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# ATARI USER

Vol. 3 No. 2

June 1987



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The Atari II, Atari's new games machine

## Big sales expected

HIGH on the list of new hardware at the Atari Computer Show was the new games machine console.

Sell without a firm release date, the cartridge-based machine will cost £29.95.

It will be expandable to run all existing Atari 8 bit software on cassettes. The joystick, data recorder and light gun come with a keyboard for about £40. This produces a full 64k computer system for £129.95.

Atari chairman Jack Tramiel said at the launch that more than 400 pieces of software were available for the machine even before it was launched.

Because of the promotional effort Atari was putting into the machine around the world — particularly in the US — it was going to be a big seller, he promised.

## 8 BIT CHESS ARRIVES

COLOSSUS 4 Chess has been released for the Atari 8 bit.

ODE Software (3362 2nd St) says this is the first 3D chess game for the machine and claims it is the strongest program of its kind.

It features a backtrack facility, problem solving mode and handicapping.

The 8 bit version requires 48k of ram and costs £9.95 on cassette and £14.95 on disc.



Bob Gleadow... "We made all the difference", said Jack Tramiel

# Support new machine, software houses urged

BRITISH software houses have a great opportunity to make money worldwide if they weigh in with support for the new games machine, Atari boss Jack Tramiel is asserting.

He told journalists and dealers at the recent Atari Computer Show that he had just raised \$75 million of long-term backing in Europe. This meant finances were in order and the product range was right. "We are ready to go", he said.

"We need your support but on the other hand we are spending \$70 million promoting Atari in the US this year. We hope you software people will find a home there; if you try we will support you with everything we can.

"If we all work together we are going to make it big".

With \$200 million in the bank and "all petrol tanks full" Atari was ready to take on the world, he boasted.

"Everything is being plugged in; we are going to be a major force".

The Atari chairman said he could smell success in the air in Britain now that Bob Gleadow was in charge. "He has made all the difference".

Until Gleadow's arrival, Atari UK was losing money. This year it was expected to break even and next move into profitability.

Gleadow revealed he would expect to turn over £30 million this year. The least he would expect next year was £50 million, he said.

## Earnings soar

ATARI Corporation earned more than four times as much in the first quarter of this year as it did in the same period last year.

Income was \$9.3 million compared with \$1.8 million in the first three months of 1986 — a 412 per cent rise.

Worldwide sales in the quarter were nearly double those for the period in 1985.

Cash registers rang up a total of \$85.1 million compared with \$44.8 million last year — an increase

of 45 per cent.

During the period Atari opened new sales offices in Spain and Sweden, and appointed a new general manager to concentrate on improving US sales.

Atari has completed a \$75 million Euro-dollar bond issue. The company says the proceeds will be used to expand its business through capital expenditures and acquisitions in the computer field and related areas and for general corporate purposes.

## Toast of the show

SOFTWARE houses showed their commitment to cartridge games for the new 8 bit machines at the show.

The public responded too. They crowded into the Novotel on the Friday to make it the best first day ever, 1,000 up on previous opening sessions.

So many people had wanted to exhibit that organisers, Database, had booked more space. The 70 or so exhibitors reported an excellent response from an informed public.

Software publishers gave a universal thumbs up to the new games machine plugging lots of support for it and a staggering variety of new software was unveiled with every gram of utility and game on offer.

## New mission for Floyd

AT last there is a sequel to Planetfall. Featuring one of interactive fiction's favourite characters, Floyd theovable robot, American publisher Infocom has released the Atari XL/OS2 version of *Starbowl* in which you are enlisted in the Starliner Patrol and sent on a mission with the playful Floyd.

# DEDICATED? So are we!

Don't get confused. PAGE 6 is a totally independent magazine for Atari users that will compliment and expand your Atari world.

\* Long program listings - not just games but also utilities, applications, education and more in both BASIC and machine code

\* Programming articles, hints and tips

\* In depth reviews - would you believe we once devoted four pages to one review! That's in depth!

\* Comprehensive ST section

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Tel: 05210 770 1053

(NOTE S.T. GAMES WANTED)

# Revolt against games image

SCIENCE teacher Glenn Leader is so fed up with people saying Atari releases are only for games that he has started a counter movement.

He is recruiting like-minded Atari users for a new special interests group called Sigatari.

"The group was set up to combat what many people consider Atari computers to be - that is, purely games machines", he told Atari Max.

"I believe you don't have to

shoot blabs to have fun. There is music, robotics, programming, control technology, interfacing techniques and much much more available with Atari.

"One of our aims is eventually to adapt a language - Fort perhaps - bearing in mind the limitations of Basic and the difficulty of learning machine code.

"We are also developing a contact service for members with similar interests, a Help line for Atari-related problems, and a bulletin board".

## No war casualties

FEARS that the US-Japan trade war would affect Atari's UK operation have been dispelled by British boss Bob Glasbeow.

Because Japanese computers now cost twice as much in the US following the introduction of tariffs, it was suggested that Atari might flood the market there and hold

back on manufacturing for Europe. But Glasbeow explained that Atari manufacturing was operated separately for each side of the Atlantic.

"I can say that the present trade relationship between the US and Japan will not affect UK availability and pricing", he said.

## HERO FLASH FLIES IN

SPACE crusader Flash Gordon is off on another mission to save the world, this time courtesy of the Atari 8 bit series.

In Mastertronic's latest release the evil Ming has targeted Earth with planet-killer missiles. To stop him destroying life as we know it you take the part of superhero Flash and foil the plot.

Ming must die if the Earth is to live - he carries the missile controls with him and only by destroying them can you hope to succeed. Unfortunately your spaceship has crashed into the jungle on Ming's world and you only have 24 hours left.

Flash Gordon costs £2.99 from Mastertronic 101-377 6800.

## CREATIVE DEAL

CREATIVE Sparks Distribution has just signed a major deal with Atari - because it believes the company now knows what it's doing.

Vince Hutton, CSD marketing manager said: "We firmly believe that 1987 will be Atari's year.

"It is evident that both consumers and dealers are becoming excited about the variety of Atari products."

The deal, says Hutton, is part of Atari's attempt to improve on its distribution.

He said CSD talked to Commodore as well, but in the end they persevered with Atari because "the pricing was more attractive and the company had its act together better".

# THE GALLUP CHART TOP 20 ATARI SOFTWARE

THE MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	▲	BMX Simulator Code Masters	1.95
2	▲	Colony Building	1.99
3	▲	Silent Service Microphone	9.95
4	•	Football Manager Additive	2.99
5	▼	Green Beret Imagine	8.95
6	▲	Four Great Games Micro Value	3.99
7	▲	Leaderboard Access-USA Gold	9.95
8	•	Arkanoid Imagine	8.95
9	•	Hover Bover Mastertronic	1.99
10	▼	LA Swat Mastertronic	1.99
11	▼	Gun Law Mastertronic	1.99
12	▲	Ninja Mastertronic	1.99
13	▼	Spiky Harold Preston	1.99
14	▼	Despatch Rider Mastertronic	1.99
15	•	Bubble Trouble Players	1.99
16	▲	Warhawk Firebird	1.99
17	▼	Crystal Raider Mastertronic	1.99
18	▼	Molecule Man Mastertronic	1.99
19	▼	Red Max Code Masters	1.99
20	•	Who Dares Wins 2 Pymsoft	7.95

Compiled by Gallup/Microscope

While budget titles seem to dominate the chart, this month sees four non-budgets in the Top Ten - with Arkanoid going straight in at number eight. We'll have a review in the next issue.







# Speed up Dos

WAITING for the Dos menu to load can get very frustrating after hours of typing. So why not keep the two Dos files in memory at the same time? A complete waste of space I hear you all cry. But not if you find an area of memory that the Atari doesn't normally let you use.

This program uses the unused area of memory under the operating system to hold the DUP.SYS file and allows the file to load at machine code speed — a great improvement on the old method. The area of memory is also used to save the program space that the DUP.SYS file will sit in when loaded.

In other words it will act as a MEM.SAV file, leaving your programs intact. Let me explain how to change your old tortoise Dos into a high speed hare.

Type in the listing, save it and type RUN. The program will take about 10 seconds to run. It will then load Dos and select option H to write Dos files for you. To be on the safe side insert a blank formatted disc. Press Return, and follow the prompts to copy the system files on to this disc. You now have a new master disc which can be used to update any other Dos disc.

To check that all is well, turn off the computer and reboot using the new disc. Return to Basic and type DOS again. This time — and subsequently — the Dos should come up almost instantly. If at any stage things do not proceed as described, recheck the program and try again.

This modified Dos can be used with Basic, assembler or any application program that normally uses Dos 2.5.

## A superb Dos utility for 64k XL/XEs from SIMON ROBINS.

```

90 000 000 2 1 000000 000000000000
95 000 0001000 01 0000 00000 0/0/01
100 0000001 011 01101 0017 10 0000
110 0000 00
120 0000 00
130 01 0011 1010 0000 0000 000
140 000 001 10 0001001 0101 0
150 00000 000
160 0000 01001 0110
170 01001010011 01000101000101
180 0001 010010 100
190 000 000001 00111 10 000 0100
200 01000000001 0110 00
210 00000000011 0111100
220 01 0101 000 01000 0
230 01 0010 1000 100100
240 010000010000
250 010000
260 000 000001 00111 10 000 000000
280 01000000 000100010010 010
290 0000000 000100010001010
310 0000 00000000
320 000 00000 0011000
330 000 00000 001100
340 01 00011000 0000 1 0011 00001
3500
360 0000 000 01 0000
370 000 0010 0110
380 000 0010 0001000001 0010 00001000
390 0010 0001001 0000000100001010
400 0010 0010 0100000000000011000
410 0010 0010
420 0010 01100
430 0010 01100
440 0010 01100
450 0010 01100
460 0010 01100
470 0010 01100
480 0010 01100
490 0010 0001000100000100001001
500 0010 0001000001000000010000
510 0010 0001000001000000010000
520 0010 0001000001000000010000
530 0010 0001000001000000010000
540 0010 0001000001000000010000

```

```

- 1140 0010 0000000000000000100001
1150 0010 0001000000000000010000
1160 0010 0001000000000000010000
1170 0010 0001000000000000010000
1180 0010 0001000000000000010000
1190 0010 0001000000000000010000
1200 0010 0001000000000000010000
1210 0010 0001000000000000010000
1220 0010 0001000000000000010000
1230 0010 0000000000000000010000
1240 0010 0001000000000000010000
1250 0010 0000000000000000010000

```



LINE	FROM	LINE	TO	LINE	TO
90	0000	99	0000	100	0000
110	0000	110	0000	110	0000
140	0000	150	0000	160	0000
180	0000	180	0000	190	0000
200	0000	210	0000	220	0000
230	0000	240	0000	250	0000
260	0000	270	0000	280	0000
290	0000	300	0000	310	0000
320	0000	330	0000	340	0000
350	0000	360	0000	370	0000
380	0000	390	0000	400	0000
410	0000	420	0000	430	0000
440	0000	450	0000	460	0000
470	0000	480	0000	490	0000
500	0000	510	0000	520	0000
530	0000	540	0000	550	0000
560	0000	570	0000	580	0000
590	0000	600	0000	610	0000
620	0000	630	0000	640	0000
650	0000	660	0000	670	0000
680	0000	690	0000	700	0000
710	0000	720	0000	730	0000
740	0000	750	0000	760	0000
770	0000	780	0000	790	0000
800	0000	810	0000	820	0000
830	0000	840	0000	850	0000
860	0000	870	0000	880	0000
890	0000	900	0000	910	0000
920	0000	930	0000	940	0000
950	0000	960	0000	970	0000
980	0000	990	0000	1000	0000

## FLASHING CURSOR from BRUCE BLACK

ATARI computers possess many powerful features but lack certain cosmetic effects such as a flashing cursor. This can make all the difference to a screen display, and many routines have been polished over the years to provide this obviously useful feature.

Unfortunately they usually have three major drawbacks: is that all inverted text on the screen flashes in time with the cursor and the routine has to be re-initialised with a USR call every time the system reset button is pressed.

If you only want the cursor to flash and have it stop flashing even after pressing the reset button, this program - FLASH - is just what you have been waiting for. It consists of three Atari machine code routines which are copied into page 0 and initialised started by a USR call.

The routine sets the VBLANK interrupt vector to point to the FLASH interrupt service routine. Once this has been done the FLASH will continue to run even after the reset button has been pressed.

When an Atari does a warm start after the reset button is pressed it resets the interrupt vectors to default values and reinitialises the FLASH vector.

Fortunately it is possible to trap the warm start routine, since during its execution the operating system examines the contents of the boot sector flag (BOOTF) at location 84.

If the value is 0 a disc boot was successful and the operating system will jump to the address held in locations 8C and 8D (DOSDIS). By resetting the DOSDIS vector to point to the reset routine within FLASH, it is possible to reset the VBLANK vector whenever reset is pressed.

FLASH also allows cassette users to have this reset protection since it traps the operating system into thinking a disc boot was successful and so calling FLASH's reset routine.

The cursor flashing is accomplished during the VBLANK interrupt service routine. Each time a VBLANK interrupt occurs it decrements a count. When the count reaches 0 the count is reset

and the routine proceeds to flash the cursor.

FLASH makes use of the value of the character under the cursor, held in location 50D (DLCCHR) and the inverse location of the cursor which is held in locations 50E and 50F (CLOADPR).

The flashing is produced by toggling the top bit (bit 7) of the location pointed at by CLOADPR. This has the effect of changing the state of the character so that if it was normal it is now inverse, and vice versa.

A check is made to make sure that the VBLANK interrupt did not occur during a cursor move, otherwise a character may be reversed before the operating system has saved the correct value of the character under the cursor.

The check is carried out by comparing the value in DLOADPR with the value pointed at by CLOADPR. If they are not the same, the cursor flash is aborted and the routine begins counting down again.

The flashing period may be altered while the routine is running by the command "PORG 1600, period" where period is a value between 0 and 255. The smaller the value of period, the faster the flashing effect, except that a value of 0 produces the slowest flashing rate.

```

10 00 0100 70 00 0000 0000 0,0
1001 11000011000
10 001 100 100 000 0 000 0 000 11
10 001 0 00 0 000 00 0 00 1 10
10 010 0 00 0 00 11 100 0 00 0 0
10 010 100 00 00 0 00 00 0 0
10 000 00 0 0 0 0 00 00 0 0 0 0
10 00 0 00 0 0 00 0 0 0 0 0 0
10 000 0 0 0 0 0 0 0 0 0 0 0 0
10 000 0 0 0 0 0 0 0 0 0 0 0 0
10 00 0 0 0 0 0 0 0 0 0 0 0 0
10 00 0 0 0 0 0 0 0 0 0 0 0 0
10 00 0 0 0 0 0 0 0 0 0 0 0 0

```

✓ Get it right!

