

A Database Publication

ATARI USER

Vol. 3 No. 11

March 1988

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Add TEN new commands to Atari Basic with this latest package from Atari User.

SEE PAGE 32



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

ATARI USER SHOW



THREE action-packed days for Atari owners!

The spectacular Alexandra Palace represents a new showcase for the fastest-growing range of computers on the market.

From the exciting games console to the ever-popular 8-bit Atari and the sensational Mega ST, they'll all be there at the Atari User Show!

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A 201

Escape death row

A BUDGET priced multi-level shoot-'em-up - *Zybox* - has been announced by Zap-pain Games (091 281 4401).

Zybox, a two-player on-screen game, sets you on an almost suicidal mission to escape death row. To earn a stay of execution you must penetrate the heart of many strange worlds and collect Mephor crystals.

Each crystal gives access another level even more difficult than the last. Your goal



Zybox, Level 1

is to reach the ultimate level and face the final challenge - *Zybox*.

The last crystal is all powerful and will ensure the removal of the death ring around your neck.

To achieve success you have to shoot your way through several beams and colorful waves of alien, and fast exotic weapons with differing powers.

Zybox boasts fast scrolling and superb sound.



Zybox, Level 2

quality. Company policy is quality software at a budget price - hence the tag of just £2.99 on cassette from Zap-pain Games.



Try flying a Mosquito

The latest fighter simulation game for the Atari 8 bit - *Age of Aces* - has been released by US Gold (021 358 3088).

The program captures the spirit - and puts you in the cockpit - of the Mosquito RAF fighter bomber of World War II.

Your task is to blow Nazi bombers, sink U-boats, destroy VT rockets and stop enemy tanks.

Fuel and weapons have to be chosen wisely, as once you're on a mission there is no going back.

Price £9.99 on cassette and £14.99 on disc.

More 8 bit games in the pipeline

DESPITE rumours to the contrary, Atari is still committed to supporting the 8 bit games market.

Certainly the company is back in the software producing fold itself after a lull of more than a year. That's confirmed by the recent appearance on tape of *Twilight World*, the forthcoming release of *Thundercat*, and the prospect of popular titles being re-released on cartridge.

But some software developers are less than impressed with the level of support Atari is prepared to provide, and note that the company seems to be directing most of its attention to the 16-bit market. And that in turn could mean less Atari software.

Red Rat, which has just launched two twin-packs - *Planet Attack/Mar-Jax* and

Space Wars/Dreadnaught - is keeping a watchful eye on sales.

"If those two die the death they'll be 2", said Red Rat's Harry Nadler, "though if a really good 8 bit game came through we'd try again".

The problem - if there is one - seems to lie with distributors rather than with the software houses or the buying public.

And with a diminishing number of companies prepared to import software, Atari users are missing out on a wealth of titles available in the States.

Recent releases include *Top Gunner* from Micro-Force at \$19.99 and *Chessmaster 2000* from Electronic Arts at \$29.99. Given the current strength of the dollar, at these prices it's worth thinking about buying direct.

Bigger venue needed for next Atari show

EACH successive Atari User Show has left organisers Database Exhibitors with a nagging problem - how to find a bigger, better venue for the next one.

An ever-growing army of exhibitors and visitors means the event has constantly had to be on the move to larger premises.

Another big increase in demand for space has dictated that the impressive West Hall of Alexandra Palace, London, will stage the next show in the series from April 22 to 24.

Other premises that had coped well enough on previous occasions could

not meet the additional requirements - they had quite literally run out of space for expansion.

It wasn't easy finding a new location that was both large enough to cope with huge numbers of visitors, yet prestigious enough to complement the event. Happily, Alexandra Palace fits the bill in both cases.

Set in 280 acres of rolling countryside, Alexandra Palace has been completely renovated after the devastat-

ing fire in 1980.

It is one of the most flexible display areas in the UK, with more than 2,500 sq metres of exhibition space.

So there will be no shortage of room for the hundreds of hardware and software special offers exhibitors have promised to bring along for Atari users.

The Atari Show runs from Friday, April 22 to Sunday, April 24. A money saving advance ticket order form is on Page 61.

MUCH MORE THAN A MAGAZINE



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Toolkit boost for old Basic

At last the gap between the old Atari Basic and the new up-to-date Basic XL/XE cartridges has been reduced — by a new low-cost software package from Atari User.

A major criticism of Atari computers over the years has been its less-than-powerful Basic programming language, which lacks such rudimentary commands as Renumber and Goto.

The Toolkit utility, written by Mick Randia, remedies these deficiencies — and enhances Atari Basic's capabilities as well.

Designed to work on the XL/XE machines and the new XE Games Console, the Toolkit only takes up 128 bytes of user ram. This is achieved by placing the main program into the area of ram below the Basic rom chip and bank switching when required.

When a Basic program is run the Toolkit will switch off and to reenable it you simply press System Reset. A help file explaining the Toolkit can be found on the disc or tape.

And once it's installed in the computer you will have 10 new direct-mode Basic commands at your fingertips.

Toolkit's commands provide more control over variables, allowing you to change their names, or to view each name in memory

together with the line that it appears on.

And immediate access to drive directories from Basic is now possible. A single command will turn the keyboard on or off, and a useful built-in checksum program sits in memory all the time.

Listing is easier too, with commands to delete any number of lines, renumber Basic program lines in any increment and to automatically strip all REM statements from your program listings.

The Listing command provides a full printout of the Atari control characters on an Epson-compatible printer, and the program also offers decimal, hexadecimal and binary conversion from Basic.

It also provides full English error messages, extensive built-in user input error checking and a forgiving command syntax.

Price: £7.95 disc, £5.95 cassette.



Mick Randia, the author

The job's taped

In search of a production team for an idea that's still under wraps, Hewson (0225 829056) has come up with the novel idea of sending an audio cassette to interested candidates.

The cassette lays down the job specifications — as you'd expect — but the voice over has to contend with a battery of sound effects gleaned from Hewson's

previous best-selling titles.

Project Four — a five format game for 8 and 16 bit machines — isn't scheduled for release until September, but the concept is already done up.

All Hewson needs now is a Project Four team.

They're looking for a leader, two coders, a graphic artist and a freelance musician.

THE GALLUP CHART

TOP 20

SOFTWARE TITLES

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	▲	HENRY'S HOUSE Mastertronic	1.99
2	●	ACE OF ACES US Gold	9.99
3	▲	180 Mastertronic	2.99
4	▲	TRANSMUTER Code Masters	1.99
5	●	FOOTBALLER OF THE YEAR Granfin	9.95
6	▲	DIZZY DICE Pipers	1.99
7	▲	STORM Mastertronic	1.99
8	▼	PANTHER Mastertronic	1.99
9	●	SOCCER Alternative	1.99
10	●	RIVER RAID Firebird	1.99
11	●	CASTLE TOP Alternative	1.99
12	●	POLE POSITION Atari	12.99
13	▼	DECATHLON Firebird	1.99
14	●	SPACE SHUTTLE Firebird	1.99
15	▼	LEADERBOARD Access/US Gold	9.95
16	●	UNIVERSAL HERO Mastertronic	1.99
17	▼	BMX SIMULATOR Code Masters	1.99
18	▲	SILENT SERVICE Microprose	9.95
19	▼	ON CUE Mastertronic	2.99
20	●	BASIL THE GREAT MOUSE DETECTIVE Granfin Graphics	9.99

Compiled by Gallup/Microprose

NINE new entries in this month's chart, with the spectacular Ace of Aces going straight to the number two slot. Alternative, Granfin and Firebird have each got two new titles in the Top 20.

Atari is bringing out new titles in addition to the charting Pole Position — look out for Thunderfox coming soon.

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Total price: £149.95

With either combination you can also log on to other databases and bulletin boards all round the world.

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We have provided two possible options on the left.

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It's a challenge!



**Mike Cook
throws down the
programming gauntlet
to all our readers**

If you've just learned to program and don't know what to do next, keep reading. This is the first of a series of articles in which we challenge you to exercise your non-found skill in Basic programming.

It starts on this page with The Challenge itself. You can take up the challenge at various different levels of skill, depending how good you are.

We present you with a problem to solve using your Atari computer. It contains all the information you need to write the program, and if you are a reasonably competent programmer you'll need no further help.

However, if you are just beginning you might not be able to see all of it out. But just thinking about the problem and trying out a few ideas will help you develop your programming skills.

What you're going to need follows our month's hints.

In this I'll set out an algorithm you can use to solve the problem. This is simply the method you are going to use to implement the solution. It should be relatively straightforward to convert it into a basic program providing you are familiar with the language.

Then, in the following month's hints, I'll present the solution. I will give you a single working program that will do the job, along with suggestions for further improvement. You can check this against your own answer and perhaps sort out any points you had difficulty with.

Remember, as far as a program is concerned, there are as many right answers as there are wrong ones, but the solutions I favour are simple and readable.

I will avoid, as much as possible, using fancy tricks or so-called clever programming techniques, as most of the time they are not necessary.

So go to Challenge 1, which is set in a casino...

YOU are down on your luck, standing looking at the roulette wheel, when a steady character taps at your sleeve. After exchanging a few pleasantries he persuades you to step outside where he will tell you something to your advantage.

So after cashing your remaining chips you follow him out to the alley behind the casino. He whispers in your ear: "For just a pony, Son, I can tell you my foolproof plan to win".

Maybe it's the drink that softens your heart, or maybe it's the slot-machine lights you feel poking through his coat into yours, but you decide to give him his money and listen to his advice.

"It's all very simple", he says, pulling the money into his overstuffed pocket without even bothering to count it. "Just bet on the red".

Feeling cheated, you ask what happens if you lose. "Even simpler", he replies, "bet on the red again, but this time double your stake. If you lose again, double again, eventually you will win because red is an even money chance".

He continues: "When you count your winnings you will find that you are up by your original stake. Drop your bet down again and do it all over again. You can't lose".

With that he slips into the night and you wander home to think about what he has said. Any bet on the red, or the black for that matter, pays even money - what you bet plus your stake back.

So if you bet a pound and lose, then bet two pounds and win, you get four pounds but have only paid out three -

one for the first bet and two for the second. As the roulette wheel comprises black and red numbers in equal amounts, a red is bound to come up sooner or later. It's true, you can't lose!

However, you then remember the green - number zero. It's only one place on the wheel, but when that comes up the house wins all bets. That nudges the odds of the red coming up slightly away from even, but that is only one chance in 37.

Yes, it sounds like a really good scheme, so you go to bed dreaming of what you will spend your money on.

