still manage to concentrate on other work while it was churning away.

There is a built in 4k buffer – very useful indeed, as it allows you to continue working on your micro as the printer does its work. However there is a snag with the large buffer – there isn't a flush button. So, if you make a mistake you have to wait until that large 4k buffer empties. Alternatively you can turn the printer off.

Fitting the cartridge type ribbon poses no problems. It is claimed to last for two million characters – but I didn't have time to test this.

The LSP 100 has a sleek modern look and is surprisingly compact when you consider that it does some tasks that printers twice its size can't. The manual is well presented and easy to read with plenty of diagrams showing things like fitting the ribbon and so on.

This is a superb printer, well priced and should satisfy the needs of most homes and small businessmen.

Specifications

- 150/175 cps at 10/12 cpi in draft and 40 cps in NLQ
- Epson and IBM compatibility
- Parallel interface standard
- Tractor feed and friction feed
- 4k buffer
- 8 bit graphics capabilities
- Downloadable characters
- More than 400 print styles
- Automatic sheetfeeder available
- Bottom-feed paper loading option

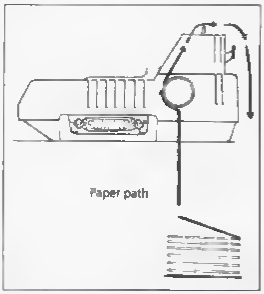


Figure 1. Loading the printer using bottom feed

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An American eye on the 8 bit scene

I LIVE in Boston USA and I was in London for two weeks when I heard of the Atari User Christmas Show. Having owned an Atari 1200XL – which was once available in the US – for nearly three years I naturally decided to attend.

I am a great fan of games software and boast a 1,200 program collection which includes 82 cartridges. In my two week visit I have been to many software outlets in the West End, but have discovered that Atari 8 bit computers are sadly not so well supported as others I could name.

This is a shame really, as they offer excellent graphics and superb sound facilities, which by far exceed the standards offered by other micros.

In the US Atari 8 bit computers are now one of the most popular micros. With the arrival of the new XE, software houses have really been booming.

But it is not like this in Britain so as I entered the Champagne Suite in the Novotel I had little hopes of enjoying myself. But, was I surprised!

Software here is just as good as that in the US – only it's more difficult to obtain. I had never even heard of titles like Phantom, International Karate and Arkanoid, but they proved to be excellent games.

I found business software here to be of a very high standard too. Overall I was very pleased with the software I bought – if only it was stocked by every software outlet in the UK.

But to the point of my letter – at the show I discovered Atari User. It is an excellent magazine, and much better than anything in the USA.

I bought all the back issues which were on display and look forward to some interesting reading and more projects like the speech synthesiser. Thank you Atari User, for making my visit worthwhile.

By the way, games freaks may be interested to hear of the games which are all the rage in the US on the Atari. Kung Fu Master, Rocky, Phoenix and World Cup Football – look out for them in Britain. – **Z Javed, Boston, USA**

£10 LETTER

Printer transformed

I HAVE just returned from Saudi Arabia with an Epson RX80 printer that I bought out there.

The printer is 120 volts and I am at present using it with a voltage transformer. Can I convert it to 240 volts? – **Nigel Potter, London**

● It should be possible to convert your printer to 240 volts. Some transformers are multi standard and require a link to be changed inside the printer.

If your printer contains a single voltage type, it will be necessary to replace it. Epson UK should be able to help you. The address is Epson UK, Dorland House, 388 High Road, Wembley, Middlesex HA9 6UH.

No Ninja

COULD you please tell me if the Last Ninja from System 3 will ever be available for Atari 8 bit computers? I have waited a long time but it has not come out yet. – **Scott Howden, Stirling, Scotland**

● At the moment the Last Ninja has not been released for the 8 bit Atari and it appears a conversion is unlikely to be forthcoming.

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Atari User
Europa House
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Adlington
Macclesfield SK10 5NP

Faulty keyboard

I BOUGHT my 800XL about two years ago from Currys and we had a few problems loading games. After a few weeks – and computers – we found one that worked and I've been happy with it until recently.

Everything was fine until about two months ago when the comma key started to stick and a continuous stream of them poured out. I ignored this as I didn't do much typing for a while, but when I did, none of the keys would work.

I could still load games, as the function keys worked, and after the beep the data recorder started automatically. If it's a major fault could you please recommend someone to repair it. – **L Stephenson Easington Coll Co Durham**

● Your best course of action is to send your computer to a service engineer for repair. Here is the address of someone close to you who may be able to help: ISC Electronics, 12 Pirbright Grove, Hemlington, Middlesbrough, Cleveland TS8 9PB.

Stopped on the red

OCCASIONALLY the black background on my monitor display develops a pale green/yellow cast which sometimes lasts up to a minute.

Also the top of my print head doesn't work making the text difficult to read. – **Michelle Nixon, Waddington, Lincoln**

● The cast on the picture is due to an absence of a red signal. This could be a faulty lead or connector at the computer or monitor end. Alternatively it could be a problem inside the monitor circuit itself.

The print head fault can probably be rectified by cleaning or replacing it. Alternatively the Darlington driver – inside the printer – which controls the top solenoid of the head may have gone faulty and need replacing.