LINE	ADDR	DATA	HEX	ADDR	DATA
10	0001	70	0000	00	0000
40	0001	00	0000		

# 5

## LINERS

## Win £25

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

You should give a full description of the routine and any other details that are relevant.

If you want your material returning please enclose a suitably stamped package. We pay £25 for each one published.

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

Atari User, Europe  
Hazel, 68 Chester Road,  
Hazel Grove, Stockport,  
SK7 9WY.

## SPACE INVADERS from RICHARD PARKES

HOW said you could fit just a game into five lines? Well here we have a version of the classic Space Invaders program and the only difference is that you only have one crafty little invader to deal with.

The program makes use of many

```

10 PRINT "0,1,2,3,4,5,6,7,8,9,10"
20 GOTO 10
30 GOTO 10
40 GOTO 10
50 GOTO 10
60 GOTO 10
70 GOTO 10
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830 GOTO 10
840 GOTO 10
850 GOTO 10
860 GOTO 10
870 GOTO 10
880 GOTO 10
890 GOTO 10
900 GOTO 10
910 GOTO 10
920 GOTO 10
930 GOTO 10
940 GOTO 10
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960 GOTO 10
970 GOTO 10
980 GOTO 10
990 GOTO 10

```

Atari Basic features, but the one most utilised is the assignment of the values 1 or 0 to a true or false Boolean statement.

For example, the expression  $X=2$  yields a 1 if X is 2, or a 0 if X is not equal to 2. The ON GOTO statement is also used to good effect to give the missing IF... THEN... ELSE type structure.

To get the program into five lines you will have to use Basic abbreviations shown, but do not abbreviate the GOTO of the ON GOTO statement, as this cannot be abbreviated to G.

Unfortunately because of the length of the lines you must use the abbreviations and it is not possible to give a GIL with this listing.

REL.	PRINT	10,	1000
GL.	PRINT	1,	100
L.	GOTO	1,	1001

## 3 DIMENSIONAL CUBES from MATTHEW CROFT

HERE's a five liner that allows you to draw any number of 3D cubes on the screen. When the program is first run a Graphics 8 screen appears with your first cube drawn and a message asks you to enter the two coordinates of the top left hand edge of another cube to plot.

The cubes can be stacked, put behind, in front and either side of any other cube you choose to plot, in fact they can be placed anywhere, but don't enter any points over 255 on the first coordinate or 160 on the second, as this will cause an error 144 - cursor out of range.

If you wish you could add an extra line to reject any points above these settings. To draw a cube behind another simply decrease both previous numbers by 70, and to plot in front of another cube increase by 70.

If you experiment with these plots you can create some amazing effects.

```

1 GRAPHICS 8:GOTO 10:PRINT "0,1,2,3,4,5,6,7,8,9,10"
20 GOTO 10
30 GOTO 10
40 GOTO 10
50 GOTO 10
60 GOTO 10
70 GOTO 10
80 GOTO 10
90 GOTO 10
100 GOTO 10
110 GOTO 10
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```



LINE	RELATIVE	LINE	RELATIVE	LINE	RELATIVE
1	1148	2	1188	3	1581
4	2741	5	1087		

## MASS FORMATTER from COLIN FROGGATT

HOW often have you had a pile of discs that you wanted formatting? Well here is a five line program that allows you to do that without using that tiresome format option on your Dos disk. You don't have to enter Dos disks. You don't have to enter which drive you wish to format, or answer the prompt. Just get on with the job at hand.

The program uses the Basic command MODE, #1, #0, "D", to format the disc. This will format any disc in Drive D1 in the density of the Dos you boot the system up with. So Dos 2.0 is formatted in single density, Dos 2.5 to enhanced density, Dos 3.0 - 3.5 floppies.

### LINE BREAKDOWN

Line 1 sets up screen, sets colour registers, turns cursor off and prints the title.

Line 2 prompts you to press start to format the disc.

Line 3 uses MOD 254 to format the disc and sounds a bell when finished.

Line 4 prompts you to Continue.

Line 5 reports when an error has occurred.

```

1 GRAPHICS 8:MODE 10,1:PRINT "0,1,2,3,4,5,6,7,8,9,10"
20 GOTO 10
30 GOTO 10
40 GOTO 10
50 GOTO 10
60 GOTO 10
70 GOTO 10
80 GOTO 10
90 GOTO 10
100 GOTO 10
110 GOTO 10
120 GOTO 10
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990 GOTO 10

```



LINE	RELATIVE	LINE	RELATIVE	LINE	RELATIVE
1	1815	2	1615	3	1686
4	1416	5	2088		

# Mini Office II



**6** powerful home and business programs in just ONE package – at a price that simply can't be matched!

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Business Program of  
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Signed .....

Name .....

Address .....

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DATA 50, Database Software,  
Europa House, 48 Chester Road,  
Bund Green, Stockport SK7 9JG

In this final part of our series we look at AUTORUN.SYS machine code files, which will allow you to make your own Basic programs load and run automatically from Dos.

Program I shows our new familiar colour change routine in AUTORUN.SYS form. You can see the differences between this and the autoboot version listed in parts 1 and 2 - only lines 279 to 379 look at all familiar.

Notice first of all that no special header is required in our source code, since the Assembler Editor cartridge will insert one automatically when you assemble the file to disc. To identify it as a binary load file a six-byte header will be placed before the actual machine code.

The first two bytes will be set to 255, the next two will contain the load address and the last two will hold the address at which the load will end. If you had to insert it manually, it would look like this:

```

184H  J111 211
      J111 211
      J000 255H
      J000 255H
  
```

Program I is a conventional AUTORUN.SYS file which loads and runs on power-up, then hands control back to Basic.

Dos extracts the load address and calculates the file length from the six-byte header, then it loads the file into the specified area - or areas, since there may be more similar blocks of data assigned to different places in memory.

After all the blocks have been loaded, it then looks to see if you have stored a run address in RUNAD (726,727). If so, it performs a JMP to that address and executes everything down to the final RTS, then hands control to Basic.

Lines 410 and 420 set RUNAD during the load process to point to the start of our file. If you don't store an address at RUNAD, Dos will give control to Basic as soon as AUTORUN.SYS has finished loading, without running it.

Alternatively, you can store an address at INTAD (728,729), in which case the code at that address will run as soon as it is loaded, without waiting for the rest of the file.

System Reset handling is not as simple as it was with the boot formats we have been looking at so far. When DOS/MS-DOS was first loaded it set the value of DOS/MS-DOS to point to its own initialisation routine and, provided you don't want anything extra done during Reset, you should leave this value unchanged.

# Customising the system

**LEN GOLDING gives you final details for adding that professional touch**

The OS will then carry out Dos initialisation and hand control straight back to Basic; whenever Reset is pressed.

In many cases, however, you will want to run some extra code of your own after System Reset has been pressed, so DOS/MS-DOS will have to be altered. You could make it point to any address in your own code, but then Dos initialisation would be bypassed thus disabling the Dos file management system entirely.

To get around this problem lines 130 to 160 copy the original value from DOS/MS-DOS to the operand of JMP INTAD06. This effectively translates line 280 from a simple time delay into an instruction to initialise Dos. These lines 170 to 200 change DOS/MS-DOS so that it points to our extra Reset code, at M44RMS4T.

Now when Reset is pressed, the OS jumps via the new value at DOS/MS-DOS to M44RMS4T, carries out the Dos initialisation and then returns to execute all the code between RMS4T2 and the final RTS, it then hands control back to Basic.

If you want to extend the Reset routine, put your extra instructions between lines 206 and 210 (remembering the program, of course), while any extra power-up code should go between lines 260 and 280. If you stick to this layout, your AUTORUN.SYS file will always behave correctly.

Saving Program I to disc is easy. Just type:

```
WR,41:41169,575
```

Alternatively, you could use Program II to make the same AUTORUN.SYS file from Basic. Notice that in this case the header data must be included in the DATA statements (line 30).

To round things off let's look at an AUTORUN.SYS file which will load and run a Basic program automatically on power-up. Program III is the source code for those readers who are interested.

It inserts a new editor handler which

allows you to put a line of text into the computer's text buffer during power-up. When Basic takes control, it will assume that you have just typed that line and hit Return. If the text line contains:

```
0001
```

followed by your filename, the specified file will load and run as soon as Basic takes control. Program III also changes the text luminance so that the READY message can't be seen while your Basic program is loading. This makes it look more like a commercial disc autoboot.

The source code is for interest only - Program III is the one to use. It starts by putting the machine code into page 8, with 32 blank spaces left for the file name. Then it asks you for a name, such as PROGRAM1.BAS or MENU, and rejects anything that is too short or too long.

You could improve the program by adding more sophisticated checks to ensure that the file name is legal in all respects. The name is inserted into page 8 at the appropriate point in the machine code, then line 79 creates the AUTORUN.SYS file for you.

Now whenever you switch on with that disc inserted, a chain of events takes place. First DOS/MS-DOS is loaded and, after being initialised, it takes control and looks for an AUTORUN.SYS file on the disc. Once run, our program inserts a text line reading:

```
00010001 0001 000,260 000000000000
```

Basic now takes control, and carries out the instructions in the text line. This clears the screen, makes text visible again, then finally loads and runs the specified Basic program. The net result is difficult to distinguish from a single-stage machine code autoboot.

AUTORUN.SYS is ideal for customising the operating system, or even adding extra facilities to Basic itself, and we will be presenting a few interesting routines in future issues.



## Program 1