In the morning, once your head has cleared, you begin to think and wonder why, if it is that easy, had that man not done it and made himself a fortune?

Glancing over to your trusty Atari micro you decide to try it out first with pretend money by writing a program to simulate a roulette wheel and test this strategy.

You want to try this not once but many times to ensure it is no fluke. You need to know how many bets it will take to recover your initial outlay of £20 to the man.

What is the best size of bet? The larger the bet the faster you will make money but, also, the more money you will need when doubling. How much extra money will you have to have in reserve? Is it practical?

● So it's over to you. Can you write the necessary program? If you have problems, next month's *Chess* will help.

HAVE you ever been sitting at your keyboard at three o'clock in the morning, staring bleary-eyed at a somewhat fuzzy looking television? NO PROBLEM "DONE" you type through half-closed eyes—

The result is error — PRINT issued! And as you retire the offending line, your faithful friend Basic continues to monitor your progress, letting you know whenever your fingers slip off the keys until finally sleep overtakes you and you slump over the keyboard.

The other effect that post-midnight programming has on the cerebral cortex is to make your brain wander off at a tangent to the job in hand — and so it was one cold night about five years ago when I suddenly thought "How does it do it?"

Or more specifically, how does Basic manage to check your typing so quickly and, come to that, what does it do with the line you've typed anyway?

Tokenisation

After some research I had established the fact that a process known as tokenisation was at work. It seemed that when you type:

```
10 PRINT
```

the computer actually stores the numbers 10, 0, 6, 8, 32 and 22 in memory. Here, on a minute, I hear you say, that's only six bytes of data stored — and our program line is eight characters long. No wonder those programs only seem to work properly six out of eight times.

Well, what Basic is doing is making up a much slimmer, coded, version of your line. In fact, the word PRINT itself is represented by just a single number 32 — known as a token. The first two bytes represent the line number and are followed by two length indicator bytes — both are six in this case because the coded line is a total of six bytes long. The line ends with a terminator byte — the final 22.

But why bother? What's the matter with storing the whole line of text. Well, there are a number of advantages to tokenising. In fact you've already seen a couple of them. To start with the stored version of the line is shorter than the original text — often by a considerable amount. Consider a line such as:

```
10000:POB1158:02079603:70209603
```

As a piece of text this line is 35

So you want to understand Basic better . . .

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characters long, including the carriage return at the end. Tokenised it becomes just nine bytes of data — and so uses just one quarter of the memory space which would otherwise have been required. On average, a tokenised line is about one-half to two-thirds the size of the original text version — depending on such factors as the length of variable names and how long the command words are.

Also, when the tokenisation process takes place any incorrect statements will immediately be flagged as ERROR lines, thus giving you an instant indication of both the fact that you made a mistake and also the position within the line where the tokeniser couldn't find the syntax it was expecting.

Many computers will let you enter anything at all as a program line even if it's complete rubbish — as is often the case at 3 o'clock in the morning — and you won't find out until you run the program.

Speed advantage

There is also an execution speed advantage to tokenised programs. The theory goes that the machine code routine to look up a single byte from a token table is very much faster than the code that would have to be used to search an entire Basic text line.

However, this speed advantage is unfortunately lost when you consider Atari Basic's multi-rowlines, which could hardly be described as particularly efficient. As with everything else in life — you win some, you lose some.

Basic's tokenisation process goes much further than just coding PRINT, POSITION and the other major commands. It also tokenises functions and

operators — such as CHR\$, INT, LEN, SQR, VAL and so on — and variables. We'll be looking at statements, operators and functions in greater detail next time, but for now let's see how Atari Basic deals with variables.

Variables

As an example, consider this simple program:

```
1001:NUMBER=100  
10:PRINT NUMBER
```

We'll examine line 5 in a moment, but since line 10 is so similar to the example we've already looked at let's see what difference the variable NUMBER makes to the final tokenised line.

Line 10 now tokenises as 10, 0, 7, 7, 32, 108, 22. If you've been following so far you'll remember that the initial 10 and 0 represent the line number, and the next two numbers tell us how long the tokenised statement is — in this case seven bytes. As before, the 32 means PRINT and the final 22 is an end-of-line marker — so somehow 108 must represent the variable NUMBER.

In fact, any token with a value over 107 represents some form of variable — which may be a normal numeric type, an array or a string. Each time you refer to a new variable when typing in a program — such as NUMBER in our example — a unique number is reserved for it. If you enter another line which contains a new variable name then it would be assigned the next free number — 129 in this case.

Since a single byte can only store a value of up to 255 we find that Atari Basic can thus only cope with 128 variables in any given program.

Variable name table

The variable names are stored at the beginning of the program in a table known, rather originally, as the variable name table. Each time you use a variable name when typing in a program Basic scans through each entry in the table looking to see whether you've used that one before. If you have it works out the number of the entry and uses it in the tokenised line. If it comes to the end of the table before finding a match it assumes that you have used a brand new variable name and this will then be added to the end of the list and its number recorded for future reference. This does mean that a lot of mistyped lines can create an awful lot of useless extra entries in the variable name table, sometimes causing problems with more complex programs.

The quick answer is to LIST your program to tape or disc, then type NEW and RE-ENTER it into memory. This will force Basic to create a new table containing only the currently required variable names.

While a program is actually running Basic never needs to look at the text in the name table – since every reference to a variable is now coded as a number between 128 and 255. In our example, each time the token 128 is found it knows that we are referring to the variable which we know as NUMBER.

Let's now go back to that first line of our program:

```
1 LET X=123
```

which tokenises into the following sequence:

```
5, 5, 15, 15, 8, 128, 86, 14,  
86, 18, 0, 0, 0, 0, 23
```

Looking at the bits we already know

about, the 5 and the 0 at the start must be the line number. The two 15s tell us that the coded line is 15 bytes long and the 23 at the end signals the finish of the tokenised line. Since we know that the 128 refers to the variable NUMBER you will probably have realised that the 8 preceding it must therefore mean LET.

As it follows straight after the variable name we can safely assume that the token 86 is the code for the equals sign, which just leaves us with the strange sequence 14, 86, 18, 0, 0, 0, 0 to somehow represent the rather innocuous looking number 123.

Atari maths

This is where the Atari maths system's complications come into their own. Whereas most micros allow us to store numbers in a couple of different ways, Atari Basic allows only the most complex of these methods.

Some languages would allow us to place the number 123 into two bytes as an integer variable. All this means is that the number is stored in memory in much the same way as we access memory addresses like the display list. To get the final value we take the contents of the first byte and then add on the second byte times 256. You might have seen lines such as:

```
10=POKE256+POKE128*256
```

which use this very method.

This integer system has the advantages of much greater speed and of using less memory, but it can't handle numbers larger than 65525 or decimal fractions such as 1.5 or 1.01.

The alternative system, the only one available in Atari Basic, is known as floating point arithmetic which stores

numbers in a scientific form very like the exponential form you might have used for large numbers in your own programs. If you saw 1.5E4 in a listing you would know that it means 1.5 x 10⁴, or 1.5 times 10,000.

The digit 14 in our tokenised line simply tells the computer that a floating point number follows, and this is composed of six bytes. The first of these gives sign information – plus or minus – and the power of – exponent – of the number. The other five bytes give the fractional part of the number using a system known as Binary Coded Decimal.

This is not as tricky as it sounds and all it really means is that each byte holds two separate numbers – one in the first four bits and the other in the second four.

In our example, the first of these five BCD numbers is 10 which gives us the binary pattern 0001 0010. The first 0001 is a one in decimal while the second part, 0010, means two. So our fractional part is actually 0.12 – see, it really isn't as difficult as it looked.

We finally have to subtract 88 from the exponent byte before we use it – giving us 88 minus 84 = a grand total of 04! Rather than using powers of 10 this system uses powers of 160 to make the work simpler so our final floating point number is 0.12 times 160 to the power of one. This is the same as 0.12 times 160 – or a value of 192, which is what we were hoping for. Perhaps you now see why floating point maths takes so long compared with simple integers.

■ Now comes it's for continuing this exploration of Atari Basic with a more detailed look at the tokenising process, see a full breakdown of all the available tokens and what they represent. I might even manage to get some sleep in the meantime.

Turn to Page 42 in

Mapping your micros memory

Location	Label	Function
128128	LDNAM	Lowest user-accessible memory address
128131	WVFP	Variable Name Table pointer (start address)
128133	WVTP	Variable Name Table dummy (end address)
128138	VTMAB	Variable Name Table pointer (variable command)
128139	VTMAB	Variable Name Table (first address of tokenised program)
128138	BTMCUR	Current statement (last direct command line)
148149	STABP	String/Array pointer (string/array variable address)
128148	BLNTRT	Runtime stack (internal COS,SPQ3,NEXT addresses)
148148	MLMTRP	End of current Basic program space

Figure 8: Basic's Zero Page Pointer Table

Now that you have a rough idea of how a tokenised program is made up, let's take a look at where everything can be found in your micros memory.

All the information we require is held in a table of nine two-byte addresses that is zero-page memory as shown in Figure 8. Each of these is referred to as a pointer because you must use the value

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contained within it to point you to another memory location.

As I mentioned before, the second byte must be multiplied by 256 before being added to the first. The resulting figure is then the address you actually require.

Locations 728/729 point to the lowest address in memory that Basic is allowed to access (LOWMEM). This normally would be either \$780 for a cassette system or \$4000 if Dos 2.5 is loaded.

If you use another type of Dos you will find this location points to the first free location beyond Dos's memory. The next 256 bytes are reserved as a temporary work area for the following routines.

Locations 136/137 point to the address of the Variable Name Table, 758 bytes on from LOWMEM. It is here that your table of variable names will be stored, in the same order that you first referred to them.

It is worth noting here that string variables have a \$ sign stored after the name and array names are followed by a ! sign. The last letter or symbol of each name entry is converted to inverse video in order to let Basic know where one name finishes and another begins.

Locations 138/139 point to the first byte after the Variable Name Table - which is normally a dummy zero byte. If you type in a line containing a new variable name it will be stored here and this value moved onwards to the end of the new name.

Locations 134/135 point to the

address of the start of the Variable Value Table. It is here that the actual contents of your variables are stored. Each entry in this table is eight bytes long and may contain either a floating point number - in the case of normal variables - or a further pointer to the actual address of strings or arrays. See Figure 8 for more information.

Locations 136/137 point to the address of the tokenised program itself. If you type in the two line program we have been considering then you can PEEK from this address onwards if you want to see the token structure for yourself.