Lighting up

I WAS very interested in the disco light controller in the December 1987 issue of Atari User. I would like to know if it can be bought

Turn to Page 58 ▶

◀ From Page 57

ready built and if so what is the price?

I am not electrically minded and don't know anyone who could build it for me, but I would like to put on a light show – **R Hindheugh Ashington, Northumberland**

● The disco lights are available ready built from RH Design for £32 50 plus £1 50 postage and package The company also sells some of the other gadgets featured in *Atari User* ready built

The address is RH Design, Units 2 and 3 Stonefall Stables, Stonefall Avenue Harrogate HG2 7NR

Printing screens

I WOULD like to tell you that Atari User is really great and I buy it every month in my country – Israel I have two questions and was wondering if you can help

Can my dot matrix printer dump screens from games and pictures from adventures?

I can't find the game King's Quest for my Atari 800XL with 256k memory Do you know where I could get this? – **Eyal Levy, Moztkin, Israel**

● As your computer stands it is very difficult to dump screens from adventure games However, using something like the OS Controller card from Computerhouse it is possible

The board is an internal modification to your micro and allows you control over the operating system Their address is Computerhouse, 14 Romily Court Landndge Road Fulham, London SW6 4LL

The King's Quest adventure game is only available on ST format in the UK However if you write to Sierra On Line Inc in America you will be able to obtain full details of the products for the 8 bit Their address is Sierra On-Line Inc Coarse Gold California CA 93614 USA

Software shortage

WHY is it that 8 bit Atari owners always get left out when games like Out Run are released? I have written to many of the major software companies but to no avail

If games like Out Run and many others – too numerous to mention – were released they would be bestsellers

There is a massive user base for Atari 8 bit computers out there so why are we still ignored? – **Martin Osborne, West Wimbledon, London**

● Do any of our other readers have problems obtaining software? Write in to us we'd like to hear from you

A sound investment

I RECENTLY bought a second-hand 800XL and 1050 disc drive, but there were no manuals I am interested in music and programming so I tried to produce some tunes on my micro

A friend explained the SOUND statement to me, but my problems arose when I tried to convert numbers for the pitch value into musical notes Can you please help me? – **Denise Skelton Cleveland**

● The panel below shows a range of musical notes and their numeric equivalents There's also a short program to play a musical scale and demonstrate the SOUND statement in use

High notes	C	29
	B	31
	A# or Bb	33
	A	35
	G# or Ab	37
	G	40
	F# or Gb	42
	F	45
	E	47
	D# or E	50
	D	53
	C# or Db	57
	C	60
	B	64
	A# or B	68
	A	72
	G# or Ab	76
	G	81
	F# or Gb	85
	F	91
	E	96
	D# or Eb	102
	D	108
	C# or Db	114
Middle C	C	121
	B	128
	A# or Bb	136
	A	144
	G# or Ab	153
	G	162
	F# or Gb	173
	F	182
Low notes	D	193
	D# or Bb	204
	D	217
	C# or Db	230
	C	243

Figure 1: Pitch values and their relative musical note

```
10 REM MUSICAL SCALES PROGRAM
20 READ N
30 IF N=-1 THEN END
40 SOUND 0,N,10,10
50 FOR DELAY=1 TO 500 NEXT DELAY
60 GOTO 20
70 DATA 29,31,33,35,37,40,42,45
80 DATA 47,50,53,57,60,64,68,72
90 DATA 76,81,85,91,96,102,108,114
100 DATA 121,128,136,144,153,162
110 DATA 173,182,193,204,217,230
120 DATA 243,-1
```

Topical translations

FOLLOWING the amusing article on Computer Speak in the November issue of Atari User, *here are some more in a similar vein* – **P Bullin, Hucknall, Notts**

Apple – *grows on a tree*
Brand new – *at last someone has found a use for it*
Byte – *a hungry computer programmer*
C – *a letter after B*
CMOS – *moss that grows on the sea bed*
Data – *asking your girlfriend out for a drink*
Data bus – *mobile library*
Dos – *a layabout*
Designed by a computer – *no one will take the blame*
Forth – *a bridge*
IC – *rough weather for ships*
Latest technology – *we put it in a new case*
One meg bus – *expensive double decker*
Mega byte – *banquet for computer people*
Monitor – *school milk distributor*
Nibble – *not so hungry computer programmer*
Unrepeatable offer – *hurry up we're going bankrupt*
Serial input – *cornflakes for breakfast*
Micro chips – *small portions of fried sliced computer*

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– Anthony Ginn, Atari User, May 1986





Guild of Thieves – it's a steal!



Guild of Thieves is the long-awaited follow-up to the award-winning adventure, The Pawn.

You're back in the fantasy world of Kerovnia, in the role of a novice thief who has applied to become a member of the illustrious Guild. To prove your worthiness you must ransack an island of all its treasures.

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– Bob Chappell, Atari User, October 1987

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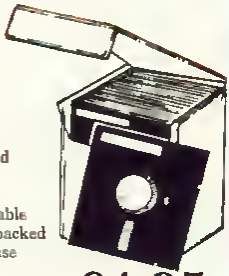
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Compumart	23 25	Page 6	12
Computerware	26	Rambit	42
Cut Price Software	42	Red Rat Software	64
Database Software	2	Silica Shop	63
Datel Electronics	26	Software Express	8
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