```

01 PROGRAM 1 - A SIMPLE AUTOBOT.DOS P
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```

```

0240 JOB (SYSTEM) job name=1 001 init
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## Program 11

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01 PROGRAM 11
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## Program 12

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5 REM PROGRAM 12 - BASIC VERSION OF PD
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LINE COLUMN	LINE COLUMN	LINE COLUMN
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90 0000	100 0000	110 0000
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## Battle stations

Product: Astro-Droid  
Price: £9.99 (retail) £7.99 (online)  
Supplier: Red Rat Software,  
71 Fenner Street, Mill  
Hollow, W4 3JF  
Tel: 087-225 1200

Is it a bird? Is it a plane? No, it's Astro-Droid, the latest release from Red Rat Software. You take on the role of a \$200,000,000 machine of destruction, a cyborg, a machine with a human brain - an insane one at that.

You are first presented with an impressive title screen. When the rest of the program loads this changes to a 3D scrolling starfield, with a prompt to press the fire button to start.

Flying in the background is a catchy tune that suits the game's mood very well. This continues to play all the way through the game.

When you press the fire button you are enter the Mission Sector and go single-handedly into battle against the evil Retainers to force them back to their own galaxy.

You do this by flying over their 50 mile long neutron-powered starships blasting away at their geotronic laser batteries and destroying enemy fighters that attempt to crash kamikaze-style into you.

After you have inflicted enough damage to their craft you move to a bonus level which involves avoiding fighters in deep

space.

Once the fighters have been destroyed you progress to another space sector with yet another starship to obliterate.

The first impression is good - the screen scrolls very smoothly, the fighters appear and attempt to also bomb you. However, after I had been playing a while it began to remind me of Screaming Wings, an earlier Red Rat game. Fighters fly at you in a similar way, over the way your droid moves around the screen.

This does not detract from the skillful content of the game - the fighters are very hard to shoot, and the wreckage can destroy you if you are not fast enough.

Dotted along the starship are different letters. If you shoot at a letter C you cause your droid to turn into an invisible attack ship, but this transformation only lasts for a limited time.

The time remaining is displayed at the bottom of the screen. If you look closely at the starship the letters XL appear frequently - a nice touch.

This is a one-player game using the joystick in port one. In certain parts of the game you are required to move your droid to the left or right of the screen to indicate if you wish to fly above or below the starships.

The scoring system is easy, and you gain points for blasting the fighters,



with bonus points awarded for hitting special targets and for surviving the deep space section.

There are many nice features, such as the ability to fly on either side of the starships. Visible through the ship is a very nicely scrolled starfield which gives the impression of depth.

The way that your droid transforms into the sleek attack ship is smoothly done and does not interfere with the screen's scrolling.

My only quibble lies with the instructions, which are very short and contain an

error when telling you how to load the disc version. They indicate that you hold Start and Option keys when powering up your machine. In fact you only hold Option to deselect Basic.

Apart from this, I was very impressed with the game, and if you like to see your enemy vanish in a hail of laser fire this is the one for you.

Neil Fawcett

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



## Fast and frantic

Program: *Attack of the Mutant Camels*  
Price: £7.99  
Supplier: Mastertron, 6-10  
Paul Street, London EC2M  
4JL  
Tel: 01-277-6880

MINTER Madness is about to burst on to your screen as cyber-punk king Mastertron rereleases the games that made Jeff Minter into a megastar.

Minter might be more famous for his C64 games, but he's always had a soft spot for the 8 bit Atari. *Attack of the Mutant Camels* is the game that started it all.

As with all the best shoot-'em-ups, *Mutant Camels* is easy to play but almost impossible to master. The

plot revolves around your attempts to foil the Zryaxian's evil plot to destroy the Earth.

These dastardly aliens secretly abducted a herd of camels and have genetically engineered them into 98 foot high, laserbolt-firing, neutronium-shielded war machines that now march relentlessly on their path of destruction. Your job is to stop them.

The countries of the world have united to provide you with a small but highly manoeuvrable ship to fly between the deadly beasts, blast them with neutron bolts (then wearing down their shielding) and finally destroying them - while avoiding their laser bolts.

I found the best tactic was



to huddle towards the first camel (so you don't waste any time), get behind it and blast away.

Naturally, you should avoid the laser bolts but stay as close as possible as you'll soon thank him.

In between rounds you must survive a hyperspace turtle through an asteroid belt, so keep your nerve.

*Attack of the Mutant*

*Camels* was Jeff Minter's first game and, as far as I'm concerned, it's still the best. Fast, frantic action, now at a budget price. What more could you want?

Tony Hetherington

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

## It's a knockout!

Program: *Fight Night*  
Price: £9.99 (console) / £4.99 (disk)  
Supplier: US Gold, Unit 2 & 3, Millway Way, Romington, SE15 5JZ  
Tel: 01-352-3399

*FIGHT* Night offers five different modes of play - main event, construction, training, sparring and tournament.

Control of your boxer is by joystick and you are limited to eight basic moves - take or throw a punch to the body or head, put your guard up or down, and move left or right.

Although punches never actually seem to connect, the recipient nevertheless doubles up or jerks his head back as appropriate.

To defeat an opponent in the three, three minute rounds, you must either out-point him or knock him out.

Each time you land a blow your score goes up and the contender's KO indicator increases. The greater the length of the KO indicator, the closer to being knocked out.

All options are selected from the title screen. The main event has you fighting five plug-ugly computer-controlled boxers, each one stronger than the last.

Construction mode allows you to create up to 32 of your own boxers.

You can select head, body, feet and shorts. Then your creation is either controlled by the computer or by a player and can balance the strengths (100 per cent split) between head and body of the power of the boxer's blow and his resistance to blows.

If the boxer is to be computer-controlled you can also adjust the balance of offensive and defensive moves and the split between action and intelligence.

Sparring mode lets you call up any two boxers to fight. You can have computer a computer (in which case you sit back and watch), player against computer, or with a second joystick, player against player.

Training mode lets you



call up any boxer to punch away at a bag. You may operate in Follow or Lead mode at a selected speed, allowing you to practice joystick control as well as being able to evaluate a created boxer's power.

In Follow mode you simply move your joystick in accordance with an illuminated position on a displayed joystick chart. In Lead mode, you see move the joystick at will.

In Tournament mode (disc only), two players can set up various boxers against each other in a knockout competition.

The graphics are of a fairly high standard although the animation is a little on the slow and jerky side.

Presentation is excellent, from the ease of selecting the various options, to such things as the use of an admission ticket as a header screen before a contest.

Sound effects are only fair - a little bit of music and simple graphics whenever a punch lands.

All told, *Fight Night* provides general, non-sensational entertainment and is certainly the best boxing simulation around. Good fun, insured and good value for money.

Doug Woolley

Sound	3
Graphics	3
Playability	3
Value for money	3
Overall	3

## All aboard Loco

Program: Loco  
Price: £1.99  
Supplier: Alligata Software,  
1 Orange Street, Sheffield  
S1 4DB  
Tel: 0743 750190

BRITISH Rail was never like this. Alligata's new release puts you in charge of a classic American steam train on a journey more hair-raising than anything Casey Jones ever undertook.

Most of the screen is taken up by a side-on view of an impressive red steam engine.

The engine chugs away to the right along the track, or rather, it gives that impression. In fact, the train stays in the centre of the screen while the background scenery (blue skies, green fields and mountainous terrain) slides smoothly to the left.

At the bottom of the screen is an overhead view of a cross-country, six-lane railway system. This lets you see some distance ahead and behind and so

works as an early warning device.

Your train has a limited supply of fuel and the only way you can take on more is by visiting fuel dumps sited around the system.

To do this you'll need to change lanes from time to time - accomplished by pushing up or pulling down on your joystick.

There are other reasons why you'll need to keep a weather eye open. A dynamic-beam handcart will come rattling along the tracks at frequent intervals. If it hits your train, you're a goner.

Mind you, there are means other than evasive action to deal with that particular pest. A quick pull to the right with your joystick fires a missile - very handy when you're on a collision course with a handcart.

Danger also comes from the skies in the form of planes and airships which drop red bombs. The best way to deal with this aerial bombardment is to fire a



blast of smoke upwards from your engine (Smoke that destroys bombs and airships! The laws of physics have been rewritten again!).

Holding and releasing the fire button controls the height of your smoke clouds which rise to the desired height and then drift off to the left, hopefully annihilating aerial objects on impact.

There are 10 levels to deal with and a choice of speeds (fast or slow). At least the instructions say there are two optional speeds, but don't let you know to select them.

No matter what boys I

pressed or how I wiggled the joystick, I never did find out how to race at top speed.

Neither do the instructions mention that there is a Pause facility (key P) to pause, anything else to continue.

Loco is excellent value for money. High quality graphics, sound and gameplay make this a must for your library.

Bob Chappell

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

## House to forget

Program: House Of Usher  
Price: £1.99  
Supplier: Micro Masting,  
33 West Hill, Dartford,  
Kent DA1 2EL

ANOTHER platform game, I'm afraid, and not a terribly good one at that even taking into account its obscurity.

The main screen of House of Usher is supposed to represent the reception hall of this ill-famed house.

To enter a room, you simply position your avatar, rather nondescript, character in front of a door. By pushing forward on the joystick and pressing the fire button the screen will change to show the appropriate room.

Every room offers a series of platform puzzles. Most involve dodging invisible objects such as monsters,

canonballs, boulders, and so on.

You have three lives and touching any object will cost you one, as will mistiming a jump over a gap between platforms, or falling off a ladder.

In some screens, you must collect items; in others you simply need to reach the exit. One screen has you jumping hidden gaps, the position of which are shown only by a tiny inset map.

When you have successfully negotiated all the rooms you will be allowed to enter a mystical room (the Treasure Chamber). From here you can catapult yourself into the Final Room via a spring.

Every time you enter this last room you will be given the chance to pick a letter of



the alphabet to discover whether it forms part of a secret codeword.

What happens in these last two rooms and what results when you discover the code word can only be guessed at, since I have not so far reached them - due in equal parts to my lack of skill and the absence of interest or excitement generated by the game.

The price is low, but there's no doubt you could

find better value in many other budget releases.

Even better, why not save a few pence more and buy Edgar Allan Poe's The House of Usher in paperback form - far more exciting than this game.

Bob Chappell

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

## Worth the wait!

**Program:** Gauntlet (multi-man title)  
**Price:** \$9.99 (w/cover) / \$4.99 (disc)  
**Developer:** US Gold (Units 2 & 3, Hatfield Way, Birmingham B6 7AA, UK)  
**Tel:** 021-294 2388

At last, it's here! I've been waiting for Gauntlet for so long I almost began to think that US Gold wouldn't release it.

If you read the preview of Gauntlet in the April issue of *Amiga User* you know that it is a conversion of the arcade game.

The first thing to appear when you load the game is the arcade title screen of *Thru the Wizard and Thru the Valkyrie* in action.

Then you choose between a one or two player game, then which character or characters you are going to use (warrior, valkyrie, elf and wizard). I chose the wizard, for his powers with magic. Then you move into the

game itself.

The first few levels are easy, compared with what's to come later on. To start with, you only come across relatively harmless ghosts.

But as you get deeper into the game, you come across grunts, lechers, demons and a friendly character known to his pals as Death.

Keps and potions can be found and used in the dungeons, as well as food and drink to replenish your health. But take care what you consume, as some food and drink is poisoned.

The exits are marked with a large E, and transport you to the next level. One of the later levels is a dungeon filled with exits, except for a few pathways littered with food, drink and treasure.

In this, the exits are marked of a disadvantage than anything, although in other levels you may not be able to find the exit, so if you leave the joystick alone for about a minute all the walls



turn into exits.

That gives you just an idea of what Gauntlet is like. Play is just a bit slow, compared to the other versions, but it's still good fun. The music is a little tough, but you don't find yourself listening to it that often - you're too engrossed in the action.

The treasure rooms are included as well as levels where shots stop and hurt other players. The selection screen is impressive, using four colours, and the sprites and scrolling are both extremely fluid.

The game is very subtle

and you can find yourself collecting treasure in an otherwise empty room, then be attacked by dozens of monsters all at once.

Overall, Gauntlet is totally wicked. Although you only have a single colour shaded screen, the game play more than covers that.

Take my advice: Run the Gauntlet!

Robert Owen

Sound	4
Graphics	4
Playability	4
Value for Money	4
Overall	4

## A wizard time...

**Program:** Wizard's Crown (multi-man title only)  
**Price:** \$9.99 (w/US Gold cover) / \$4.99 (disc)  
**Developer:** US Gold (Units 2 & 3, Hatfield Way, Hatfield, Birmingham B6 7AA, UK)  
**Tel:** 021-294 2388

If you've tried adventures but find they lack depth or restrict your movements, why not try a computer role playing game?

They don't quite match up to the real role-playing action and atmosphere of games such as *Dungeons and Dragons* and *Chivalry and Sorcery*, but they do come close.

Wizard's Crown provides you with a massive world of magic, monsters and wilderness to explore. There are towns, dungeons and ancient ruins that (S)I claims will take you a 100 hours to complete.

Somewhere in the land

lurks the evil wizard Tarnion who stole the Crown of the Imperator. Your quest is to get it back.

If you're to stand any chance of surviving - never mind solving - the game you must manage your party of eight adventurers so that the rangers and fighters are supported by magic-wielding wizards, healing priests and lurking, robbing thieves.

Each character has a rating for its strength, dexterity, intelligence and life (health points) as well as specific skills such as fighting, haggling or casting any of the sorcerer's 32 possible spells.

Play is controlled by entering single key commands to move your party around a wilderness map which then expands to combat



in each a battle each character and monster is moved independently, depending on its dexterity. Single key commands control moves, attacks, loading and firing bows, casting spells, healing wounds, speaking to thieves and evasive action such as ducking or haggling.

As your characters survive battles and fight for plunder they will gain in skills, experience and power, equip themselves

with magical weapons and powerful potions.

This depth of character and gameplay make up for the elementary graphics and almost constant disc accessing. The result is an enjoyable game that will take months to solve.

Tony Hetherington

Sound	4/10
Graphics	3
Playability	4
Value for Money	4
Overall	4

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 • 68010 Motorola 32-bit cache controller  
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 • 68010 Motorola 32-bit timer  
 • 68010 Motorola 32-bit DMA controller  
 • 68010 Motorola 32-bit cache controller  
 • 68010 Motorola 32-bit cache controller  
 • 68010 Motorola 32-bit cache controller

**£399**

## 1040ST-F

Atari 520ST-M and 1040ST-F  
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 • 68010 Motorola 32-bit floating point coprocessor  
 • 68010 Motorola 32-bit timer  
 • 68010 Motorola 32-bit DMA controller  
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 • 68010 Motorola 32-bit cache controller  
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By **MICHAEL  
A. BAXTER**

HAVE you ever thought of yourself as a bit of a William Tell? This challenging game gives you the chance to show everyone what a snazzy shot you are. You take the part of a slightly eccentric character who enjoys bouncing up and down on a trampolene while shooting at various objects with a crossbow.

Unfortunately for you, these objects happen to be obscuring by an endless stream of indestructible balloons that drift up the screen, causing you endless trouble. Your timing is critical: You have only a limited number of crossbow bolts, so shoot carefully.

The game can be played by one or two players using joysticks plugged into ports one and two. The crossbow bolt is fired by pressing the fire button, and the speed of the man bouncing up and down can be altered by moving the joystick up and down. The game consists of three individual rounds:

**ROUND 1:** Has you bouncing up and down shooting at a standard archery target. The closer your bolts are to the bullseye, the more points are gained. This is the easiest round to play, and gives you practice for the harder ones that follow. The main problem is that the balloons keep getting in your way.

**ROUND 2:** You are attempting to shoot small glass jars off shelves and gain five points for each one that you manage to hit. But this is not so easy as it sounds, as those datted balloons again obscure most of your vision.

**ROUND 3:** In this, the hardest level to master, the true archer comes out in all of you as you try to shoot apples off the heads of two men. If you shoot a man he dies and you only have one apple to shoot at. If you shoot both men then the game automatically ends, regardless of how many bolts you have left. And all the while those accursed balloons continue to stream up the screen annoying you. When you kill a man (and you must probably will) he vanishes and a tombstone appears with R.I.P. carved upon it, just to remind you of your fallen victim.

Once you have typed the game, save it to tape or disc as it uses various machine code routines to manipulate graphics. Any errors in the code can lock the computer up and thus you would lose your program. All ROM statements can be removed, and if you have any problems typing it in you can refer to the accompanying Get It Right! listing.



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1 000 *****
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04 0F 100000000000000000000000
05000 0000 000
06 00000000000000000000000000
07 0000 00
08 00000000000000000000000000
09 00 0000 00 00 00 00000 00 0000 000001
10 00000 00 00 0
11 0F 000000000000 0000 000 00 00 00
12 0000 0000 00000 00000 00
13 0F 000000000000 0000 00 00 00 00
14 0000 000000 00000 00000 00
15 0000 00
16 0000 00 00 00 000000000000 00
17 000000000000 0000 0000 00
18 00 0000 00
19 00 0000 00 000000000000 00000 00
20 00 0000 00
21 00 0000 00 000000000000 00000 00
22 00 0000 0000 0000 0000 0000 00
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```



## VARIABLES

<b>MM19</b>	Constants 0-10.
<b>VBL</b>	Determines the velocity of the bounce.
<b>YLOC</b>	Bouncer's Y coordinate.
<b>PLVRS</b>	Number of players (1 or 2).
<b>YMAX</b>	Maximum height of bounce.
<b>DANTS</b>	String holding Moode for the clan.
<b>PLS</b>	String holding Moode for clearing the player missile area.
<b>VBRV</b>	String holding VBL initialization routine.
<b>VBOVF</b>	String holding routine to turn VBL off.
<b>MOVES</b>	String holding Moode to move memory (used with character set).
<b>HIS</b>	String holding high scores.
<b>INTS</b>	High scorer's initials.
<b>SCS</b>	Current scores.
<b>SC1SD</b>	Array holding score for both players.
<b>SRD</b>	Array holding status of glass jars.
<b>APFSD</b>	Array holding status of apples and condition of men.
<b>TD</b>	Reserve starts (indexed with screen Y coordinate to print starts).
<b>MPL</b>	Memory start for PLM stripe holding the start.
<b>Y</b>	Coordinate of the dart.
<b>ROUND</b>	Round number (1,2 or 3).
<b>DEAD</b>	Flag. True if both men in armor have been shot.
<b>GALINE</b>	General variables used in the facing.

## PROGRAM BREAKDOWN

10-20	Initialize variables and strings.
30-70	Main program control loop.
100-100	Dart moving routine.
110-132	Handles end of round routine, checks for two players.
130-120	Check for start hitting target, alter score accordingly.
130-150	Check for clan hitting glass jars.
160-190	Check for dart hitting apples or men.
200-220	End of game and initial entry routine.
230-250	Draw screens.
1000-1120	Introduces options page.
2600-2650	Define characters and data.
3000-3120	Set up player missile graphics.
3150-3170	Install machine code to move dart.
3250-3300	Install VBL, DLU routines, and data.
7100-7180	Reset values before new game starts.