Locations 138/139 point to the first byte AFTER the tokenised program. It is here that Basic stores your direct command lines while it works out what to do with them. In fact, the last direct command line used will always be available here - complete with an imaginary line

number of 32,768. Try PEEKing the address given as 138/139 to find out.

Locations 140/141 point to the first byte after the current statement token, and it is here that your arrays and strings are stored. The Variable Value Table, in fact, contains offsets into this area in order to access the various elements of arrays and strings.

Locations 142/143 point to Basic's runtime stack which will hold the return line numbers for all the GOSUB statements and FOR...NEXT loops.

Finally, locations 144/145 point to the very last byte required for use by the program - which is also the end of the runtime stack.

Figure 8 brings all of this information together and shows how these pointers combine to keep track of our example program once it has been tokenised.

Byte number	1	2	3	4	5	6	7	8
Variable type								
Number	80	Entry number	Six byte Binary Coded Decimal number					
Array (DIMed)	65	Entry number	Offset from STAMP	Real DIM plus 1	Second DIM plus 1			
String (DIMed)	128	Entry number	Offset from STAMP	Current length	Dimmed length			
Array (unDIMed)	64	Entry number	n o t u s e d					
String (unDIMed)	128	Entry number	n o t u s e d					

Figure 8: Types of entry in the Variable Value Table

Label	Name	Bytes	Function
VNTP	Variable Name Table	78 88 72 68 88 210	Start for NAME\$
VNTO	Variable Name Table dummy	8	Zero byte at end of Variable Name Table
VVTP	Variable Value Table	8 0 65 18 0 0 0 0	BCC contents of variable 8 (NAME\$) = 120
STRTAB	Tokenised program	8 0 15 15 8 1 28 45 14 65 16 8 0 6 8 22 16 8 7 7 32 128 22	8 LET NAME\$ = 120 10 PRINT NAME\$
STMCUR	Immediate Mode statement	8 128 01 01 25 15 13 68 51 58 78 88 77 88 68 82 66 86 88 82 22	Last direct command used Try working it out!
STAMP	String/Array contents	(None)	
STSTACK	Runtime stack	(None = no program running)	
MEMTOP	End of reserved program area	80ms byte beyond end of STMCUR	

Figure 9: Areas of memory after a program has been tokenised



DAM TROUBLE

ONCE again mankind — or village kind — is crying out for your help. Apparently some time ago an obscure individual by the name of Muzapka Drink — or Mr.D — decided to gain control of the Federation for the Control of Water Supplies.

However, the Federation refused his cash offer to buy them out, which left a man too gleeful Mr.D in a winning mood.

This was when he decided that if you can't join them, beat them. So he decided to destroy all the Federation reservoirs and cause chaos throughout the land. Millions of people will be very upset when they get up in the morning, grab their tooth brush, turn on their taps and nothing comes out.

Now spare a thought for the vil-

lagers of Roodville. They face the dubious honour of living in the only place in the country with a surplus of water — sited next to a huge dam holding back around 500 million gallons.

But as luck would have it — and doesn't it always — you stumble across a £15 million helicopter gunship. Using this you may be able to destroy the missiles that are heading towards the Roodville dam and prevent the impending disaster.

So now the scene is set — only you

stand between the missiles and an early bath for the village.

Take in the briefing, remembering to check it with Get It Right! and save it to tape or disc before rushing it. Be especially careful when entering lines 1080 to 1400 as these contain a large amount of machine code.

Three difficulty levels are incorporated, and you make your choice using the Select key. The game ends if the incoming enemy missiles manage to blow a hole through the dam or if all your three helicopters have been destroyed.

Each wave is progressively harder than the last — the enemy missiles get faster and your helicopter is positioned further away from the dam, giving you less time to react. Remember, Roodville relies on you.

PROGRAM BREAKDOWN

10 — 12	Initiative variables and strings	500	Clear all sound channels.
20 — 25	Set wave parameters and clear all collision detection registers.	1080 — 1085	Allocate a safe area of ram for the player missile graphics and initialise it.
50 — 70	Main program loop controlling collision detection and movement of missiles.	2080 — 2180	Install the vertical blank interrupt routine to control the helicopter, animation of the rotor blades and enemy gunfire.
100 — 110	Move helicopter missile.	2185 — 2187	Set up new screen display list.
110 — 157	Randomly select a new shape and position for the next enemy missile.	2188 — 2195	Set up a display list interrupt to change the colours.
300 — 360	Successful end of wave and bonus routine.	3200 — 3400	Allocate another area of ram for the new character set and define the new graphics.
390 — 393	Collapsing dam sequence and sound.		Draw game screen, select skill level and start the game.
440 — 480	Check for a new high score.		
	Helicopter explosion, decrement lives and check for end of game.	5000 — 7000	

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TO ORDER PLEASE USE THE FORM ON PAGE 61



Brian Jobling, one of the founders of Zeppelin Games and author of Speed Age

Visions of success...

Neil Fawcett takes a look at a new software company, a new game and its seasoned author

IN an ever-expanding software market it is always pleasing to see a new product arrive in the office - and Speed Age certainly had us all buzzing.

It is the first release for the Atari by a newly formed company, Zeppelin Games, which decided to enter the world of budget price software. If all its products are as good as this one it can look to a prosperous future.

The game is a one or two player motorcycle simulation which uses a split screen display similar to the old Pitstop II game. After playing it for a while I was intrigued to find out who is full price product of the author is priced at only £3.95. So I packed my bag and headed for Newcourt-on-Tyne to talk to the author Brian Jobling, who is also one of the founders of the company.

When you meet Brian the first thing that strikes you is his age. At 16 he has already clocked up an impressive list of games in various computer formats. His successes on the Atari came about while he was working for Tynesoft - Winter Olympics, Phantom, Who Dares Wins II and Mousetrap.

I remember that it was the success of these - especially Winter Olympics which sold over 4,000 copies in its first month - that allowed him to buy his

Porsche at the tender age of 18.

When I asked Brian why the game was so cheap his answer was very simple: Zeppelin want to show that high quality software can be produced and sold at a budget price. It has certainly done that with Speed Age. Unlike most budget companies who bring out up to 10 titles a month of an average quality, Zeppelin will only produce around two or three games a month. But because more time is spent on each, the quality will be very high.

Zeppelin was formed on 26 September last year by Derek Brewster, Martin O'Donnell and Brian Jobling.

They have their own in-house programmers and various free-lance writers and, as well as supporting the Atari they produce budget games for other machines.

Derek is the man who got Brian interested in the world of programming. He was working games for the Amstrad CPC, but since then Brian has moved on to better things. Derek used to be an editor of a computer magazine.

With all this experience the company has the potential to succeed, but what really sells the products is their

Turn to Page 26 >



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quality. The packaging has been produced in a very professional way. Original artwork and eye-catching style makes the product jump off the shelf at you. So, best of luck Zeppelin and keep those quality products coming in.



NEW RELEASE

As with most budget releases, Speed Ace is only available on cassette. Being the first release for Zeppelin, they will be hoping for a huge success.

When loaded you are presented with the main menu from which to select your race options.

If you choose a one player game you will race against 10 other computer-controlled riders on a full screen. The scrolling is very fast and simulated speeds of up to 150 kph are possible.

In two player mode you can race against a friend using a joystick plugged into port two. The screen is split into two each half giving an independent view, with the two of you being the only riders. This technique slows the game down a little, but racing against someone other than the computer is great fun.

You can choose between nine different race tracks with from one to nine laps on each. The circuits include Nevada Hated, Silverstone, Japan, Paul Ricard and Daytona.

The info card says that the computer tracks are identical to the originals, but not knowing them personally I can't dispute it — although Brian assures me they are.

To control your bike, push forward on the joystick to accelerate and pull back to slow down. If you collide with another rider it results in you temporarily losing control and it will take you a little time to regain speed.

Leaving the road or touching the kerb also slows you down drastically, so take the bends at a comfortable speed and it will pay off in the long run. I found that under 140 kph was a safe speed for bends.

After a race you are presented with the score table which shows the best time for that particular track and the time you have just achieved. It also shows what position you finished the race and the best position you achieved.

The graphics are superb and the scrolling exceptionally well animated. Sound effects could be better — a catchy little tune on the main menu would have been nice. Having said that the constant

sound of the engine revving and the crunch as you grate your legs into the ground as you go round a corner are adequate.

The feature I really liked was the way the bike leans to one side as it goes round corners; this is smoothly done and adds the finishing touch to a superb motorcycle game — the first of its type that I have seen for the 8 bit Atari's.

At £2.99 this game is a bargain and must be a winner for Zeppelin and Atari computers alike. I will be very surprised if it doesn't turn out to be one of the best sellers in 1986.

COMING SOON

Zybox is by the next release by Zeppelin for the Atari 8 bit and although the version I saw wasn't finished, what I did see was superb. It promises to surround dead game players with its quality and addictiveness.

The game involves two rebels — Rinner and Casselara — who have been sent on an almost suicidal mission to escape the nightmare of Death Row.

To escape execution they must go to various strange worlds in the Craker system and fight weird and deadly aliens. From each of these planets you must collect a teleport crystal. Each crystal gives you access to another world until you reach the restricted levels and face the ultimate challenge — the Zylon itself.

If you obtain this it will ensure

that your captors remove death rays from your necks.

To help you with the mission you are given the Orbz weapon with power level one. This can be increased as the game goes on by picking up weapons of the same type.

There are others that you can get and these include the Rail Gun, the Wall, the 8-Way and the Pulse. The game is described as having a simultaneous two player option — two players on screen at the same time. Very nice to watch.

The graphics are stunning and the music was some of the best ever on a game for the Atari, and believe me I've heard a lot.

The graphics for the backdrops are some of most original I have seen. A lot of thought has been put into designing the aliens you fight and the weapons that you use. All in all this game is a credit to Zeppelin.





NEWS...NI

Service has new specialist role

ONE of the country's leading learned societies has joined MicroLink.

The British Psychological Society has nearly 32,000 members and is involved with government, the health and education services, academic institutions and other organisations here and abroad.

Last year its charter was changed to allow it to maintain a register of chartered psychologists which the general public will soon be able to consult.

This gives the country a new breed of chartered specialists whose education and professional conduct the BPS oversees.

The society is no stranger to the benefits of electronic mail. For some time its members who work in academic institutions have been communicating via JANET, the Joint Academic Network.

By joining a more widely-used service like MicroLink, BPS members working in all areas of psychology can now communicate faster and more efficiently with the Society's offices in Leicester.