```

100 3240,3170:00 000 10 0000000 000,000
101 00000 00000,0
102 000000,000000 00,0001 * 000 0
103 00 0000 000 000
104 0000 00
105 0000 00000 000 10 000 000000
106 0000,0000,0000 000
107 000000000000000000000000 00 00
108 0000 0000,000000000000,000000
109 0000 0000 000000 000000 000000
110 00 0000 000000 000000 000000 0000
111 000000000000000000000000000000
112 0000 0000
113 0000 0000 000000 000000 000000 00
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200 00000 0000 0000000000000000000000000000000000
201 00 0000 00 0000 0000000000000000000000000000000000
202 00 0000 00 0000 0000000000000000000000000000000000
203 00000000000000000000000000000000000000000000000000000
204 000000 00000000000000000000000000000000000000000000000000000
205 00000000 00000000000000000000000000000000000000000000000000000
206 00000000 00000000 00000000000000000000000000000000000000000000000000
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208 00000000 00000000 00000000000000000000000000000000000000000000000000
209 00000000 00000000 00000000000000000000000000000000000000000000000000
210 00000000 00000000 00000000000000000000000000000000000000000000000000
211 00000000 00000000 00000000000000000000000000000000000000000000000000
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219 00000000 00000000 00000000000000000000000000000000000000000000000000
220 00000000 00000000 00000000000000000000000000000000000000000000000000

```

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100 00 00000 0000 0000000000000000000000000000000000
101 00000000000000000000000000000000000000000000000000000
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```







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LOTS of superb pictures created on Atari computers have started to arrive in our mailbox. To let everyone share the delights of these works of art we are publishing a few each month. We start with a collection from Medical Systems (Bob Chewer).

If you would like to see your masterpieces in print, send them to: Palette, Atari User, Europa House, 88 Chester Road, Hazel Grove, Stockport, SK7 5NY.



Our Winch



Canine appears



Tron Light Cycle



M. M. M. M.



Self portrait

# Ranging far in magic lands

by  
Ruoloc

**WELCOME** heroes everywhere to another visit to the world of *Adventures*. First of all I must announce a change of party members. My old pal Brillig has decided that the lure of the new ST has proven too much of a temptation even for him. He has gone off to concentrate on that far *Afar di* *Loac*.

As for me: Well, having just defe-

sted the evil Krill and seen off the Demon Jester on behalf of the Great Malbas, and his Circle of Enchanters, I find myself at somewhat of a loose end. It seems that my prowess has preceded me and all known adventures have fled, so my WizardPinger skills are not needed at this time.

On occasions such as this, when I am resting, I often turn to my trusty Atari and indulge in a spot of computer adventuring. In fact, having solved countless quests in my time I suppose you could look on me as something of an expert, and if modesty permits, I could pass on some valuable help to any of you who might be in a spot of difficulty.

Brillig has kindly passed on his parting to me, and as of this month I shall be delving into it to see who is in trouble.

The Pawn, Iah, Keromyia, when again shall I look upon your beauty! is the subject of the month, and to support it I shall give you many hints to the solution in a cryptic form only, for those of you who might not want the secrets divulged completely.

You may have read last month of the imminent release of Guild of Thieves. Well, the final touches are being put to the game as we speak, but also on the drawing board at Magnetic Scrolls are five main adventures to be released over the next two years, so hurry up and solve Guild before you're faced with a backlog.

On that note, I feel a competition is in order, so the first person to send me the list of all the treasures needed in Guild (and remember, I have seen it already so I know the answer!) will win a prize.



See you next  
month

## Clues to The Pawn

### Game objectives:

- Get the wristband removed
- Kill the adventurer
- Rescue the princess
- Kill Kronos
- Save for Gings

**The note:** Kronos has offered you the note... now what, take it or not? If you refuse he'll not be very happy, if you take it, you'll need to find a king.

**The shed:** Where do you leave your toys?

**In the shed:** The plant needs to be planted a bit better; look at the bench more closely.

**The gurn:** Could you cover the band maybe? He needs a drink. Maybe a drink will find liquid, but you'll need something to put it in.

**The boulders:** Big aren't they? One object couldn't possibly move them by itself, but two together... rimes.

**The snowman:** He won't talk, but maybe he'll warm to you, in a colourful way.

**To kill the adventurer:** Ask Kronos about the band.

**The lava river:** Try moving the pedestal. Breaking a wall could do more than just damage.

**Maze:** Find more!

**Wipe for Gings:** Better paper I think, in the safe I think.

**The double doors:** Be very polite. The poster may be thirsty... so is Laveis.

**Kill Kronos:** The bottle needs to smash. Feeling strong?

**The dragon:** He is a bit blind. Point out some other people in the shadows. Wearing Kronos' clothes. Whatever next?

**The platform:** The cream door could be knocked down.

**Open the palace:** The key is feeling blue.

## Postbag



**GOES** anyone out there have any answers for Gamma Thresher, who is stuck in Ten Little Indians? She can't get out of the carriage.

Adam Marshall would like a map of Alternate Reality, and thanks to reader Vic Rowland, I shall provide you with one next issue.

John Sweeney is not happy about Billig's review of Moonmist and writes that although he said it is specifically aimed at adult gamers new to adventures, and on this basis he judged it to be in some part a failure, it does stay on the box that it is for ages 8 and up.

It is in fact a superb game for

8-year-olds, as Infocom's previous two introductory level games were actually much too hard for the average youngster.

Also, to answer John's plea about Ulysses and the Golden Fleecer to get past Phobos, throw DUST which you can find in a hole in a tree on the Island of Sisyphos.

Thanks for your letter John, and with regard to Moonmist, I entirely agree with you and the idea of four different endings is truly wonderful.

Adventures Unlimited are four boys from Manchester who between them have solved over 60 quests, and offer help if you write to them at Adventures Unlimited c/o Steven Townsend, 1 Taunton Ave, Ripost, Manchester M21 1PQ.

Mrs Greenway has shattered nerve endings and a nearly exploding brain, due to the Pay Off. For 18 months she has been in the Bas Room unable to get the bas containing the gems. The April issue of Atari User carried a complete solution for you, but if you missed it, get the list from the chamber and

drill box (the number is on the list) open box and get gems.

The answer comes from Chris Beard who says that J C Bradbury asks where to find the combination in Lapis Philosophorum. You need to clean up the sheet of copper using the rags from the manasters, then use the copper to reflect some Heliographist on a boulder in a swamp. Also, to enter the cave just type enter save, then play hangman with the Troll.

Lastly, I have received a letter from Robert O'Leary, the boss of Robico Software, who is puzzled as to why a mention of his Rick Hanson Adventure has not been forthcoming in the column. He puts it down to the fact that I haven't got a copy so he kindly sent one with this letter.

So to Robert I say Robico and Rick Hanson, thank you for the disc, and I'll have a look at it for next month.

Good luck with The Pawn, I'm off to sharpen my trusty sword and position a few spells. See you next month.

## HINTS AND TIPS

By Sir Kodgeswilde, Green

◆ **Escape from Zeam.** By Jym Pearson: If you have found the alien warrier, type TALK. The program will respond with some letters. Type TALK again. The program will respond again, with different letters. The letters are words, but they are written in code. The coded words are:

IBBY AW BOW YCOV BRY VYCD BK BMYW UDRAT HEM  
YCOYBN HMYW BRY SCALC ECF HEM HIBBAC

I broke the code, and the final code was:

SHOOT ME THE BOLD AND DROP IT HERE, CLIMB THE GOLDEN TREE AND WATCH FOR THE TRAMMO. THEY EAT EARTHFLICE.

◆ **Dallas Quest.** The complete responses are:

East, get envelope, north, get sunglasses, north, offer sunglasses, enter barn, drop mail, get shovel, south, south, south, west, get bagle, west, dig, dig, blow bagle, dig, read tombstone.

Then: East, north, open desk, get pouch, close desk, drop money, north, north, west, west, north, examine airplane, offer envelope, get knapsack, open knapsack, drop knapsack, get parashute, close knapsack, jump, open pouch, offer pouch, close pouch, drop parashute, south, south, south.

Now: Tickle anacorta, south, south, enter dingle, open pouch, offer pouch, close pouch, row dingle, blow bagle, drop bagle, drop shovel, enter post, draw curtain, get flashlight, get mirror, open pouch, offer pouch, close pouch, drop photo, drop mirror, drop ring, drop pouch, light flashlight, climb ladder, drop flashlight, east.

Then: Enter post, get ring, climb ladder, drop ring, east, enter post, get photo, climb ladder, drop photo, west, enter post, get pouch, climb ladder, drop pouch, east, enter post, get mirror, find Snaky, climb ladder, get ring, get photo, get pouch, get flashlight, west, extinguish flashlight, close photo, get cocoon, west, open pouch, offer pouch, give eggs, offer mirror, wave ring, heat eggs, light flashlight, drop ring, get map.

J.R. will appear and make an offer to you. You don't want to accept it, so type NO. You will go back to SouthWest Ranch. Type GIVE MAP and the game ends with 172 moves.



# The Pawn

Following numerous requests from our readers, this month's featured adventure is The Pawn, from Rainbird Software. This is a beautifully packaged product with excellent graphics to complement the detailed text descriptions.



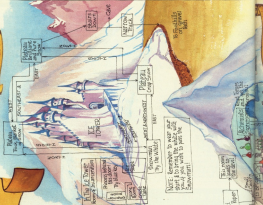
## Across the Ravine

Even with  
Freddy's Special  
Widely

Griffith  
and Sizzle later!

This room  
leads to  
the next!

## The Plateau







**ATARI USER**

**Under the Mountain**

Cubic Stone Board  
0 (Search well!)  
Lava  
To get away from the lava, you need to get away from the lava  
2 Jet Bridge

1  
Cave  
Lava  
To get away from the lava, you need to get away from the lava  
2  
Trunk  
Back Bay  
A Sign  
Up to...  
Up to...  
Up to...  
Up to...



1  
Cave  
Lava  
To get away from the lava, you need to get away from the lava  
2  
Trunk  
Back Bay  
A Sign  
Up to...  
Up to...  
Up to...  
Up to...



1  
Cave  
Lava  
To get away from the lava, you need to get away from the lava  
2  
Trunk  
Back Bay  
A Sign  
Up to...  
Up to...  
Up to...  
Up to...



## High tech thrives on Sark

THE isolated island of Sark – population 500 and not a car to be seen – is surprisingly a major user of information technology.

"Sark is a thriving financial centre due to its tax free status, so electronic communications are a vital element here", explains MicroLink subscriber Philip Stokes who has lived on the island for 13 years. "In fact, I reckon we have the world's highest ratio of telex and fax

machines per head of population".

Philip owns a gift shop, but he used to work on the London Stock Exchange and when he isn't serving tourists he operates an administration service for offshore companies.

"Efficient movement of documents is essential to properly maintain an offshore company's Sark registration", says Philip. "But while the telex car-

rying our mail can take a few service in the summer, rough winter weather can easily cut us off for days at a time".

"The Guernsey authorities are about to provide an electronic mailbox facility which will help make up for our lack of P.O. and I'm confident my investment in computer communications will have paid for itself within a year thanks to MicroLink".

## From the Antarctic with love . . .

ELECTRONICS technician John Mackintosh couldn't work much further away from home than on a scientific research vessel in the icy waters of Antarctica. But he is in constant touch with his wife in Scotland thanks to a combination of MicroLink and Inmarsat, the international marine satellite system.

Contracted to an international scientific foundation, John's ship travels all over the world doing ocean research.

For some time it has been using electronic mail as a relatively cheap alternative to regular telex services for communicating with its base office.

"So when I was looking for a means of keeping in touch with home while at sea, the obvious solution was Email", said John.

"Inmarsat is an extremely reliable means of communications – though it's expensive at about 15 a minute. By using a MicroLink mailbox, however, my wife and I can exchange letters in a fraction of the time taken by voice calls and make considerable savings.

"Because MicroLink is available 24 hours a day, I don't have to set up any particular schedule with my wife, and I can use the ship's communications system whenever it is available".

## Help for the handicapped

A CALL for computer users to put their brains to work on behalf of the handicapped has come from MicroLink subscriber Brian Vainsteins.

Brian is disabled by a rare disease called Friedreich's Ataxia which affects a victim's coordination, balance and speech.

He says: "I'm extremely lucky in that I'm still just about mobile, but others are not. Many sufferers are completely unbecoming, but some of us can see huge possible benefits from the use of a micro.

"I am currently working on a dictionary word entry system, the main advantage of which would be greatly reduced use of the keyboard in word processing and programming.

"This is only one example of the kind of thing we need. Help with software ideas, complete programs, or just tips and advice could open one of the great doors for someone confined to a wheelchair".

## Your chance to join MicroLink see Page 4

### Discounts on view

THE latest firm to display its wares in MicroLink's Shop Window Section is Sun by Four Lings, descendant of a Lithuanian family which emigrated to Britain at the turn of the century.

Four has been exporting computer software and peripherals to home and business users overseas for the

past two years. His customers range from Europe and North America to Australia, Israel and North Africa.

Recently he decided to extend his firm's discount offers to UK residents, and chose Shop Window as MicroLink to display his products.

### LINK TO CUT COSTS

To combat the effects of the crippling disease which afflicts more than 15 million people worldwide, the Leprosy Mission helps support more than 2,500 doctors, nurses and para-medics caring for 400,000 lepers in 30 countries.

The international Christian organisation has 16 area engineers throughout England and Wales who are being connected by MicroLink electronic mail in a pilot scheme

designed to speed the flow of information when cutting the cost of communications.

"We hope to make savings in our overheads that will allow us to send more money abroad to help leprosy victims", said Dr Tony Lloyd, the man in charge of the project.

"To produce and circulate a memo to our area offices in the UK can cost as much as £25 – by MicroLink Email we should be able to do the job for under £2".

# WEAVING A TANGLED WEB

By  
**GEOFFREY STOREY**

**MONEY**, and lots and lots of it, is scattered around a two dimensional dungeon with 10 levels. All you have to do in this game is walk up and take it.

Sounds easy. But living in this dungeon are two eight-legged, furry money spiders. And these horrible little creatures get very annoyed when you try to take their savings.

Luckily for you they are not very intelligent, and you can avoid them by confusing them at junctions. This can be done by watching which way they travel when they encounter a gap in the walls and moving in the opposite direction.

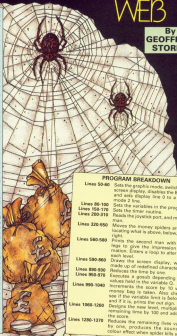
You have to travel from the top of the screen to the bottom collecting the moneybags. When you have enough, an out sign will appear in the top left hand corner and at this point you make your way to the exit avoiding the spiders on the way up if this sounds too easy, a flasher at the top of the screen indicates a time limit which is running out fairly quickly.

Moneybags is a one player game, played with the joystick in port one. During the game a few moneybags may still be left when the out sign appears and these can be collected to obtain extra points. Each moneybag is worth 10 points and at the end of each level you gain a bonus for completing the screen. You have three lives at the start of the game and if you lose a life you'll begin that particular level again.

There are 10 levels, each a little harder than the previous, with level 10 to be the most challenging - where the walls and dungeons of the screen are invisible. The screen layout is randomly generated, so each level and game will be different.

The computer keeps your high score only while the program is running. Pressing system reset will purge the variables containing this information, so you only have the score table as a temporary challenge.

When first run, the initialisation will take around 10 seconds due to the characters being redefined and the writing up of a machine code routine that animates the spider's legs. The break key is disabled by the two joysticks in lines 50 and 1380 because there are interrupt routines running which continue to execute even after it has been pressed. To abort the game press the System Reset key.



## PROGRAM BREAKDOWN

- Lines 50-80** Sets the graphic mode, switches off the screen display, disables the Break key, and sets display line 0 to a graphics mode 2 line.
- Lines 90-100** Sets the variables in the program.
- Lines 100-170** Sets the timer routine.
- Lines 200-210** Reads the joystick port, and moves the man.
- Lines 220-950** Moves the money spiders around by locating what is above, below, left and right.
- Lines 960-980** Prints the second man with shorter legs to give the impression of animation. Enters a loop to alter time of each level.
- Lines 980-990** Drives the screen display, which is made up of redefined characters.
- Lines 990-990** Reduces the time by one.
- Lines 990-970** Rewrites a gobol depending on the value held in the variable Q.
- Lines 990-1040** Increments the score by 10 when a money bag is taken. Also checks to see if the variable limit is below one, and if it is, prints the out sign.
- Lines 1060-1260** Designs the new level, multiplies the remaining time by 100 and adds it to the score.
- Lines 1280-1270** Reduces the remaining lives variable by one, produces the sound and colour effect when spider kills you.





RM 849 4, 111, 144, 177, 210, 243, 276  
28, 61  
RM 849 34, 71, 115, 159, 203, 247  
1, 3, 7, 11, 15, 19  
RM 849 84, 141, 1, 147, 7, 144, 164, 30, 9  
1, 308, 94



100	200	300	400	500	600	700	800	900	1000			
58	1119	58	4441	58	5776	99	2636	68	2787	878	1840	
68	871	58	8084	68	1780	99	4836	8889	1719	1078	2380	
78	1881	68	9128	78	3920	8889	6384	8889	494	1864	3876	
188	1441	78	1880	188	1876	8889	4633	8889	4771	1888	8577	
178	3888	78	3118	188	3976	8889	9786	8889	6711	1717	15377	
718	1718	888	18128	998	1188	1112	8711	1188	1188	1144	18626	
718	7814	788	8718	788	8888	1758	4227	1388	1811	1246	4278	
258	8889	788	8818	268	1948	1178	6273	1388	1781	1717	9445	
278	2588	268	3488	268	1229	1178	2527	1118	1718	1718	1548	2578
188	4717	718	1788	118	1711	1188	2857	1388	1317	1278	1878	
348	3278	788	3281	348	4148	1378	6437	1488	8214	1478	5282	
378	8973	388	3718	398	3387	1428	18889	7018	4814	1648	7188	
488	4948	478	4981	438	4425	1428	1878	1488	7384	1478	1878	
438	2718	438	4441	448	4754	1428	7818	1588	7818	1888	18477	
478	3718	488	4827	498	11889	1578	7888	1738	5218	1558	2427	
588	1888	578	1784	538	4427	1548	3888	1688	3733	1848	3871	
538	8036	548	3124	538	3144	1588	3843	1588	3715	1688	8521	
568	7271	578	4996	588	1671	1638	17821	1638	6711	1688	12371	
688	7871	678	18427	638	4779	1648	6578	1658	4784	1648	15478	
638	6245	648	1781	678	4164	1688	6271	1688	6282	1788	4871	
668	6267	678	4771	688	3423	1718	4752	1728	4762	1718	4887	
898	1074	788	3828	718	1288	1758	4528	1758	4423	1758	4787	
778	1788	778	7988	758	1411	1778	4873	1788	4898	1778	4371	
778	2429	768	3344	778	1211	1888	4873	1818	4255	1818	4477	
788	1545	788	1478	888	7188	1838	3288	1848	3288	1848	3811	
818	3238	828	3174	838	1488	1878	8274	1888	7588	1878	4487	
848	8588	858	3711	868	3816	1888	1428	1978	11347	1888	6144	
878	1438	878	1281	888	3871	1938	7456	1948	6271			
918	1482	928	2191	938	3711							

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101	1219.00	719.00	819.00	919.00	1019.00	1119.00	1219.00	1319.00	1419.00
201	1819.00	1019.00	1119.00	1219.00	1319.00	1419.00	1519.00	1619.00	1719.00
301	2419.00	1319.00	1419.00	1519.00	1619.00	1719.00	1819.00	1919.00	2019.00
401	3019.00	1719.00	1819.00	1919.00	2019.00	2119.00	2219.00	2319.00	2419.00
501	3619.00	2119.00	2219.00	2319.00	2419.00	2519.00	2619.00	2719.00	2819.00
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**BEFORE** starting on this month's topic — customizing the operating system to your own requirements — let's first answer the question I left you with in the April issue of *Atari User*: Why should it take so much longer to send 1080 bytes of data when using the PUT command than it does with the Binary File routine we gave you?

Well, the reason is not all that hard to work out if you think about how the OS actually works when you give it a task. Each time you access it to send some data, it first needs to take care of a lot of internal calculations, such as working out the handler addresses and moving the Input/Output Control Block.

Even at machine code speed this takes a little time, and while you won't notice it when you call a routine once, you will start to see the effect if you call the OS 1080 times — and this is why the extra delay occurs.

So far we've looked at the way that the operating system carries out your commands, but let's now examine the potential for expansion that it gives us.

As you know, the OS has a number of internal device drivers — such as those for the cassette, printer and screen — available from the moment you switch on the machine. In addition, there are a number of extra peripherals you can add to your Atari — each of which needs to add its own handler to the existing set.

These include the disc operating system and the RS232 interface routines, both of which are capable of loading — or booting — their own handler routines as required. This facility gives us a very neat way to add our own routines to the OS, or indeed to

# Constructing a machine code device driver

## Part 5 of Andre Willey's series on the Atari's input/output facilities

customize the existing ones.

Program 1 is a simple machine code device driver. It is not designed to do anything especially useful, but it does demonstrate the basic principles required when constructing a new device handler.

In fact, all each of the six commands does is to change the screen colour so that you can see it has worked. The rest of the program is perfectly valid for any driver, so you could insert your own routines quite easily by replacing the colour changing instructions such as those at lines 548 to 558.

If you think back to the first part of this series you will recall that the OS uses a table of device names and handler addresses known as HATABS (at address \$01A) to keep track of the currently available drivers.

This table, shown in Figure 1, consists of a single ASCII byte for the handler name — C, P, D, S and so on — plus a two-byte number: this is the address of a further table which gives the actual memory locations of the various Open, Close, Put, Get and other data handling routines.

If we want to patch our own driver into the OS, we must first look for a free space in HATABS. Since each three-byte entry starts with an ASCII character, we can check every third byte to find the names used by the OS so far. As soon as we find a zero entry

we know that we have come to the end of the used portion of the table, so we can insert our own handler's name and address there. Lines 258 to 490 do this, adding the name X to the current HATABS list.

In fact, the OS always starts searching from the end of the table, so you could even add a device name that already exists and the new version would then be used instead of the 'original' one.

The two-byte address should point to a 16 byte table (lines 150 to 200) within your machine code which contains six addresses — or vectors — and a jump instruction. These addresses will point to the six major routines that the OS can access — Open, Close, Get, Put, Status and Special.

In fact, due to the internal workings of the OS, the addresses given in your table should be one byte lower than the actual location of the machine code routine. The jump instruction is a simple JMP R7T which will only be used to initialise the handler, and often does nothing more than return with an RTS, as in our example.

When you access your device, the OS checks the ICCOM command byte to decide which of the six routines to use. Open, Close and Status (0, 12 and 13) are obvious, as are the various Put and Get commands (5, 7, 9 and 11), but what about the Special commands such as 8 and some 16?

Well, if the OS finds an ICCOM command number greater than the normal maximum of 13, it will use the Special vector at the end of the table, and your driver should check to see whether it can handle the command number requested. By the time your routines take control, the ICCB information will have been transferred into the Zero Page (CDB (00C8) at \$30).

This means that you never need to

HATABS + 0	P	\$0400 (\$0400)
HATABS + 3	C	\$0440 (\$0400)
HATABS + 6	E	\$0480 (\$0000)
HATABS + 9	S	\$04C0 (\$0000)
HATABS + 12	R	\$0480 (\$0400)
HATABS + 15	D	\$0000 (\$0000)
HATABS + 18	-	\$0000
HATABS + 21	-	\$0000
HATABS + 24	-	\$0000
HATABS + 27	-	\$0000
HATABS + 30	-	\$0000
HATABS + 33	-	\$0000

N.B. Assumes Disc 2.0 present.  
Unused entries are filled with 0000.

Figure 1 — The Handler Address Table (HATABS) at \$01A (294)

worry which channel number the calling program is using - all the information you require will always be located in the ZIOCB.

The ZOOOM command byte will thus always be found at \$02 (three bytes into the ZIOCB). In our example, lines 680 to 690 check whether this value is 100 - the only command number that we will allow in this case. Of course, you can check for any numbers you want here, thus allowing a lot of flexibility beyond the normal data input operations.

After completing whatever tasks it needs to do, your routine should place any error code into the Y register and update the ZIOCB with any changes which have occurred. Normally the Y register should contain a value of 1 if an error has occurred, as in the Open, Close, Get, Put and Status examples shown.

In the case of the Special command, any ZOOOM number other than 100 should generate an error, and hence the 900 into the Y register in 140 - the error code for Function Not Implemented - and returns.

When writing new handlers you should always bear in mind that the System Reset button will wipe out any user-defined drivers and replace the original rom-based set. Programs that need to get around this problem must keep the Reset readiness by means of the CASINI or DOSINI locations.

When the system boots it sets a flag called BOO?Y to indicate if any special initialization will be required when Reset is pushed. If this flag is set to 1, the disc vector at DOOSM is used. If it is 2, then the cassette vector CASIM will be used - and a value of 3 means that both cassette and disc software requires initializing.

To avoid any complications with Dos you can always check the system a little and put your initialize address into CASINI and after the BOO?Y flag to 2. This will fool the OS into thinking that a cassette boot has also taken place, and thus initialize your code alongside that of Dos. This is done in lines 420 to 460.

Normally, you would also need to adjust the LONEM pointers to make sure that nothing overwrites your

code. In this case this is not necessary, because our driver is so short that it fits into page 6, which is always protected anyway.

For those of you who don't have access to an assembler, Program 1 is a Basic version of the handler. It works in exactly the same way but is FORK'd into page 6 and initialized via a USF command.

Lines 240 to 530 provide a full demonstration of what each command does, plus the effect of using a value other than 100 in an XIO command. This section may be typed in separately if you have already loaded the handler from an assembled file.

■ Well that's it. You may like to experiment further to find out which form of error are handled by the OS and which are handled by the device driver itself - you may be surprised by how little the OS actually does. You could also have a go at LBTING, LOADING or SPLITting with the X; driver and watch the screen colours change as the OS performs different tasks.

### Program 1: The machine code driver

```

0110 104 F927F862C0
0120 174 6E748D0000
0130 104 F927F862C0
0140 174 6E748D0000
0150 174 6E748D0000
0160 104 F927F862C0
0170 104 F927F862C0
0180 174 6E748D0000
0190 174 6E748D0000
0200 104 F927F862C0
0210 174 6E748D0000
0220 174 6E748D0000
0230 174 6E748D0000
0240 104 F927F862C0
0250 174 6E748D0000
0260 104 F927F862C0
0270 174 6E748D0000
0280 174 6E748D0000
0290 174 6E748D0000
0300 174 6E748D0000
0310 174 6E748D0000
0320 174 6E748D0000
0330 174 6E748D0000
0340 174 6E748D0000
0350 174 6E748D0000
0360 174 6E748D0000
0370 174 6E748D0000
0380 174 6E748D0000
0390 174 6E748D0000
0400 174 6E748D0000
0410 174 6E748D0000
0420 174 6E748D0000
0430 174 6E748D0000
0440 174 6E748D0000
0450 174 6E748D0000
0460 174 6E748D0000
0470 174 6E748D0000
0480 174 6E748D0000
0490 174 6E748D0000
0500 174 6E748D0000
0510 174 6E748D0000
0520 174 6E748D0000
0530 174 6E748D0000
0540 174 6E748D0000
0550 174 6E748D0000
0560 174 6E748D0000
0570 174 6E748D0000
0580 174 6E748D0000
0590 174 6E748D0000
0600 174 6E748D0000
0610 174 6E748D0000
0620 174 6E748D0000
0630 174 6E748D0000
0640 174 6E748D0000
0650 174 6E748D0000
0660 174 6E748D0000
0670 174 6E748D0000
0680 174 6E748D0000
0690 174 6E748D0000
0700 174 6E748D0000
0710 174 6E748D0000
0720 174 6E748D0000
0730 174 6E748D0000
0740 174 6E748D0000
0750 174 6E748D0000
0760 174 6E748D0000
0770 174 6E748D0000
0780 174 6E748D0000
0790 174 6E748D0000
0800 174 6E748D0000
0810 174 6E748D0000
0820 174 6E748D0000
0830 174 6E748D0000
0840 174 6E748D0000
0850 174 6E748D0000
0860 174 6E748D0000
0870 174 6E748D0000
0880 174 6E748D0000
0890 174 6E748D0000
0900 174 6E748D0000
0910 174 6E748D0000
0920 174 6E748D0000
0930 174 6E748D0000
0940 174 6E748D0000
0950 174 6E748D0000
0960 174 6E748D0000
0970 174 6E748D0000
0980 174 6E748D0000
0990 174 6E748D0000
1000 174 6E748D0000
1010 174 6E748D0000
1020 174 6E748D0000
1030 174 6E748D0000
1040 174 6E748D0000
1050 174 6E748D0000
1060 174 6E748D0000
1070 174 6E748D0000
1080 174 6E748D0000
1090 174 6E748D0000
1100 174 6E748D0000
1110 174 6E748D0000
1120 174 6E748D0000
1130 174 6E748D0000
1140 174 6E748D0000
1150 174 6E748D0000
1160 174 6E748D0000
1170 174 6E748D0000
1180 174 6E748D0000
1190 174 6E748D0000
1200 174 6E748D0000
1210 174 6E748D0000
1220 174 6E748D0000
1230 174 6E748D0000
1240 174 6E748D0000
1250 174 6E748D0000
1260 174 6E748D0000
1270 174 6E748D0000
1280 174 6E748D0000
1290 174 6E748D0000
1300 174 6E748D0000
1310 174 6E748D0000
1320 174 6E748D0000
1330 174 6E748D0000
1340 174 6E748D0000
1350 174 6E748D0000
1360 174 6E748D0000
1370 174 6E748D0000
1380 174 6E748D0000
1390 174 6E748D0000
1400 174 6E748D0000
1410 174 6E748D0000
1420 174 6E748D0000
1430 174 6E748D0000
1440 174 6E748D0000
1450 174 6E748D0000
1460 174 6E748D0000
1470 174 6E748D0000
1480 174 6E748D0000
1490 174 6E748D0000
1500 174 6E748D0000
1510 174 6E748D0000
1520 174 6E748D0000
1530 174 6E748D0000
1540 174 6E748D0000
1550 174 6E748D0000
1560 174 6E748D0000
1570 174 6E748D0000
1580 174 6E748D0000
1590 174 6E748D0000
1600 174 6E748D0000
1610 174 6E748D0000
1620 174 6E748D0000
1630 174 6E748D0000
1640 174 6E748D0000
1650 174 6E748D0000
1660 174 6E748D0000
1670 174 6E748D0000
1680 174 6E748D0000
1690 174 6E748D0000
1700 174 6E748D0000
1710 174 6E748D0000
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1760 174 6E748D0000
1770 174 6E748D0000
1780 174 6E748D0000
1790 174 6E748D0000
1800 174 6E748D0000
1810 174 6E748D0000
1820 174 6E748D0000
1830 174 6E748D0000
1840 174 6E748D0000
1850 174 6E748D0000
1860 174 6E748D0000
1870 174 6E748D0000
1880 174 6E748D0000
1890 174 6E748D0000
1900 174 6E748D0000
1910 174 6E748D0000
1920 174 6E748D0000
1930 174 6E748D0000
1940 174 6E748D0000
1950 174 6E748D0000
1960 174 6E748D0000
1970 174 6E748D0000
1980 174 6E748D0000
1990 174 6E748D0000
2000 174 6E748D0000

```





# SOFTWARE SOLUTIONS

## Shadow registers

I AM having a bit of trouble with a program I'm trying to write. I have defined the main parts, and I'm now playing up the screen displays and so on.

My problem is linked to the SETCOLOR statements. Before I read some data in from disc I print a message in Graphics mode 2. However, I often find that the colours I have set do not appear immediately, but often take four or five seconds to come on-screen.

I understand that this has something to do with shadow registers, but I'm not too sure what this is — can you help? — A. Pratt, *Salisbury West Midlands*.

■ You are indeed correct in what you say and the problem is linked to these mysterious shadow colour registers.

There are two types of colour register on the Atari — hardware registers, from which the screen display is generated, and software (shadow) registers which are used by software and SETCOLOR commands.

The two types are provided to prevent a problem common to many computer display systems. If you change a colour value while the display is being updated on the television you will see an annoying jump on the screen. This is most pronounced when you are using flashing colours.

To avoid this, the Atari only updates the actual hardware colour registers during the blank period between each TV frame — or the Vertical Blank period as it is known.

When you do a SETCOLOR command, the colour value you provide is stored in a temporary colour register — the shadow — until the next Vertical Blank comes along. During this time, all the shadow registers are copied into their hardware counterparts.

Your problem occurs because some

of these Vertical Blank tasks are temporarily suspended whenever time-critical tasks such as data transfer are taking place. Thus, whenever you access the disc drive within one-fifth of a second after executing a SETCOLOR command, the colours may not appear until the disc IO has finished.

You can get round this in one of two ways. Firstly you could use a simple FOR...NEXT loop to delay the program until the next Vertical Blank has occurred — a loop of 50 times should be ample for this purpose. Alternatively, you could POKE the hardware register directly.

Each of the software registers (708 to 712) has a hardware equivalent (5270 to 5274). All you need to do is POKE the hardware register with the value held in the shadow. If you have just set the colour of the 708 shadow you could use:

```
POKE 5270,100000+708-80000000
```

This will ensure that the screen display shows the correct colours immediately.

## Square root snags

I wish to use my recently acquired 80800 to carry out various mathematical calculations. However, I appear to have struck a problem with Atari Basic when attempting to work out squared numbers or roots.

For example, a simple problem of determining the area of a circle of given radius is given by  $A=\pi r^2$ . In Basic this would be:

```
10 INPUT R
20 LET A=.14159265358979314*4*R
```

Unfortunately this produces an error message on line 20 regarding the

substitution:

```
20 LET A=.14159265358979314
```

This produces the required result. However, usually the problem when dealing with  $\pi$ .

Conversely, how does one determine a square root or cube root? In Basic  $\sqrt{x}$  or  $x^{1/2}$  might be:

```
1000/SQRT(16)
```

But how does one obtain this on the 80800?

It seems quite easy to produce the  $\sqrt{\quad}$  symbol by pressing Escape then Control+ $\sqrt{\quad}$  but each time I try it an error occurs.

I should be extremely grateful if you could supply a solution to this problem as the local computer club are unable to help, claiming that the Atari is only a games machine. — Mr J. P. Raitt, *Tyne & Wear, Chaywood, Middlesbrough*.

■ The answer to your problem is actually very simple — the character used when raising numbers to a given power is  $\wedge$ , and is given by pressing Shift+ $\wedge$ . This will allow you to use the formula:

```
1000/4^0.5^2
```

You may then use fractional powers for roots, or for a simple square root use:

```
10000/4.14141
```

Because of the way computers handle real numbers, you might find that the final place of decimals is often somewhat inaccurate, in which case you can round off to, say, four decimal places with:

```
10000/4.14141+0.00005
```

If you omit the +0.0 you will truncate to four places instead. There — now you can tell everyone what a great machine the Atari really is.

Are you having problems getting your programs to work? Write to Software Solutions, Atari User, Hazel Grove, 58 Chester Road, Hazel Grove, Stockport.

We will answer as many as we can within the pages of Atari User but, unfortunately we cannot give personal replies.

# The Atari 520 ST gives you the power to defeat deadly enemies, slaughter monsters and outwit cruel captors.



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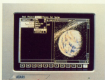


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# ATARI 520 ST

WORKS HARD - PLAYS HARD

# Your HINTS & TIPS

## The Last V.8

(tape only)

IF YOU can't get past the first screen press the break key as you load the program when the tape counter is around 187. Start the game as normal and when the background disappears move down until you reach a green strip. Move slightly up and horizontally along, slowly starting accelerating downward. A message should flash - Entering Inner City - and you then go on to the next screen.

If you don't manage it the first time, don't give up: There is a trick to it - J.P. Karahov, Medfordfield

## One on One

THERE is a mistake in the entry. It says press 1 or 0 for a time out. This is not so and it is in fact 0 for God and 1 for Da.J. - C.E. Smith, Welling, Kent

## International Karate

IF YOU hold down K and a number between one and four you can change the speed. Four is slowest and one fastest. - Gary Rowson, York

## Polar Pierre

(disc only)

If you have started a game with one player only and wish to change to two (or vice versa), press Option to go to the controller menu. Remove all discs from the disc kit. Remove all discs from the drive and select play on the screen menu. The game should then return you to the title screen where Select should do the trick. - Paul Collins, Lenton, Sussex

## Mediator

FIRST pass the skeletal horse by going down as far as possible then running up until you are one pixel or so above the bridge. When the horse stops, run quickly across the bridge and he should follow.

You must now cross the lake by doing a 3D version of Frogger, going from turtle to frog and so on. When you land on the island at the centre, the Mermaid waving his arms about should disintegrate.

You must now climb the trees and pick the apples, descend and press the fire button to throw them at the horse. The longer the button is pressed the steeper the angle of the throw. After three hits, the horse should wade through the lake and carry you off.

While you are on this screen, if you are asked up to fight the enemy, you will find that you have

been awarded a forward-firing missile for your endeavour. Just push forward to fire it.

The next screen is easy because aliens come pouring down from the mountains while you heat from below as a telephone in the hope that they'll explode.

Just when I think I've got somewhere that loop bird flies past, steals my hammer and leaves me well and truly in the lurch. Can anyone help? All I do know is that if you press up on this screen, left and right will steer your missile (from last screen) accordingly.

At this rate, all I can say is your ship on screen might just be a real mean war-machine with the amount of extra weaponry it's receiving. - Paul Collins, Lenton, Sussex

## Spindizzy

WHEN you travel along thin pathways that are just hanging in the air change to the form of a gyroscope. Then your craft will only fall off if the clay point that the whole thing is balanced on wanders too near the edge. It gives you more room for error. - Paul Collins, Lenton, Sussex

## Spy vs Spy II: The Island Caper

YOU can drop missile parts just behind forgotten trees so that behind forgotten trees. In the only a pixel or so is walkie. In the only a pixel or so is walkie. In the only a pixel or so is walkie. It tends to miss them, especially if you have lots of objects around the area to distract him. - Paul Collins, Lenton, Sussex

## Aztec

TO OBTAIN infinite diamonds, collect seven skulls then stand to the end of a ledge with your hand over the edge. Drop the skulls quickly on each other and they will stay in mid-air. The dynamic mediator will become a mass of wavy symbols but you will have infinite diamonds. - C.E. Smith, Welling, Kent

## Zorro

HERE is the full solution, but you will have to work out a few for yourself.

● Collect the barrel. Feed it at the fence and push the so that the barrel collect the barrel and collect the barrel.

● Collect the mission bell from the hotel and put them at the top of the church with the barrel. The game will work, but do not enter yet.

● Collect the treasure from the hotel, stand on the see-saw and press fire. Your horse will emerge and fall on to the see-saw, catapulting you into the air. Move along the path, go up and collect the beer.

● Collect the barrel. If you haven't already then go down the well and take the golden in the cellar.

● Now enter the grave and collect the barrel. Then when you are in the main well, the flashing beam, go high to the top and push the barrels in the cellar.

● Go back to the hotel and collect the flowers.

● Re-enter the tomb by the cellar and go up to the jail.

● Free the prisoners, while avoiding the bullets. The prisoners will form a platform to jump on to the low roof. Go to the next room and then to your own room.

● On entering the room with the secretary, the top, work your way to the top. When you reach her, the hanky and flowers will be given to her automatically. She will kiss you and music will play. You have completed Zorro. - C.E. Smith, Welling, Kent

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**ATARI 520 STM**  
WORKS HARD • PLAYS HARD

THE Atari XL is hardly blessed with a proliferation of music add-ons, so it is encouraging to see 2 Bit Systems devote its energy to righting this wrong. It already has three music packages for the 486 Atari and more are on the way.

We're looking at three of them this month — Midi Master, Replay and Digistore/Bank. The first contains six programs — an eight track Midi sequencer, CZ voice editor, DR106/21 voice editor, CZ keyboard split utility and two programs which will play, via Midi, music created with the Music Composer and the Advanced Music System.

You get an interface, too, which plugs into one of the disc drive's 80 ports. It even has six feet of wire attached with Midi DIN plugs on the end so you can connect it straight into your synth. The plugs are marked in pen with an I and an O but these soon rub off, so it's a good idea to tape on a couple of labels.

The trade-off for all these programs is a general lack of facilities, but you do get lots to play with.

The sequencer is controlled from one screen and operation is a piece of pie. You can record on up to eight tracks but each is monophonic, which means it can only record one note at a time.

The tracks are listed down the left side of the screen with seven parameters across the top, REC, FLY, PCM, TRP, REP, LEAD and GAP.

You alter parameters by moving the cursor on to them and typing in new values. Thankfully you don't have to hold down Control to operate the cursor keys — nice one 2 Bit.

REC selects the record channel, FLY selects the play channel, PCM sets a Midi patch or program number which is transmitted to the synth before the music starts and TRP transposes the track over plus or minus 16 semitones.

REP will cause a track to repeat a certain number of times, LEAD lets you delay the start of a track and, finally, GAP will produce a delay before the track repeats.

You can save and load a piece of music, wipe a track and play and record. There is also a time input option which lets you tap out the rhythm of a recorded track. This is the nearest you get to step-time input, as all tracks must be recorded in real-time — but see the Music Player programs.

Let's say straight off that what the sequencer program does it does well but a comparison (however odious that may be) with almost any other piece of Midi software finds it lacking in the facilities department.

For example, one of the main attrac-

# Sound sampling and playing Midi music

**IAN WAUGH** reviews three packages devoted to tuneful fun

tion of Midi sequencing is the ability to record a piece slowly and speed it up on playback, but Midi Master can't do this (although you can set the metronome speed to help you keep time as you record).

Other features which you might expect to find are also missing. There are no editing or copying facilities, and it doesn't record velocity or pitch-bend information.

The program doesn't send a Notes Off message when you stop playback, and notes on your synthesiser will drone on until you reset it. It doesn't transmit Midi sync messages, so controlling a drum machine could be awkward.

I'd love to be able to catalogue the discs too.

Okay, that's a pretty big list, but there is good news. Apart from being easy to use, the program ships a treat with Casio CZ synths.

The CZ series are multitimbral instruments, which means they can sound more than one type at the same time, under computer control. It's a double to record four parts and by altering the PCM parameter you can experiment with different sounds on playback.

Another bonus for Casio CZ owners is the CZ voice editor. This shows all the synth's parameters on screen at once and you alter them by moving the cursor and typing in new values. It has no fills and can only handle one sound at a time.

If you have a CZ330 this is perfect as it lets you set the otherwise inaccessible four-programmable values. A CZ menu program lets you instantly load any of the voices on disc.

A new addition to the disc is the CZ split facility which lets you play one sound on the lower end of the key-

board and a different one on the upper end.

The DR106/21 editor performs a similar service on those Yamaha synths and it can even dump a complete bank, although the synths have faster built-in tape dumps.

The two final programs let you load in and play music produced with the Music Composer cartridge and the Advanced Music System. The manual admits there are limitations because of the way the programs handle music data but they can still produce excellent results.

The most annoying part of Midi Master is the price. Even though it may be short on features in a few areas, if you want to make music with Midi and you *must* — and especially if you have a CZ synth — you really cannot afford to be without this package. It is terrible value for money, and if you have a CZ330 it is a must.

Replay is something different — a sound sampling system. The necessary circuitry is housed in a cartridge which plugs into the cartridge port and there are five programs on the support disc.

A 19-inch flying lead ending in a mini jack plug runs from the cartridge and plugs into a sound source, such as a tape recorder or hi-fi, for sampling purposes. I wish this lead had been a bit longer.

The sampled sound is played back through your TV or monitor speaker and the sound quality suffers accordingly. An excellent headset would have been nice, and would have made the recording of your Replay experiments easier and clearer.

The main program is called Replay and this lets you sample and playback a sound. You can select six sampling rates — 64K, 66K, 100K, 120K,



2 Bit's Digitum.

1600g and 2184u — which give you between three and 12 seconds sampling time.

The waveform of the sample is shown on screen and you can position start and end markers to select the section you want to hear.

You can load and save samples between these markers, and catalogue like files. By loading a number of samples and moving the markers each time you can build up a series of sounds one after the other. You can produce some good — and wild — effects like this.

Apart from chopping bits off a sample, you can't do much else to edit it, although there is a reverse option which lets bits play the sound backwards. Always great fun, this one. A calibration meter on screen helps you select the optimum playback level for your tape recorder. There is also an auto trigger function which will trigger the sampler as soon as the sound source reaches a threshold level.

The sampling resolution is eight bits, with a playback resolution of four bits. This means it's not the best quality, but it should be acceptable — and that sums it up nicely considering the sound plays back through the TV speaker.

Careful positioning of the start and end point markers can often get rid of unwanted noise, and good recording procedure is very important, too.

You have to set the output and recording levels carefully to get the best results.

The User program allows you to use samples in your own basic routines. What makes this especially useful is that you don't need the cartridge to play them back, so you can give copies of your programs to your friends. Imagine your program saying, "Now pass this!" — or whatever other words your mind can conjure up. The sample does occupy memory of course, but not so much that you

couldn't write some interesting programs.

Digitum converts your Atari into a software-based drum machine which uses drum samples taken with Replay at a sample rate of 16KHz. You can program up to 28 patterns of up to 38 steps and chain them into a song.

A song consists of up to 32 steps, each step consisting of a pattern number and the number of times it is to be repeated. This composition is similar to the method used by many dedicated drum machines.

Options are accessed from pull-down menus and you select the pattern to be edited, then edit mode, followed by play, which is a bit fussy, it would be nice if you could hear the pattern and select patterns from the edit screen.

You can't load in new samples in place of the existing drum sounds, which would have been terrific, but perhaps that's asking a bit much. Wash out for 2 Bit's Percussion Master, which lets you do just that!

Available sounds include bass drums, snare, mid tom, low tom, cowbell, hand clap and open and closed hi hats. You can only play two drums at once, and certain combinations can't sound at the same time (such as the hi hats and the cowbell) but you can produce some pretty good results with a little thought and careful programming.

Digitum, as you may guess from the name, does for sequencers what Digitum does for drums. You can load new voices into Dglynth and use them to play a sequence of up to 256 notes within a single octave range.

Now you can program a dog barking, "How Much Is That Doggy In The Window — Woof! Woof!" — something I've always wanted to do since seeing it on a Tamagotchi's World programme.

The pitch only ranges from C up to



The sequencer program.

B. That missing C at the top is rather restricting — as, indeed, is the one octave limitation — but you can enter and play back simple tunes quite effectively. It is interesting to hear how the character of a tone can alter when played with different sounds.

New to the package is Echo, which can produce a delay ranging from 20 1000ths of a second to 1.3 seconds. It can do some rather fancy things to recorded music, and it will work on your speech too, although you will probably need an adapter of some sort to go between the mini jack on Replay and microphones.

Although all the programs are simple you can have a lot of fun with them. A bit more scope and a few more features would be nice but, as with Mid Master, you get a lot of programs in the package.

The significantly more powerful features and intricate hardware required to run the system is reflected in the higher price of Replay. It hardly costs an arm and a leg as sampling systems go, but if you want to make extensive use of it in recording you may find it lacks facilities you really need.

The good news is that the Digitum and Dglynth programs are available together for the ridiculous sum of £4.95. This is a prime example of software being cheap even if it were twice the price. Buy these if you buy nothing else!

2 Bit is currently working on an enhanced version of Mid Master which will include a 16 track polyphonic sequencer and a score writer. Now that will be something.

Program: Mid Master £29.95, Replay £29.95, Digitum/Dglynth (separate) £4.95.

Supplier: 2 Bit Systems, 44 Alport Road, Doncaster, South, YO1 4BE, Tel: 0827 280020

# ACE

## - the final frontier

**PART** three, the final section of the ACE character set editor program, adds the Pad and Animation modules. It will not run on its own, but must be merged with Parts one and two that appeared in *Atari User* in April and May.

Once you have typed in Part three, hit **H** to tape using the LIST "C" command, or to disc with LIST "D-ACE".

With Part three in memory enter the combined Parts one and two from last month by using ENTER "C" or ENTER "D-ACE1&2" and you will have the complete version of ACE which can then be saved to tape or disc using the command SAVE "C" or SAVE "D-ACE".

The extra commands now available are as follows:

**PADEF:** Used to create multi-character graphics, it is also used to design animation frames used during the Animation screen.

To enter Pad press **F**. There are further commands associated with Pad and these are listed on the right hand side of the menu display. Like the main commands, they are accessed by pressing a single key. When returning from a Pad command, ACE will redisplay the Pad menu. To exit from the Pad menu and return to the main menu press **Escape**.

**ATAGORA:** Affects all characters on the Pad display.

When this function is on, all characters will be displayed as standard Atari characters. Pressing **A** again returns the Pad display to the redefined shapes. This helps you keep track of what shape has been assigned to which character.

When leaving Pad mode the selected character set (Atari or redefined set) remains on the Pad display.

**MCDEMO:** The bottom section of the screen display in the Pad design section. When ACE is first run all characters printed to the Pad display will be in Graphics 0. To change to a Graphics 1 or 2 screen press **M** and select the mode required.

**PRDEF(P):** When the Print option is accessed a rectangular flashing cursor will appear on the Pad display. Any character key that you press will be printed to the Pad screen at the current cursor position. The cursor is moved around the screen by means of a joystick.

In Graphics 0 do not use any non-character keys such as Delete, Tab or Insert. You should also avoid using the **^** key as it is used to make up the

cursor square.

In Graphics 0 use the Caps and Inverse keys to select uppercase, lowercase and inverse characters. In Graphics 1 and 2 these keys are used to select a colour from the palette of four foreground colours. Because of this, only 64 characters are available in modes 1 and 2 - uppercase letters, numbers and symbols (screen codes 0 to 63). Screen codes 64 to 127 - lowercase and Control-key graphic symbols - are not available.

For Graphics 1 and 2 characters the four colours are selected by means of the Caps and Inverse video keys:

Caps on/Inverse off	Colour 1
Caps off/Inverse off	Colour 2
Caps on/Inverse on	Colour 3
Caps off/Inverse on	Colour 4

This is true for the 26 letters of the alphabet, but numbers and symbols act differently - refer to the discussion of the Basic COLOR statement in *Your Atari Computer* for more information.

Because the Escape key is accepted as a valid character in Graphics 1 and 2 it cannot be used to exit from the Print option. Instead, press the Start function key to return to the Pad menu - then press **Escape** if you want to return from Pad to the main menu.

**WDEF(W):** To erase the Pad display press **W** - this operation takes a few seconds.

Wipe fills all the current Pad display with spaces. It is possible to add the space character just like any other during the Edit option, but in normal circumstances this is not recommended unless you deliberately want to create a textured background.

One interesting aspect of editing the space character is to create anti-aliasing effects which take advantage of how your television handles colour information. By adding the space character so that it resembles a chess board with alternate pixels plotted.

On a Graphics 1 or 2 Pad display print large blocks of space character using different colours. As if by magic more colours will appear. Switch to graphics 0 and what is normally a two colour mode (foreground and background) has acquired other colours. This effect is more dramatic with some colours than others - try experimenting with this effect using the Colour option.

**SCREEN CHANGE(N):** ACE has the facility to hold up to nine separate Pad displays in memory for use in the Animation mode or for storing graphic designs. To switch from one screen to another press keys 1 to 9 from the Pad mode. When in the Print/Pad mode, use the Option key to go up a screen and the Select key to go down.

When saving Pad screens you will be prompted to specify how many screens to save. As well as saving the data, ACE also saves the colour registers so that, when loading screens from cassette or disc, the colour registers will be changed back to the saved values.

**ANIMATION(A):** The animation facility displays a quick succession of Pad screens to create graphic movies.

This mode is entered by pressing key **A** from the main menu. A Pad screen (1 to 9) may be allocated for each frame of the animation.

Press **Escape** after entering the screen number of the final frame in your animation sequence - these need not be the maximum nine frames. The frames will then be displayed in quick succession.

Animation speed is preset to 1 frame. To change speed move the joystick down/leftward or up/rightward. The animation sequence will stop while the speed is being adjusted. Press the stop button to return to animation. To stop animation and return to the main menu press **Escape**.

The animation effect is handled by a basic subroutine and achieves high speed smooth animation without





# Utility



6599	WHTS	470	410	420	430
6600	WHTS	470	410	420	430
6601	WHTS	470	410	420	430
6602	WHTS	470	410	420	430
6603	WHTS	470	410	420	430
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6606	WHTS	470	410	420	430
6607	WHTS	470	410	420	430
6608	WHTS	470	410	420	430
6609	WHTS	470	410	420	430
6610	WHTS	470	410	420	430
6611	WHTS	470	410	420	430
6612	WHTS	470	410	420	430
6613	WHTS	470	410	420	430
6614	WHTS	470	410	420	430
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6620	WHTS	470	410	420	430

LINE GROUP	LINE GROUP	LINE GROUP	LINE GROUP
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Inventory	100	Inventory Control	98
Marketing	100	Marketing Lists	98
Personnel	100	Personnel	98
Project Management	100	Project Management	98
Reporting	100	Reporting	98
Sales Management	100	Sales Management	98
Training	100	Training	98
Web Development	100	Web Development	98
Word Processing	100	Word Processing	98
Database	100	Database	98
Spreadsheet	100	Spreadsheet	98
Graphics	100	Graphics	98
Security	100	Security	98
System Administration	100	System Administration	98
Utilities	100	Utilities	98
Integration	100	Integration	98
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SUNARO SOFTWARE (UK) PO BOX 76, MACCLESFIELD, CHESHIRE, SK10 6PP

**PAYING** income tax is no fun at the best of times, but at least with this program you can anticipate how much cash will be left in your pocket next pay day.

Before working out the calculation it needs to know what your tax code is, which tax period your next pay day will be in, how much you've earned, how much tax you've paid on those earnings and how much you expect your next pay to be before any deductions.

Your tax code is issued by the local tax office and is in the form 230L. The actual number can be almost anything but 230 is normal for single people or married women and 389 for married men or others who are claiming a married man's allowance (for instance a single parent).

The letter following the number would normally be L, as shown, H or T. None of these letters affects the way in which tax is calculated. Certain other letters however may affect calculation and are outside the scope of this program.

National Insurance calculations in the program are based on a person who pays NI contributions under weekly table A. This will cover all working men and single women who are not classed as self-employed, any working married women who are not entitled to be on B rate and is not self-employed, and in all cases, not con-

# Check up on the taxman

**Ernie Little's program might just get you that income tax rebate . . .**

tracted out of the State pension scheme and under the current legal retirement age.

The way this program calculates your income tax is to start with your tax code. A tax code of 230 means that you may earn up to £2305 a year before you need to pay tax at all. This is just under £46 a week. A married man with a tax code of 389 can earn £3895 a year, just under £72 a week, without incurring tax liability.

The amount of tax-free pay which you are entitled to for week X is calculated and this figure is deducted from the total wages earned for the current tax year, up to and including the week in which you will receive the amount entered in the input routine.

If your total taxable earnings in any one tax year are less than £17,100 you will be taxed at the rate of 27 per cent. If you exceed that figure, you will have to pay tax at 46 per cent on all taxable

pay earned between £17,100 and £28,100.

The rate then increases to 46 per cent for the next £3,000 spread. There are other bands up to 85 per cent and the program refers for those too.

National Insurance is calculated differently. In this case there is a base line and a ceiling. Any earnings below this line, currently £39 a week, attract no contributions up to the maximum amount payable of £28.80 a week irrespective of the amount earned.

For all points in between, the amount due depends on the gross pay for that week. From the base line to £70 the figure is 5 per cent, from £70.01 to the ceiling it is 9 per cent.

Unlike income tax calculations, amounts earned during the year have no effect. If you earn £20 one week and £180 the next, you will pay no NI contribution for the first week and 9% for the second.

Once the tax and NI has been calculated, net pay is found by subtracting these two amounts from your gross pay.

This program draws a bar chart and shows the figures for Tax, NI due, and net pay both as money and as a percentage of your total earning that week.

If you have entered the information incorrectly, or you are due a rebate, the bars may exceed the limit of the screen. This should not be a problem and will leave you secure in the knowledge that you are due a nice fat tax rebate.



```

THE TAX AND CALCULATOR PROGRAM
*****
NI GRAPHIC 8-BIT/256K 1,2,3,4 PAGE 70L
1
42 POSITION 1,61 25600 THE CALCULAT
07
41 POSITION 1,11 *****
    
```

# —COMPUTING IN— ACTION

07 POSITION 0,0,1 ENTER NUMBER VALUE  
0 0,0,1  
08 POSITION 0,0,1 ENTER THE CODE/IMP  
OF 0,0,0,0  
09 POSITION 0,0,1 ENTER PAY EARNED TO  
DATE 0,0,0,1 PAY  
10 POSITION 0,0,1 ENTER THE PAID TO  
DATE/DATE 0,0  
11 POSITION 0,0,1 ENTER THE MONTH  
FOR YEAR  
12 POSITION 0,0,1 YEARLY GROSS PAY  
13 THE YEAR/INPUT PAID  
14 NEW CALCULATIONS FOR GROSS  
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1971 POSITION 1,0,1 PERCENTAGE OF PAY  
1972 POSITION 1,0,1 YEAR  
1973 0,0,1 0,0,1



1974 0,0,1	1975 0,0,1	1976 0,0,1	1977 0,0,1
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# Putting on an art show

**MICHAEL BAXTER shows how to give a professional look to your picture display**

ONE of the few things Atari left out of its touch tablet graphics package was an artshow program, similar to that included in Paint. This allows you to display your creations one after the other - in a specified order - automatically.

With this in mind, I wrote this picture handling utility.

When the program is run you are presented with six options:

**Enter picture display order:** Lists all the picture files you have on the disc. They must have the extension .PIC to be listed and be in compacted form, as this program will not operate with the 40 sector micropainter files. To enter the picture order, use the cursor keys to move up and down the columns. Press Return when you wish to include a picture and the display number will appear on the right of the flowmap. When finished, press Escape to return to the main menu.

**Set up colour scroll values:** Playfons the rainbow colour option on the dead Atari cartridge and is much more flexible in its use. It allows control over direction and speed of the colour scroll. There is also a random setting which creates interesting effects. The default setting is fast scroll up.

**Picture disintegrate toggle:** Disintegrates the displayed picture before the next is loaded in when the option is turned on. If it is off, the picture will just blank out before the next one is loaded.

**Next picture by delay/keypress:** Loads the pictures automatically with a selected time delay if toggled on. Otherwise, you press a key to start each picture loading.

**Start art show:** Allows you to start the art show if you have entered the display order. If you have opted for a

time delay, then enter how long in seconds you wish the picture to remain on-screen. You will then be asked if you want to see the picture loading. Enter Y or N or press Return if you want to use the displayed default setting. Pictures will then load.

When a picture is being displayed, press keys 0, 1, 2 and 4 to use the colour scroll facility - you cannot use this if you are using a time delay. Press any other key to load the next picture.

**Leave program:** Returns you to Basic.

## PROGRAM BREAKDOWN

- 10-20** Variables.
- 3000-4200** Poke in machine code and data tables.
- 7000-7095** Main options page.
- 7100-7160** Reads picture filenames, displays them and allows you to input picture order.
- 7200-7350** Set up colour scroll values.
- 7300-7395** Auto disintegrate toggle.
- 7400** Clear screen routine.
- 7500** Delays program.
- 7600-7695** Determines whether time delay or keypress is to be used.
- 7800-7900** Loads pictures, handles colour scroll and disintegrate routines.

## MAIN VARIABLES

- N=NO** Numbers 0-15.
- SLD** Location of machine code.
- BTBIC** Number of bytes to poke into SLD.
- PS** Page 0 (1020).
- RAMI** Random colour scroll flag.
- ALTO** Auto disintegrate flag.
- NPIC** Load next picture after time delay or keypress flag.
- FB** List of picture files to be loaded.
- TS** Temporary string.
- COLS4** Color register data.
- W** Width of colour bands.
- S** Speed of colour scroll.