In addition the society's extensive business activities, which include publications and software, will be enhanced by MicroLink Email and other facilities.

A bulletin board for business

MICROLINK has joined forces with the University College of Swansea to provide a unique electronic bulletin board for businesses.

Subscribers can get advice free of charge from experts in various fields, and discuss business problems with others who may have experienced similar difficulties.

As well as being instant and free, this access to profes-

sional expertise comes with no strings attached, no axe to grind and no commercial bias.

The wide range of business sectors covered includes legal matters, exporting, industrial relations, management, market research, personnel and training, statistical and systems analysis.

Expertise is also supplied in the areas of computing and

computer systems, electrical and electronic engineering, expert systems and artificial intelligence, and mechanical engineering.

Users of the Business Bulletin Board can browse through the messages and replies for items of interest.

All messages are read by the system operators who pass them on to the relevant expert.

Translation back the same day

LANGUAGE expert and Swansea university lecturer Dr June Selmons has started what is probably the world's fastest translation service on MicroLink.

Subscribers who send foreign language documents to her mailbox can get the translated material back the same day - a vast improvement over the past, particularly for businesses.

"Initially I can offer translation facilities in Italian, Spanish and French - but if the demand is there, other European languages can easily be added", said Dr

Selmons.

Subscribers can use either the standard service, where the translated document is returned via MicroLink the next day, or the super-fast same day service.

Dr Selmons, a lecturer in Italian, said: "Europe has always been an important area for organisations to develop into. However, barriers are often erected solely because of linguistic difficulties.

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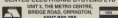
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Grateful for small mercies

AS I was saying to my great-great-grandfather just the other day – we small folk are noted for our longevity you know, despite the fact that we die with danger and dragons annually every day of our lives – not a lot now seems to be happening at the moment.

There's usually a post-Christmas lull on the games front and that goes for adventures, too. Still, this year it seems even quieter than ever, but then I probably say the same sort of thing every year.

When you think about it though, not all that many companies are producing adventures these days, even when the market is at its liveliest. Apart from Rainbird, Magnific Soranis, Infocom and Level 9, adventure producers seem remarkably thin on the ground.

There's Roblox, of course, and even US Gold releases the occasional import – the Ultima and Electronic Road series spring to mind – but you'd be hard put to think of any others that are still around.

And yet, when you really start to look back over the years, that's the way it has always been. Only a handful of companies have ever gone in for adventures in a big way, the rest being grateful for small mercies – as long as we adventurers remain hungry for new quests and challenges, I believe that there will always be software houses willing to satisfy that demand.

The most cheering aspect is that the quality of the adventures being written today is, in most cases, better than ever.

The advent of more powerful and larger memory machines, together with the development of more sophisticated programming techniques, means that we are no longer faced with wrestling with an adventure's vocabulary severely limited by simplistic two-word command structures or bored to distraction by barren descriptions.

For those that like them, many adventures now have superb graphics and some even sound effects.

We've come a long way in a few

by
Rouloc



years and with the prospect of other exciting developments such as CD roms, the future of adventures looks assured.

Now, turning to your letters, what happened to your response to my invitation for you to send in your personal lists of favourite adventures? Not a dicky-bird have I heard! Can it be that none of you have played enough adventures to be able to supply such a list?

I can't believe it – surely most of you have experienced the joys of at least a dozen quests? If so, write in and let me know your favourites in order of preference. I just love comparing my own pet likes and dislikes with those of fellow adventurers, don't you?

Steve Wilson of Tamworth is desperate. "Please, please, please," he writes, "for goodness sake tell me who's the King of the Jungle in Mondra's Quest". Taven has quizzed Steve a hundred times and Steve has wandered around in misery for months trying to discover the answer.

He's going bald with worry and unless someone tells him soon, he's going back to Space Invaders – that

shows you just how bad the situation is. I don't know the answer, but for the sake of Steve's health, can someone please supply what he and Taven want?

Brian Standing of Port Talbot teases me to look for forgetting what I am supposed to be ready know about Ultima IV. Similarly, Ron Plalbird from near Crowes asks for my help with the same adventure, noting that I claimed to be an expert on the game.

Well, I'm afraid I have a small confession to make: Like Dr. Who, who regularly undergoes a transition to an entirely new personality, I, too, have undergone a change in recent months. I am not who I was, if you catch my drift, and I have to admit that my knowledge of Ultima could be written on the head of a match. Now if it's info on Infocom games you're after...

However, Brian has supplied some more help with Ultima IV which I now pass on for the benefit of interested parties. The mandate can be found either on an island to the east of the Fens of the Dead which are south of

Turn to Page 201

*Two discs crammed
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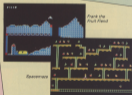
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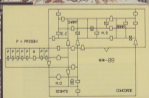
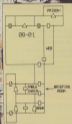
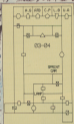
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Software

SCENE

Batty but beautiful

Product: Rebound
Supplier: Microvalue/Tris-auris, Adelaide Industries (Sydney, Brisbane, Town and Moor 8877 477)
Price: £2.99 cassette £3.99 (disc)
Tel: 027-414-0811

ONE of the main problems the software market suffers from is a lack of originality. At times it appears that programmers simply change the design of the aliens and sell 'shoot-'em-ups' under another name.

Maybe it's time we went back to another old idea and jazz it up a bit and this is exactly what Microvalue

has done with its latest game Rebound. The title screen is very well done. There's no amazing pictures, but varying text fonts and colours are used to good effect.

The music is a superb percussion piece that really gets your foot tapping. It goes on for quite a while and changes all the time - not the usual monotonous ding that some games give.

As you play, the music can be heard in the background - a feature that I like.

The quality of games music seems to be getting better all the time - but that's not really surprising

on the Atari machine.

Now on to the game itself. Imagine that you take a tennis court, cut it in half along the net, then place one ball at the top of the screen and the other at the bottom.

You then have a bat at each end moving left and right and a ball and build the sides of the court up so the ball can rebound off them. There you have it - sounds very simple doesn't it?

There are three levels of play. One is just right for the novice, but don't try level three unless you have the speed and reactions of Boris Becker.

In one-player mode you

face the computer, but the fun really starts when you move to two-player mode and challenge a friend.

The object is to score seven points, or goals, which is done by making your opponent miss the ball so it passes his bat.

You can only score a point when it is your serve and the scores are displayed on a status line that separates the two halves of the court.

When a game is won a whistle blows and you are returned to the title screen.

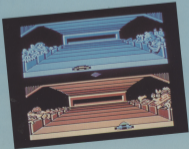
An amusing feature is the animated audience seated on each side of the court. They are the strangest bunch of aliens I have ever seen since the cantina scene in Star Wars.

Whenever the player who has just scored a point they clap, jump up and down and generally squirm around in glee.

The game contains all the features needed to be a winner - smooth scrolling and superb graphics give an overall addictiveness, the animated audience is fun to look at and the music is superb.

Rebound will be released in Easter on Microvalue's Four Great Games - Volume Three. The pack will be worth buying for the game alone. Well done Microvalue - a superb product.

Neil Finocott



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

Software

SCENE

Flight of fancy

Product: *Swift Spreadsheets*
Supplier: Ausbyte, Manchester House, Carrington Road, Widdowville, Newnes 5443 754
Price: £29.99 (retail)
Tel: 01 461 1166

EVER since the pocket calculator was invented, complicated mathematics has needed the development of a spreadsheet computing or, as some would call it, financial planning, has brought business calculations well within the grasp of everybody's abilities and pocket.

A spreadsheet acts like a blank sheet of paper on which both text and numbers are placed. Numbers form the basis of calculations and if these change, it often causes automatic recalculation of all the results.

Spreadsheets can be used for any calculation - not only financial, but the majority of applications are usually for standard items, such as profit and loss, balance sheets, costing/estimating and analysis of expenditure.

The main benefit, apart from time saved in accurate calculations, is the possibility of what-if predictions. Just changing a few pieces

of data or even editing a formula can alter the forecast of any financial modelling.

Swift originates from the Commodore 64 version of Micro Swift. The disc contains XI and XII versions and the correct one for your computer is loaded automatically when you boot the disc.

It comes with a 50-page manual covering basic information and gives plenty of examples and two tutorial lessons.

Unfortunately all the commands are laid out for the C64, but there is a separate quick reference card for the Atari indicating which keys to use.

Swift has all the usual features found in spreadsheets together with user-defined screen colours and popup menus to aid data input and manipulation.

The size of the spreadsheet allowed by this program depends on the size of the computer's ram. For the XI version there are 6600 cells - 38 columns and 264 rows - and the XII version has 84 columns and 264 rows - 18,264 cells.

To take advantage of the package's many features, the unique pop-up menu system allows you to select commands without having



to enter a sequence of special characters.

Many instructions have been grouped together in a logical sequence to further aid data input.

The menus are small windows which overlay about a quarter of the sheet but do not interfere with the data behind.

Some commands have additional menus linked to them, so there is often no need to type in specific instructions - just select the right one and press Start.

Using these menu commands make the complicated calculating process structure seem easy to operate - see Figure 1.

To move round the spreadsheet, the Control-cursor keys are used for single cell jumps while larger moves like Goto key allows you to go directly to any cell.

Entering and editing data is simple - just place your cursor on a cell and type the data in.

Features include the

standard preparation of cells for width, numbers, currency signs and decimal places. You can also format a disc from within the program, or see the data in a basic graphical form.

One of the most important parts of any spreadsheet is the ability to be able to relate cell values to others. You do this using formulas.

For example, you can say that the value of D10 is the result of D3 * D6. You can transfer or copy that formula to other cells.

The printer section has some good facilities. You can select the output width and insert printer commands to customize it. All data can be saved to disc.

Swift operates effectively, but the programmers have tried too hard to be innovative.

Although the little pop-up menus are impressive, they are difficult to use, but overall using the program is still quite easy.

The tree-like structure of the pop-up menus save you having to memorise complicated commands.

Spreadsheets for 8 bit micros are few and far between, and while Swift may not have the depth of other popular business programs, it has very good capabilities, is adaptable and well suited for beginners to both computing and financial modelling.

Alan Goldstone



Command Menu

Menu 1 - Range Command

Menu 2 - Range Copy
Range Format - Menu 3 - Exit
Range Erase
Range Sort
Range Save
Range Load
Range Print

Negative Values
Currency Signs
Commas
%Sign
Zero suppression
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Figure 1. The tree-like structure of Swift's pop-up menus



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Telephone: 21-227-8411

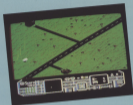
PANTHER, the new budget title from Mastertronic, is a good old-fashioned shoot-'em-up. You are inside a flying saucer and should get hours of entertainment as you disintegrate aliens in a hail of laser fire.

You are the lone remaining pilot - sounds like *Starfighter Galactica* - in the Federal base and your city, Ramon, is under attack.

Most of the population have left and the remaining few must be picked up and taken to the spaceship on the other side of the city.

Reminiscent of *Blue Max 2501*, the playfield scrolls right to left diagonally across the screen. This looks good, but it unfortunately prevents half the screen from being used - your movement is restricted to a narrow channel running from corner to corner.

To me this is a sign of lacy



programming, as with a little bit of work the entire screen could have been used.

The view of your flying saucer is from above and to the right - hence the scrolling technique used. Using the joystick, you can move up, down, left and right, within strict limits.

The aim of the game is to survive - which isn't easy - and to rescue stranded people who are taking refuge in triangular shaped

buildings scattered around.

To make life difficult alien fighters constantly buzz the area and take great delight in popping you - but don't they always?

The terrain is nicely varied and starts with desert - beware of the killer cacti. Don't land on any green bits to pick up survivors because your craft will explode - a handy piece of information that the cassette may omit.

Another problem with this level is that some of the aliens are the same colour as the background, making them very difficult to see.

Next you'll come to the deserted city which is laid out in a monotonously symmetrical fashion. After this you arrive at the sea, complete with waves, and very realistic they arrive.

Look out for oil platforms as you cross the screen as there could be survivors on them.

After the sea you reach another city and the spaceship. Flying is fun in the city as you try to go in under radar and round the obstacles.

Below the main playing area is your saucer's control panel. This displays your score, the number of people

you have rescued, how many ships you have left and a radar panel.

The latter shows the position of the bad guys relative to you and is very useful because they can go off the screen and shoot you from behind, whereas you can only shoot them if they are directly in front of you and at the same altitude.

A novel approach I liked was that they call your death and rising from the ashes the Phoenix manoeuvre - you have five of these before the game is over.

A failing is that there is no real height indicator - you have to guess the height by your shadow and compare it with the alien ships. At least in *Blue Max* the enemy changes colour when you're at the same altitude.

Another well-implemented feature is the superb background music, although it can get on your nerves after an hour or so. Most of Mastertronic's recent games have been released with some very classy music, let's hope they keep it up.

I was disappointed with some of the graphics. Your ship resembles a strawberry that you have just trodden on - flat and horrible.

The alien craft are just as boring, but a saving grace is that the little people are well animated as they run out of the bunker to your ship.

Despite these minor faults I enjoyed playing Panther. Excellent scrolling and sound effects make it pleasing to look at and hear. For £1.99 you must buy this game for your collection, it's well worth it.

Ruth James



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



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Your HINTS & TIPS

Mirax Force

If you are having problems with this fast action shoot 'em up don't worry - help is at hand. The author, Chris Marnes, has built in a cheat mode.

His middle name is Peter and by typing his initials (CPM) at the title screen you will turn off the collision detection for your craft. You can still shoot the alien craft and destroy the paper structure of the mother ship, but they can't get you.

I have used this cheat to get off the way through the game and, believe me, some of the later screens are superb. - **Michelle Nixon, London**

Zaxxon

WHEN you are flying through the second Space Fortress you need to get the heights exactly right for going through the space between the force fields and the wall.

Your height is indicated on the left of the screen as full and half blocks, so here are the heights to fly at: 1.5, 2.5, 5, 1.5, 2.5, 5 and 1.5. - **P. Rowley, Hockley, Essex**

Ghost Chaser

If you are having problems playing the game and are losing lives fast, type in FANDA and the program will give you extra lives. - **Owen Paget, Ross-On-Wye, Herefordshire**

Mercenary:

The Second City

HERE are tips on how to escape the planet with 9,000,000 credits.

- Steal the Dominion Dart.
- Sell the large box to the mechanics.
- Sell everything else you can lay your hands on to the Palyers - (including the Mechanoid).
- Shoot all Mechanoid-occupied positions.

You will also need to be in possession of the:

Granad Protium	These make up the skeleton key.
Photon emitter	

To get the Neutron fuel you will

need to be in possession of the Anti-grav which allows you to fly higher. It can be found at location 09-06, altitude 88013.

You need the metal detector to identify Mechanoid positions - it turns the message bar blue when you are over one. You also need the pass, because if you don't have it you will be

Alternate Reality: The Dungeon

On level one go to see the Oracle who, if you give him five gold pieces will give you information about quests to undertake. The ones that he speaks of are:

QUEST ONE

Seek the prisoner under the palace and free the prisoner with the silver key. To get it you must kill a master thief you encounter at a random location in the dungeon. After you get the key you must go to the palace dungeon on level one.

The prison is through the secret door in the sewer system. Once you have freed the prisoner you may learn a spell and you receive a staff piece. You will then be teleported in to a room.

To solve this you must walk through the door immediately in front of you after you have been teleported. Then take the middle door, left door, left door, middle door and then the middle door again. This will take you to the tomb of Arimindal the wizard. After visiting there you are forced to go to death's door.

You are given the option of walking through it or using an item. If you try to walk through it a bug in the program seems to make it impossible to find any item to use with any effect. The only solution is to walk through a sewer door.

QUEST TWO

All you have to do is fight and kill the

recovered with it and not get the 1,000,000 credits.

If you manage to shoot a Palyer position make a quick note of its coordinates, then get the Anti-Time bomb which will rebuild it and you can shoot it again.

A final warning: Don't enter the prison in the colony craft laboratory because there is no escape. For further help with this addictive game take a look at the map on Page 32 - **S. Stevens, Andover, Hants**

Fidget

On level 10 you will come across Flindal the spider. To pass her you have to stand at the bottom of the ramp and wait for her web to disappear.

Go up the ramp and then go on to the ledge that juts out on the left. Wait for her web to pass you and carry on up to the top, then knock Flindal who will shrink and allow you to pass. - **P. Rowley, Hockley, Essex**

goblin king then fight the troll tyrant to recover two halves of an evil ring. Then take the two halves to the dragon smithy on level two. He will reforge the ring for a gem or jewel. You then take the ring back to the Oracle.

QUEST THREE

Take the Marganna's diary from level one to the war horse on level two. The diary is found in the room with three wreaths in it. The war horse is found within the hall of mirrors on level two. Wear the diary and you will have the chance to exchange it for a mirrored shield which you can use later.

QUEST FOUR

You are told to cross the river Stang at midnight. Unfortunately, I have been unable to do this, has any reader finished this quest?

GENERAL TIPS

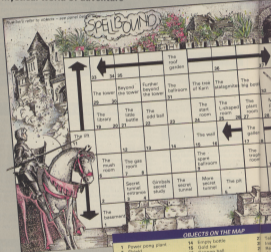
Fight only weak monsters at the beginning of the game - bats, rats and so on - until you advance to higher levels. Many weapons can be found scattered around the dungeons - some of them magical.

Use magic to discover where secret doors are. To gain a very powerful weapon use the sword of the adept in the hall of adept on level two. Then use the amethyst rod and you will be teleported to a secret corridor on level one where you will find the weapon. - **O.V. Howarth, Bowdon, Cheshire**

SPELLBOUND

THE MAP

MIKE MOULTON invites you to enter the mystical world of adventure



ONE of the most popular budget titles for the Atari computer is Spellbound from Mastertronic. This graphical text adventure is extremely addictive and fun to play. So, for novices and experts alike, here is a guide to the spells, objects and personalities that grace the game.

OBJECTS ON THE MAP

- | | | | | | |
|----|------------------|----|-----------------|----|------------|
| 1 | Power pong plant | 14 | Empty bottle | 20 | Yellow key |
| 2 | Shield | 15 | Gold bar | 21 | Red key |
| 3 | Puzzle | 16 | Carson ball | 22 | Arrows |
| 4 | Pocket laser | 17 | Blue crystal | 23 | Gold key |
| 5 | Broken tallman | 18 | White gold ring | 24 | Phosphor |
| 6 | Sticky ball | 19 | Key | 25 | Phosphor |
| 7 | Mock of runes | 20 | Engraved candle | 26 | Phosphor |
| 8 | Gold goblet | 21 | Power tankard | 27 | Phosphor |
| 9 | Tube of glue | 22 | Mirror | 28 | Phosphor |
| 10 | Truncheon | 23 | Sexophone | 29 | Phosphor |
| 11 | Crystal ball | 24 | Teleport key | 30 | Phosphor |
| 12 | Book of shadows | 25 | Red hammer | 31 | Phosphor |
| 13 | Brick | 26 | Glowing bottle | 32 | Phosphor |

Map

Another exclusive from the

ATARI USER

mapping division



- 12 Teleport pad
- 13 Instruction book
- 24 Red crystal
- 26 Ancient scroll
- 31 Green crystal
- 32 Javelin
- 33 Four leaf clover
- 14 Bottle of liquid
- 15 Runestones
- 16 Prism
- 17 Wand of command

CLUES

- To get past the dragon you need to take the two jumps of bridges from the wall after Elrand has blown it down. Drop down on top of each other near the tower.
- To find the Banasha shop the glowing bottle. However, be careful only to do this after the Armoured Phantoms spell has been cast.
- If the character does not want to be accompanied or commanded by you, then command it to be happy.

CHARACTERS AND WHAT THEY DO

General the Wizard	Will help you with the Release spell.
Thor	Give him the mallet and he will help you get into the lift and in the tower.
Florin the Dwarf	Give him the bottle of liquid and take it back to restore your energy. Give him the tube of glue and the broken talisman and command him to help. Florin will then mend the talisman and it will become the magic talisman.
Ork the Cleric	Give him the crystal ball and he will help you get into the Most Magic room with the Crystallium Spectralis spell.
Samsun the Strong	Give him the javelin and he will help you at the pit.
Erand the Half-elf	Give him the trumpet and he will help you at the wall after Thor has helped you at the tower.
Leely Resmer	Give her the pocket laser and she will help you in the secret tunnel entrance.
The Banashes	Will tell you some clues if you command her to help.