```

0 000 .....
1 000 *PICTURE NAMES LISTING =
2 000 * 00000000000000000000 =
3 000 * 00000000000000000000 =
4 000 * 00000000000000000000 =
5 000 .....
6 000 *****
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94 000 *****
95 000 *****
96 000 *****
97 000 *****
98 000 *****
99 000 *****
100 000 *****

```



# Sounds exciting, but unfortunately...

In Bob Chappel's review of *Trivial Pursuit* in the February edition of *Atari User*, he states "All you have to do is speak it aloud - there's no typing or selection of multiple answers".

I would like to know how the computer receives its voice input, what it uses for a microphone and whether it requires a voice print demonstration at the start so that it can understand your statements.

I don't know much about that side of the computer world, but if you don't need extra hardware for this maybe someone could write a routine to let the computer monitor your voice print in the way the review says this game does.

Of course I may have got the wrong end of the stick, in which case could you inform me of the true meaning of this statement.

Also, could you tell me if there is an 8 bit version of the *Star Trek* game you reviewed in *Atari ST User* last month.

- E. Swinson, Southcope, South Humberston.

■ When Bob Chappel reviewed *Trivial Pursuit* in the February issue of *Atari User*, he did say that all you have to do is speak aloud, but this was not meant to be taken too literally.

The computer, as it

stands, has no ability to interpret speech patterns and when you play *Trivial Pursuit* you tell the other players of your True/False or Yes/No answer to the question.

The game works this way on a truth basis, depending on your typed input.

There is an old version of *Star Trek* about for the Atari 8 bit machines, but it is far cry from the one out for the ST. If a version compatible with the ST one ever comes out for the 8 bit we will certainly review it.

## Missing switch box

I BOUGHT my Atari 1300E five months ago from Atlanta but I have not found the TV switch box which the manual makes reference to. - Sabri Ghazvini, Tepeik, Libya.

■ The box referred to is only recommended for you to

use, but you can manage fine without it. All it does is allow you to switch from the TV to computer without unplugging your aerial - and you do not actually get one when you buy the computer.

## Costly error

I AMW recently typed in 8 instructions from the November issue of *Atari User*. I saved the program and checked it using *GenII-Night* and I found some mistakes. But when I tried to load the program to correct them, Error-31 came up.

This has also happened with another program. Please could you tell me what is going wrong. - Evan Prossford, Retha Station, Midlothian.

■ Unfortunately, Error-31 indicates that your file did not save correctly to tape, so unless you made more than one copy we're afraid you

will have to type the instructions program in again. A useful tip for the future is to ensure that you save your work several times. It may be that the tape you were using was of poor quality or that your tape heads may need cleaning.

## Search for cartridges

I OWN an Atari 800X with Data recorder, joystick and 100 games and I am looking for some cartridges, but can't find any.

Is the hole on the top for decoration? Can you use the old 2600/500 cartridges on an 800X?

Also, is Search Head available on cassette for my 800X. If so where could I buy and for how much? - M. Lee, Dingles, West Yorkshire.

■ A lot of software was changed to fit in the cartridge slot. However, your 2600 cartridges will not plug in and even if they did you would damage your computer.

Available cartridges include *Galaxians*, *Gorf* and *Missile Command*.

*Search Head* is not available on tape, as the program refers back to disc all the time.

## Cable conundrum

I AMW just had to shorten the cable on my Atari Touch Tablet, but now have the problem of which colours?

# REPLACING A KEY

I AMW a 1010 tape recorder which I use regularly, but recently the Record button broke in half. I know several people who have had this problem.

Could you please tell me of a company which sells separate keys, because it seems such a waste to buy a new tape recorder. - Colin Bryson, Kilmarnock, Scotland.

■ Your letter shows a standard fault with the 1010 tape deck. The keys have a tendency to snap after a lot

of use. The usual keys that break are Play and Record.

We don't know where you can get new keys but you have a Pause key that has little if any use. So you can swap it with the broken one.

To do this you unscrew the base of the tape deck and pull the front off very carefully, as two plastic lugs secure it.

You will see a grey coloured plug on the circuit board. Unplug it and you now have an unobstructed view of the keys, which are

held in place by a metal bar and circlip.

Remove the circlip, pull the bar through and pull the keys upwards. Remove your Pause key and the broken key and swap them over, remembering to replace the small metal spring behind the keys.

Right everything, and your tape recorder will be working again. We recommend you only do this job if your deck is out of warranty, otherwise take it back to where you bought it.

wire from inside the cable goes to which pin in the joystick socket in my 8000Z. I would be grateful if you could print the solution. — D. Chawin, Solihull, West Midlands.

■ It is recommended that when disconnecting any wires you always keep a record on paper of where all the wires go instead of cutting them off straight away.

Here are the pin numbers followed by the colour of the wires that go to the joystick plug:

(1) Brown	(6) Pink
(2) Blue	(7) Pink
(3) Orange	(8) Grey
(4) Yellow	(9) White
(5) Green	

## Recorder troubles

We regularly have problems loading games on our

8000Z. Nearly all our games are good quality, and I've gone through a period where we cannot get a game to load on other games load alike.

I've used a Anal cleaner on the 1210 recorder, but it didn't improve the situation and I have checked that all wires are not crossed and that plugs and sockets are securely connected. I also ensure tapes are wound just beyond the leader before loading.

When our machine does not load the loading tone heard through the TV is often much softer and seems to sound higher pitched.

Loading will normally fail before the tape counter reaches 30. The screen will show Read error or else the Atari will go into Selfcheck mode.

Do you know the address of AtariUK since our game-center card has only the US address. — Paul Haswood, Farnham, Surrey.

■ It could be that your tape heads are out of alignment, and if this is so then we would recommend you take the deck to a dealer for adjustment. We do not suggest that you undertake this action yourself, due to the temperamental performance of 1210 data recorders.

You say you wind tapes just beyond the leader before loading. On most commercial software you should fully rewind the tape, or you will get a time out error on loading because Atari has a 18 second timer before data transmission.

The address of Atari UK is Atari House, Railway Terrace, Slough, Berkshire, SL2 8KZ.

## Missing brackets

POWING recently got into computing through an Atari 800X, expanded to 512K. I have some serious hardware problems which I hope you can solve for me.

Finally I have been given Computer's Atari Games Collection Vol.1, and I am having problems typing in most of the programs. This is caused by the fact I am unable to determine how to input the curly bracket characters.

An example of a line using these signs is as follows:

```
PRINT "1234567890"
```

I have tried using ordinary brackets but to no avail. Have you any suggestions?

Secondly, when typing in lines from a program the computer sometimes seems to freeze and has to be abandoned. This always happens when the RETURN key has been pressed and the cursor returns to the next line but will then not move any further no matter what key is pressed.

I hope you or your readers can shed some light on my

problems, and thanks for a really fast class magazine. — R. Masson, Cottingham, Scarborough.

■ It is not surprising that you are having problems, as these brackets do not exist on the Atari.

When the line says "1234 Spaces" it means that you open the quotes, press the space bar 124 times then close the quotes.

You are not meant to enter the text, merely follow what it means.

In answer to your second problem, this plague most XL machines and the old 400/800 ones. It has to do with your operating system, and when a lot of text is edited it is possible for the Atari to get a bit confused and crash, thus losing all your work.

It is highly recommended that before editing a program you should always save it.

## Alternative languages

KEEP up the good work, and may Atari User continue to improve. As a relative newcomer to computing, although I am a very fast learner, I find that the intricacies of machine code elude me.

I am fairly competent in Basic but I am becoming bored with it. So I began to look for another language.

Aspirin was my first choice, but sadly beyond my budget, so I fell back on Atari Logo. It's been using it for about a week now, and it's fascinating.

So how about running a page as a regular feature devoted to, if not Atari Logo, then alternative languages in general, with programming features, reviews — in short, a mini magazine? After all, D. Haslam says the Atari is just made for Logo? I wonder if any other readers agree? — R. Robinson, Doncaster.

■ We are discussing the

## Menu Maker update

I WAS delighted when you published Menu Maker by Mark Cooper in the February issue of Atari User. I have found it to be very useful and now include MENU.MAK together with the ALTITUDE.256 file on all my disks.

There is, however, one problem with it. I discovered it when trying to load a rather large machine code program which required Basic to be turned off.

It appeared that although Basic was turned off the 8K of memory in which it resided was not available for use by other programs.

This program shows a modification to the original MENU.MAK program to allow this area of memory to be used.

Line 833 starts a

subroutine to set up the new machine code in page 8. This is initiated by a GOSUB command inserted into line 10 and executed by A = GORTRND in line 400.

This modification is well worth doing and puts the finishing touches to a very useful program.

```
10 10000:800:1073:479
40 10010:1150
50 500:100:100:1,1,100,1,2,1,1
1,1,1,100,100,100,100,100
90,100,11,100,10,1,10,100
11,1,100,10,100,1,100,100,1
100,11
110 500:100:100:1,1,100,1,1
111,100,1,100,1,100,1,100,1
100,10,11,1,1,1,100,100,100
10,100,11,100
110 100:1000: 500:100:1:1:10
10:1000:1:1000:1100:1,1
101:1
110 101:100
```

— Dr M.R. Holland, Merry Hill, Wolverhampton.



idea of covering more languages. Contributions from readers are always welcome and would help us start such a service.

## The secret of line 5

I AM having problems typing in "Just like the real thing" from the April 1987 issue of Atari User. I have typed it in exactly as you printed it, but the computer always comes up with an error message at line 5.

What am I doing wrong? I use an Atari 800X1 computer so how this applying to do with it?

Do I need some sort of cartridge to be able to type in this sort of program or must I first paste in some sort of code?

Typing in these listings gives me lots of enjoyment so please can you help me out of this dilemma. — **S. Hie, W Glamorgan.**

● Your problem is that you are attempting to type in an assembler listing from Basic.

This will not work, as the computer cannot understand the syntax that you are entering. So you need an assembler editor cartridge or some kind of assembler language to enter this listing.

If you read the article you will see that the listing on page 18 of the same issue gives a Basic version of the program to emulate the one that you are cannot enter. Your 800X1 is working fine so you have no worries on that score.

## A memory problem

I HAVE recently bought an Atari 1302X2 and a 1050 tape recorder and I am having trouble saving programs that I have typed in.

# ATARI USER Mailbag

WE welcome letters from readers — about your experiences using the Atari micros, about tips you would like to pass on to other users... and about what you would like to see in future issues.

The address to write to is:

**Mailbag Editor  
Atari User  
Europa House  
68 Chester Road  
Hazel Grove  
Stockport SK7 5NY**

Could you please tell me where I am going wrong. — **S. Miller, Middleborough**

● Unless you have got faulty equipment you should not be having any problems.

With a program in memory and the Ready prompt on the screen, press the Record and Play buttons at the same time as your 1050 then type CSAVE and press the Return key twice.

The program will then be saved to tape. If this does not work then you must have a problem with your tape recorder or computer, if this is the case you should contact your dealer.

## No joy with the socket

I RECENTLY bought an Atari computer system and joystick. When I tried the joystick on my computer I found to my horror that it would not fit.

My joystick has a round connector on it with lots of pins inside and I cannot find a suitable socket on my Atari to put it in. — **B. James, London.**

● It appears that you have a BBC joystick in the place of an Atari one.

There is no way that this joystick will work because apart from the fact that the sockets are different the

BBC Micro uses an analogue input and the Atari digital. You need to buy a standard Atari joystick.

## How to Get It Right

I OWN an Atari 1302X2 and I enjoy typing in the listings you publish in Atari User. But I would like to know how to use your Get It Right program.

I think it would be a great idea to publish the listing for Get It Right again for those people who missed it when you printed the listings. — **Sharon Beadie, Manchester, Lancs.**

● In the August 1986 issue of Atari User we printed a revised version of Get It Right and it is very simple to use. After you have typed in the program listing make two copies of it: a CSAVE version and an ASCII version.

The latter is obtained using the LIST/DIC command where DIC indicates a disc or cassette version.

When you have saved your program in this form simply load in your QR program and run it.

A menu will be displayed and you just choose the first option. Then you will be asked for the filename of your program and the QR

will then load it and display a checksum of the listing.

Once this has been obtained you simply compare this to the one in the magazine making a note of any that do not match. You can then reload your program and make any changes needed.

The QR listing and instructions also appeared in the December 1985 and March 1986 issues of Atari User. Unfortunately it begins to be repetitive and annoying to readers if we publish it too often.

We have plans, however, to publish a new enhanced version in the near future.

## Expanding a modem

I OWN an Atari 800X1 with a fax drive and now wish to expand into a new area. I have decided to purchase a modem and saw a Modem 7000 advertised in a magazine with BBC cables.

Will this connect to my Atari without modification? — **Christopher Coyle, Suffolk.**

● The Modem 7000 will work on your Atari but not with the leads being offered. You will need a special one to connect from the micro's serial port to the modem and you will also need communications software.

This software is readily available. You will find the communications module of Mini Office II an ideal program to start with.

## MicroLink

ALL program listings in Atari User are now available for free downloading on MicroLink, the UK's fastest growing electronic mail service. They join hundreds of programs already available on Britain's national on-line database.

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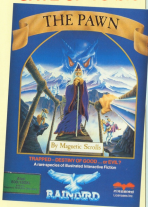
This superb package includes a 44-page novel and a cryptic help section.

*"The program took three man years of programming time to produce - and it shows.*

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- Anthony Ginn, writing about the Atari ST version  
in the May 1988 issue of the Atari User

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