SPELLS AND THEIR USES

Formation Protection	You will need the red herring and the power pong plant to cast this spell. It will protect you from the Gas rats.
Armoured Phantoms	You will have to stand on the puddle in the secret tunnel entrance to cast this spell. It will allow you to go through the dark rooms without the glowing bottle.
Gandallum Illuminatus	You will need the engraved candle and the shield to cast this spell. You will also need to get the four-leaf clover in the room. Once the candle is lit, you can use it to read the ancient scroll.
Project Physical Body	You will need the crystal ball and the magic talisman to cast this spell which will allow you to teleport to any character.
Crystallium Spectralis	You will need the three crystals and the white gold ring to cast this. You will also need to give the crystal ball to Ork and summon him to the Most Magic room. Once the spell has been cast, show the three crystals at gimbal in order to free him.
Release Spell	You will need to be in the room with Gimbal after he is freed in order to cast this spell. Once the spell is cast, summon the characters in the order: Erand, Samsun, Thor, Resmer, Banasha, Florin, Ork and Gimbal. Make sure the characters are at full strength before you summon them.

OBJECTS ON PEOPLE

Florin	Am
Samsun	Platform, off him
Erand	Mallet, leaf of elfweed
Resmer	Willow Root, last Dive hat

LET'S start off this month's column with a letter I received recently from Brian Molebas from Bishop's Cleeve in Cheltenham. He has a few useful comments to make about the 1050 disc drive.

I read with interest the letter in October's Software Solutions from A.W. Crawford who wanted to know whether or not it was possible to find out the density of a disc in a 1050 drive by interrogating the drive controller.

Obviously I wanted to do this in a machine language program I was writing. I found that it does seem to be possible with an unmodified 1050 to find the current disc density by issuing a Status command. First you should either read or write a sector on the disc — for example, sector zero. Then issue a Status command.

Bit 7 of location \$20EA will be set to one if the drive has just read/loaded in dual density — otherwise it will be set to zero. According to Mapping the Atari this bit indicates whether or not a device is intelligent, and it is always set to one. My program, however, can successfully determine the density of a disc using this method.

Readers accessing the 1050 drive without using Dos may also be interested in knowing how to format a disc in dual density as this is not documented in either Mapping the Atari or De Re Atari. You should use the command \$20 — instead of \$21 for single density. The resultant disc handler does not seem to recognize this command — at least, not in Revision 4 — which means you have to access \$20 directly rather than by using \$20INV.

The data direction byte \$200 should be set to receive \$20. You should also set the buffer address to a spare point in memory because the list of any data sectors — terminated by two \$FF bytes — will be returned there. A timeout value of \$3F would seem to be adequate. Mapping the Atari or De Re Atari will give people more information on using \$20.

Thanks for the information, Brian. I must warn readers that modified 1050 drives seem to respond differently to the density check portion of the Status command.

The other thing to bear in mind is that, to be sure of the results, you should either a sector read or write before issuing the status command. If you're going to have to read a sector anyway, why not just read sector 1000 and if you don't get an error 126 then you know for certain that you're working in

SOFTWARE Solutions

Your programming problems solved by ANDRÉ WILLEY

disc density? This has the advantage of also working with other drive types — even an old one.

At16 formatting in dual density, you can quite well be starting that the \$20 command \$2F will accomplish this task. If you are using an XL or XE then you will find that the newer OS contained in your micro will enable you to use the \$20INV command, as \$2F is now supported.

Colour coding

Next a problem from **Mr J. Taylor** from Darton-in-Business in Cumbria:

I own an Atari 800X with a 1050 disc drive which I use for maintaining the stock market, forecasting points results and the usual round of general household chores. If I have no interest in games, so my Atari is used for your programs only, usually in default graphics mode and colours.

It would be useful if I could have different coloured text on a 40 column screen at the same time, but I can't figure out how to do it.

Could you please tell me how to get one line of text in default white and another in a different colour?

The answer to your question is to select ANTIC mode 404 graphics — otherwise known as GRAPHICS 9 — instead of known as GRAPHICS 12 (an 80X24) — but this isn't quite as simple as it sounds.

To start with, GRAPHICS 12 will only allow access to the screen by means of PRINT #6 commands, and you also can't get ordinary text on the screen at the same time, except for the default bottom four lines.

Also GRAPHICS 12 is only available on XL and XE machines, which would

be fine for you but would mean that the program wouldn't work on an old 400 or 800 — of which there are still a good number about.

There is also one other much more serious problem. The standard character set is not designed for multi-coloured characters in GRAPHICS 12, so you won't be able to read the text easily.

Luckily all these problems can be overcome with a little work. Let's tackle the first two before going on to the character set. Since the screen you want is 40 columns wide and 24 lines

```
10 REM MULTICOLOURED AT 40X24
20 GRAPHICS 9
30 $217=9000:GOTO 40000($11+1)
40 READ #10
50 FOR I=0 TO 255:PRINT#4
60 FOR I=0 TO 24
70 $100=$100+64:$217=$217+1
80 NEXT I:GOTO 30
90 END
100 PRINT "MULTICOLOURED AT 40X24"
110 END
```

Program 1: Multicoloured text

deep, the display list will be almost identical to the standard GRAPHICS 9 version. The display list, for those who haven't been keeping up with their Atari 40er, is a set of instructions which the graphics chip ANTIC uses to generate the display you see on the screen.

Each line of text or graphics has an entry in the display list which tells ANTIC what colours to use, the size of the pixels and information used for operations such as scrolling text. For a 24 line screen — such as GRAPHICS 9 — there are 24 numbers, one for each screen line. Similarly a full-screen

Turn to Page 46!

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GRAPHICS 8 display would need 182 numbers.

Program 1 on the previous page will find out where this display list is located in memory - line 30, then POKE into memory the 24 row numbers contained in the data statement on line 180. For each screen line you want to be in GRAPHICS 8 you should



Figure 7: Character A in Graphics 8

place a two in the data list, and each GRAPHICS 12 line should have a four. The example program as printed just alternates between the two modes.

This routine can be incorporated into your own programs, of course, and should be run after each use of the GRAPHICS 8 command. All the normal screen editing and printing functions will continue as though nothing had happened.

Now on to the second problem - the character set. Because of the way the



Figure 8: Character A in Graphics 12 SETCOLOR 2

graphics chip works, colour characters are made up on a 4 x 8 grid of dots, rather than the usual 8 x 8 characters you are used to. This means that a special character set must be devised to take account of the change.

In the normal set, a byte of character data is used to represent eight dots across the screen - each bit controlling one pixel, on or off. However, in the case of coloured text each pixel must have colour information in addition to on and off, so two bits are used per pixel - giving four possibilities: 00, 01, 10 and 11. Thus the limitation of four dots across each character - each byte can now hold the data for only four pixels.

A binary value of 00 selects the background colour (SETCOLOR regis-

ter 4, or memory location 712 - otherwise used for the border colour). A value of 01 selects SETCOLOR register 8 (location 708) and 10 will select SETCOLOR 1 (location 704 - as used for the brightness of normal Mode 8 text).

A binary value of 11 in the character data performs a slightly different function. If the character is in the ASCII range 8 - 127 (normal text) it selects SETCOLOR 2 (location 710 - as used for the blue background area). If, however, the character is in inactive video (ASCII 128 - 255) the colour used is taken from SETCOLOR 3 (location 711). This in effect, gives you five colours to work with - including the border/background - although it is a bit of a fudged method.

Figure 9 shows the way that a letter



Figure 9: Character A in Graphics 12 SETCOLOR 1

is normally represented as bit data, and Figures 7, 8 and 9 show the same letter in three different colours for GRAPHICS 12. Note how I've left one pixel (two bits) of space at the side of the letter in each case, plus a space above and below the letter. This is to stop adjacent letters from butting into each other which would make them impossible to read.

If you are planning on using GRAPHICS 8 text on the same screen as multi-coloured text you should alter your SETCOLOR registers so that the background and the border are both the same colour. For example, to



Figure 10: Character A in Graphics 12 SETCOLOR 20 - border

change them to black you would use SETCOLOR 2,0,8 and SETCOLOR 4,0,0.

Also don't forget that the brightness of GRAPHICS 8 text is governed by the

same number as the colour of text with a brightness of 10 - so don't make SETCOLOR 1 too dark or the printing will disappear.

As you are limited to 128 different characters at any one time you must decide which ones are not likely to be used and convert them into coloured letters using a character set editor such as that given in our ASCII series in the April, May and June 1987 issues of Atari User.

I would suggest that the Control keys Ctrl-A to Ctrl-Z are converted to coloured versions of A to Z, and the lower case letters converted either to a second colour alphabet or numbers and punctuation marks, whichever prove to be the most useful in your program.

GAD screen dump

Let's finish this month with a quote from Phil Baxell who is having problems with his 1025 printer:

On asking for a printout, GAD shows up four choices - three type of printer and OTHER. Choosing OTHER lets you enter you own printer configuration.

The manual informs me of the answers to three of the four questions, but I can't answer the third. What code do you need to set up your printer to receive one line = EOC (or 180 decimal) bytes - if double density bit image graphics?

Could you possibly inform me if this program is compatible with the 1025, and if so what are the printer settings in hex and decimal?

Well, Phil, I'm sorry to say that GAD and the 1025 are just not compatible. GAD uses an industry standard method for doing bit image graphics - which is to send a long block of data bytes giving the bit-patterns to print. Each byte and represents eight dots on the printed page.

However, the 1025 - for reasons known only to Atari's marketing department - uses a 7 bit system in which the last bit of data is ignored by the printer. From this information it is fairly straightforward to deduce a number of pertinent facts regarding Atari's marketing department - some of which I will go into here!

Your best bet would be to convert the GAD pictures to an alternative form - possibly a 62 vector bit image file - which can be handled by a screen dump program. You will find programs to do both of these tasks in the January 1988 issue of Atari User.

3 CARD BRAG

BET or bluff! It's all a question of nerve when you play this version of the popular gambling game. The scene is set in a saloon, somewhere way out West. Your opponents — Doc, Kid and Tex — are ranged against you, each trying to win your, and each other's, money.

Your aim is to bankrupt them and leave the table with all the cash. But it ain't easy — this ain't no game for greenhorns. You could be playing all night, or you could be knocked out of the game early. If this happens the session will continue without you until it's over.

At the start of each hand, \$5 is deducted from each player and placed in the pot. When it is your turn to play — the computer will prompt you — you will have three choices: Bet, See or Stack. If you think your hand is good enough to win and your opponents are bluffing, or perhaps wish to bluff yourself, press keys 1-9 to indicate your bet in dollars. This must be equal to or greater than the minimum bet indicated on the screen.

If you decide to stack — that is to take no further part in this hand — press 5. If all the other players have stacked, the last remaining player scoops the pot. If at any time only you and one other player are left in the game you can press C to see his hand.

This will bring the hand to an end with the player with the best cards winning. But remember, it costs at least double the current bet to see an opponent. In the event of the two hands being equal, it is the player who is *Seen* who wins the pot.

Table 1 lists all the possible hands in their order of strength. In the event of the major part of the hands being equal, the secondary elements are included. So, two Aces with a Queen will beat two Aces with a Jack. Similarly, a hand composed of Ace, King and Jack will beat a hand of Ace, King and three.



STEVE KNIGHT goes for his cards in this addictive simulation game

Title of hand	Composition
Five of Three	Each of the three cards has a face value of three. This hand beats any other in Brag.
Five	Any hand consisting of three cards of the same face value. The highest below three is three Aces.
Run on the boards	A run — see below — where all the cards are the same suit. Also known as a running flush.
Run	The three cards form a consecutive sequence, increasing by one. Ace, two, three is the highest, followed by Ace, King, Queen down to four, three, two.
Flush	Three cards of the same suit. Priority is decided as for High Card below.
Pair	Two cards of the same face value. A pair of Aces — or bullets — is the highest. In the event of a tie, the third card is used to resolve the issue.
High Card	All three cards are assessed on their individual face values. The best is Ace, King, Jack with the worst five, three, two.

Table 1. Ranking three-card brag hands

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It's time to find your position

LEN GOLDING continues his
introduction to Basic programming

THIS month we start exploring the mysteries of computer games, and show you some of the techniques you will need to write your own text and graphics adventures. We begin by looking at the various methods of printing text and graphics characters anywhere on screen.

Along the way we'll encounter several punctuation marks with a personality of their own, the CHR\$ function, and the Basic command POSITION.

There's a Basic utility program which automatically converts a screen full of text or graphics characters into PRINT statements for you.

Let's start by looking at the PRINT command in detail. Whenever Basic encounters a PRINT statement, it looks to see where the cursor is currently positioned on screen, and starts printing your text at that point. If the screen is already full, everything scrolls upwards to make room for the next line of text, so you lose any information that was stored at the top.

When printing is completed, Basic automatically returns the cursor to the left-hand margin on the next line, scrolling the screen upwards again if it needs to.

This is fine while you're programming, and it's useful for very simple user-input tasks. But for a text adventure or graphics game you will need much greater control over precisely what is printed, and where.

First let's look at Basic's desire to start a new line with every PRINT statement:

```
10 PRINT "HELLO THERE"  
20 PRINT "HELLO", "THERE"  
30 PRINT "HELLO"; "THERE"
```

Run the program above and you'll find that line 10 prints what you would

expect, but line 20 prints:

```
HELLO  THERE
```

with the two words on the same line, and several spaces between them. Line 30, on the other hand, prints:

```
HELLOTHERE
```

with no gap at all. The comma and semicolon are obviously acting as extra instructions to modify the PRINT command.

Both the comma and the semicolon instruct Basic to forget about starting a new line. A comma moves the cursor to the next available tabulator stop before printing anything else — there are normally four stops on each line, spaced at 10 column intervals. A semicolon, on the other hand, holds the cursor at its current position, ready for the next character to be printed.

The system still works, even if there are two PRINT statements on different program lines:

```
10 PRINT "HELLO",  
20 PRINT "THERE"
```

And there can be other Basic instructions between the two PRINT statements, so long as none of these alters the cursor's position. Here are a couple of examples:

```
10 FOR S=140  
20 PRINT "HELLO", "THERE"  
30 GOTO 40  
40 PRINT "SOMEONE TO MEET YOU", "I AM"
```

or:

```
10 PRINT "THE UNAVAILABLE", "  
20 LINE#  
30 PRINT "LITRARI"
```

Notice that if you use a semicolon

between text strings, any spaces you want leaving between words must be printed as part of the strings themselves — that's why there's a space before `UTTERED` in line 38. Try experimenting until you can be sure of printing exactly what you want on a single text line.

While we're on the subject of punctuation marks, there are two others worth mentioning: The question mark (?) can be used instead of the word `PRINT`, as in:

```
PRINT "HELLO"
```

And the colon (:) lets you put more than one Basic statement on a single line, as in:

```
PRINT "HELLO"; PRINT "BYE"
```

The colon tells Basic where one statement ends and the next begins, and you can use it with any Basic command, not just `PRINT`. This can reduce the number of program lines, and also helps to speed up program execution. Remember, though, that a program line cannot occupy more than three screen lines, so there's a limit to the number of statements you can squeeze in.

The colon and semicolon are fine when you're faced with relatively simple printing tasks, but there are occasions when you have to print text at very precise locations on screen.

The simplest way of doing this is to use the Basic command `POSITION`. Here's an example:

```
PRINT "CENTRALIZED"
```

The two numbers after `POSITION` tell the computer where to start printing. The first is the number of columns in from the left, while the second is the number of rows down from the top. In this example, the word `CENTRALIZED` will be printed 14 columns in and 11 rows down.

The screen mode we're using at the moment has 40 columns and 24 rows, so you can use any number from 0 to 39 for the horizontal co-ordinate, and any number from 0 to 23 for the vertical one. Remember that if you `PRINT` anything on the bottom line, Basic will normally scroll the screen upwards to make room for its `READY` message.

Using `POSITION` you can send the cursor to any point within the screen's boundaries, but it won't move until the next `PRINT` statement is executed. The command lets you insert spaces into a text line or table, without having

to re-print the whole lot whenever the screen changes. For example:

```
PRINT "POSITION 1,10 PRINT YOUR NUMBER ON  
THE POSITION 1,10 PRINT THE NUMBER  
AFTER 5 TO 100"  
PRINT "5"  
PRINT "10"  
PRINT "15"  
PRINT "20"
```

It's important to type this in and play with it, to see the differences between this screen format and the one produced by conventional `PRINT` statements. You'll see that the words `YOUR NUMBER` are printed only once, though the chosen number — in this case 5 — changes as many lines as you like. And there's no need for commas or semicolons, because the `POSITION` statements move the cursor to precisely where you want it, overriding Basic's natural tendencies.

Also notice that two spaces are printed after the new value of `N` — on line 40. This ensures that all digits of the old number are wiped out when the new number is printed. Leave out the spaces, and see what happens when you type random numbers with one, two or three digits.

It's worth taking time to master the `POSITION` command, as you'll need it for all types of games, especially the arcade variety.

Let's move on now to a more unusual use of `PRINT`: Producing graphics on screen. You may have noticed that if you hold down the Control key, pressing most other keys will produce a graphics symbol which is different from the letter, number or symbol printed on the keypad. These are known as control characters, and you can use them to produce pictures, tables, graphs or any other kind of two-dimensional drawing.

These various characters were shown in last month's issue, together with the keystrokes which produce them. Each key has its own unique number — known as its ASCII code — and these can be used in conjunction with a function called `CHR`, as an alternative way of selecting characters to print on screen. For example:

```
PRINT "HEART"
```

will give you the heart character, while:

```
PRINT "HEART"
```

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will produce a title bar. Try this:

```
% PRINT @@@(1);@@@(1);@@@(1);
@@@(1);@@@(1);
```

A few of the control characters act like commands. For example, if you tell the computer to PRINT CHR(10), it will clear the screen, while PRINT CHR(26) will produce a short beep from the speaker.

Table 1 shows the Command characters in more detail. Their symbols cannot normally be printed on screen, because any PRINT statement containing them will trigger the command function.

There is a way, however, of temporarily disabling a command symbol, by printing the Esc character - Ascii code 27 - immediately in front of it. For example:

```
% PRINT @@@(1);
```

will clear the screen, but:

```
% PRINT @@@(27);@@@(1);
```

will print the clear screen symbol - a small left arrow - without clearing the screen. The Esc character does not appear - it's interpreted simply as an instruction to disable the command symbol which immediately follows. The system works only once for each character, so if you want to print more than one command symbol, you must put the Esc code in front of each one, like this:

```
% PRINT @@@(27);@@@(27);@@@(1);@@@(1);
@@@(27);@@@(27);@@@(1);@@@(1);
```

If you want to type any command

symbols directly into a literal string, press the Esc key once before typing each character.

The symbols will appear on the program line, but when that string is printed during program execution the characters will carry out their command functions. For example, a left arrow in a literal string will clear the screen when that string is printed. Try this:

```
% PRINT "ESC [27m;CLEAR SCREEN"
CLEAR
```

The square brackets indicate that we are talking about key presses, not actual words, so you press Esc followed by the Control+Clear keys simultaneously, then the words SCREEN CLEARED. The result will look like this:

```
% PRINT "CLEAR [CLEAR"
```

If you want a command character's symbol - not its function - to be generated when your literal string is printed, press the Esc key three times before typing the character.

After the second press, the Esc character - a sort of double E - will appear, then the third press followed by Control+Command will give you the command symbol, now when you run your program, the symbol will be printed, just like an ordinary character.

This all sounds a bit complicated, so compare this example with the one above:

```
% PRINT "ESC ESC ESC [27m;CLEAR[ESC]
[ESC] CLEAR"
```

Using control characters you can

Ascii code	Symbol	Keystrokes to print symbol	Function
27	ESC	ESC	Disable command function (see text)
28	ESC CTRL+↑	ESC CTRL+↑	Move cursor up one row
29	ESC CTRL+↓	ESC CTRL+↓	Move cursor down one row
30	ESC CTRL+←	ESC CTRL+←	Move cursor left one column
31	ESC CTRL+→	ESC CTRL+→	Move cursor right one column
125	ESC CTRL+CLEAR	ESC CTRL+CLEAR	Clear screen
128	ESC BACK S	ESC BACK S	Erase character to left of cursor
129	ESC CTRL+TAB	ESC CTRL+TAB	Advance to next tab stop
133	ESC SHIFT+BACK S	ESC SHIFT+BACK S	Delete line containing cursor
156	ESC CTRL+↑	ESC CTRL+↑	Insert a line above the cursor line
167	ESC SHIFT+↑	ESC SHIFT+↑	Clear tab stop at cursor position
168	ESC CTRL+TAB	ESC CTRL+TAB	Set tab stop at cursor position
169	ESC SHIFT+TAB	ESC SHIFT+TAB	Generate a short beep
253	ESC CTRL+2	ESC CTRL+2	Delete character under cursor
254	ESC CTRL+BACK S	ESC CTRL+BACK S	Delete a blank space at cursor position
255	ESC CTRL+0	ESC CTRL+0	

NB: □ Denotes inverse character

Table 1: Command characters

build up pictures and tables on the screen. However, it's a tedious job, and involves a great deal of trial and error to get each character positioned exactly in its PRINT statement.

The listing below makes this a good deal easier. When you run it, you can use all the keyboard's functions to put characters on the screen and move them around until they are exactly where you want them.

When you're happy with the screen's appearance, press Control+Q and follow instructions as they appear. The end result will be a new BASIC program which, when it is run, will print the screenful of characters exactly as you designed it.

The only characters you can't use are the command symbols and the double quotes ("). Because these cannot be written directly into literal strings and the program can't type Esc characters for you. The symbols could, however, be inserted by hand when the rest of the screen has been encoded into PRINT statements. To insert a double-quote character, split

the literal string at the desired point, then insert CHR\$(34), bracketed by semicolons. For example:

```
10 PRINT "THIS IS A LETTER, CHR$(34)
20 PRINT "THIS IS CHR$(34)CHR$(34)
CHR$(34)CHR$(34)"
```

Before we leave the subject of command symbols, there's one other technique you may find useful. You can permanently disable all the command functions with a single statement: POKE 760,1. Now the symbols will all behave like normal Ascii characters.

This means that the control functions aren't available from the keyboard either — for example, the cursor movement keys won't work. You can restore the status quo by POKE 760,0, so it's easy to toggle the command functions on and off at different points in your program.

Next we're not going to look at simple character animation and cursor the direction of movement on screen.

```
1000 REM USE STRINGS TO PRINT. PRINT
1010 CONTROL TO CONTROL TO CONTROL
1020 PRINT PRINT STATEMENTS.
1030 REM ASCII CHARACTERS, CONTROL CHARACTERS
1040
1050 SCREEN
1060
1070 REM USE STRINGS TO PRINT. PRINT
1080 PRINT PRINT STATEMENTS.
1090 REM ASCII CHARACTERS, CONTROL CHARACTERS
1100
1110 REM USE STRINGS TO PRINT. PRINT
1120 PRINT PRINT STATEMENTS.
1130 REM ASCII CHARACTERS, CONTROL CHARACTERS
1140
1150 REM USE STRINGS TO PRINT. PRINT
1160 PRINT PRINT STATEMENTS.
1170 REM ASCII CHARACTERS, CONTROL CHARACTERS
1180
1190 REM USE STRINGS TO PRINT. PRINT
1200 PRINT PRINT STATEMENTS.
1210 REM ASCII CHARACTERS, CONTROL CHARACTERS
1220
1230 REM USE STRINGS TO PRINT. PRINT
1240 PRINT PRINT STATEMENTS.
1250 REM ASCII CHARACTERS, CONTROL CHARACTERS
1260
1270 REM USE STRINGS TO PRINT. PRINT
1280 PRINT PRINT STATEMENTS.
1290 REM ASCII CHARACTERS, CONTROL CHARACTERS
1300
1310 REM USE STRINGS TO PRINT. PRINT
1320 PRINT PRINT STATEMENTS.
1330 REM ASCII CHARACTERS, CONTROL CHARACTERS
1340
1350 REM USE STRINGS TO PRINT. PRINT
1360 PRINT PRINT STATEMENTS.
1370 REM ASCII CHARACTERS, CONTROL CHARACTERS
1380
1390 REM USE STRINGS TO PRINT. PRINT
1400 PRINT PRINT STATEMENTS.
1410 REM ASCII CHARACTERS, CONTROL CHARACTERS
1420
1430 REM USE STRINGS TO PRINT. PRINT
1440 PRINT PRINT STATEMENTS.
1450 REM ASCII CHARACTERS, CONTROL CHARACTERS
1460
1470 REM USE STRINGS TO PRINT. PRINT
1480 PRINT PRINT STATEMENTS.
1490 REM ASCII CHARACTERS, CONTROL CHARACTERS
1500
```

```
10 PRINT "THIS IS A LETTER, CHR$(34)
20 PRINT "THIS IS CHR$(34)CHR$(34)
CHR$(34)CHR$(34)"
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```

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E10 LETTER

DIY worked with a dicky disc drive

I fell in the middle of a massive debugging session when, suddenly, my costly 800 also drive emitted a bang and a clatter and packed up completely.

With fear and trepidation I removed the cover and discovered what had gone wrong. There is a metal band which translates the rotary motion of a capstan to the linear movement of the read carriage — this had broken.

All that was needed was a piece of stainless steel shim one thousandth of an inch thick, but the best that several Atari repair shops could offer was a replacement head and capstan unit costing at least £80.

Nothing ventured, nothing gained, so I decided to repair it myself. I was able to get enough shim to last me a lifetime from a local supplier.

I removed the old broken band and taped it into my Atari notebook. Then I measured it up and drew its exact shape on to the new shim using the sharp point of a pair of scissors to score the outline.

I cut the three living holes as squares using a modelling knife and used the scissors to cut round the outline of the band which I then put in the drive.

The drive appeared to work, but the head needed aligning with track 1.

I used an oscilloscope to monitor the signal from the head and, having removed the pop-out sensor, I moved the head carriage by hand to the point of maximum signal from track one in a square formatted disc.

I digitised the scores and checked the setting using a number of other discs including a few commercial ones.

Having gained some con-

firmance, while I had the drive opened I checked several other adjustments which may be made to ensure that I could get the maximum signal from the disc.

So far I have had no further problems with this drive. I can access all my discs, as the head is reasonably well aligned and I have learnt a lot about how a disc drive works. Furthermore, if it happens again I know what to do. — **M. R. Holland, Lower Penn, South Staffordshire.**

Sorry, tape only

A FEW weeks ago I bought Boulderdash Construction Kit on tape because the shop didn't have it on disc. I designed a level and when I tried to save it to disc it reported "Check your drive".

I has done this ever since. Can you tell me why this happens and how can I fix it? — **Jamie Beesley, Hookley, Essex.**

Although the program comes up with the option to save to disc or tape, it will only work with a tape deck. This is unfortunate but, sadly, a fact.

In Never Never Land

I HAVE an 80081 and have just finished entering it Scotland from the December 1987 edition of Atari User.

I typed it all out correctly, as there were no error messages, but when I ran it to my grief three hours

typing went down the drain. All that appeared was a black screen with two green stripes on it.

I tried 'Get it Right' but I could not understand what the letters and numbers meant.

Then I realised that I had run it before I saved it, although the article said if you run the game and there are any typing errors it may cause the computer to crash as the OS is used.

Could you tell me what the letters and numbers mean on 'Get it Right' and what it means by the computer crashing? Also are there any errors in the listing? — **Kees Ball, Koppelaar, N. Holland.**

When a computer program is typed in each individual line is assigned a unique set of numbers — or checksums. The 'Get it Right' program prints this.

By referencing these numbers against the list in the magazine you will instantly know whether you have entered the line correctly.

The fact that no errors were reported doesn't mean that you haven't made a mistake. For example, if you enter A=1 when you should have entered A=0 the program won't work, but no error will be reported.

Crashing the computer — or locking the system up — are just terms given to an acute-angled computer's ear hair to. If you tell it to do something that it doesn't like or isn't supposed to do, it will wander off into Never Never Land. And no matter what you do you can't get it back.

This is always a possibility when typing in data statements that form part of a machine code routine.

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Tape troubles

I BOUGHT an Atari 80081 and a 1070 recorder. All that I wanted OS but after a short time it damaged the tapes so I could not play them again. I took the recorder back to Discos who sent it away.

They then returned it saying their was nothing wrong with it and it could be the tapes. What can you advise me to do?

I also own a 1080 video drive which works well but I would like to still be able to play budget tapes. — **Barbara Giggles, Bideford, North Devon.**

We get a lot of letters about this sort of thing hap-

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◀ From Page 87

pering to 1010 tape decks. The 1010 is usually a reliable recorder if used and looked after correctly, but if cheap tapes are used problems often arise.

Your best solution is to get someone who knows what they're doing to check the head alignment and clean it and the pinwheel.

If the recorder still gives problems after this take it to a reliable service engineer in your area.

The pro approach

I HAVE just bought an Atari 800X and I would like to know how you would go about programming a professional game. Is there such a thing as a games designer, or will I have to go back to loops, pipes and graphics?

All I ever get is errors, errors and more errors. Do please can you help before I overheat with confusion and errors? — **Darren Clowles, Milton Keynes, Bucks.**

■ A program called the Arcade Machine was written and released in America by a company called Broderbund. The utility was written in 1982 so it may be difficult

ATARI USER Mailbag

WE welcome letters from readers — about your experiences using the Atari mouse, 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:

**Mailing Editor
Atari User
Europe House
Addington Park
Addington
Macclesfield SK10 4WP**

to obtain US Gold deals with a lot of Broderbund software and may be able to help you. The address is: Broderbund/US Gold, Units 2/3, Hollard Way, Hollard, Birmingham, B5 7AX, Tel: 021-358 3385.

Submarine sunk

A FOURTH ago I bought an Atari 800X and a copy of Atari User. I have had an Atari 800X before, so I am familiar with the keyboard, but sad to say not with programming.

I typed in Submarine Hunter and checked it carefully — especially the

data — but when I entered RUN it came up with error 8 which applies to the data in line 8020. *Could you help me out of this problem?*

Also do programs for the old 400 work on the 800X? — **J.G. Gibson, Penance, Dorset.**

■ There are no errors in the program as it is printed. Line 8020 contains a READ command that reads the SAS statements; you will need to check them all very carefully.

Not all programs written for the 400/800 machines work on the 800X. Some differences in the operating systems has caused a slight incompatibility. However, most programs published in Atari User work on all Atari 8 bit computers.

Finding the vertical bar

I HAVE had an Atari 800X for some months now and enjoyed typing in the programs that you have published.

I would be grateful if you could tell me how you type in the vertical bar character that appeared in line 370 of Gnat in the January 1988 issue of Atari User? — C.P. Allen, Peterborough.

■ This is one of those elusive control characters the Atari computer processes. To obtain it press Control+V.

If you look in the February issue of Atari User you will find a table showing all the characters and the keystrokes required to get them.

Programs appreciated

THE Picture Processor and the Post Printer in the January issue of Atari User were two very good programs. They will come in very useful to a lot of 1020 owners who, like myself, do not find a lot of programs for stamping pictures to their printer.

The ease with which you can convert different file formats is very useful. It shows other 1020 users just what can be done with a little bit of patience and practice. — **J.R. Rice, Ipswich, Suffolk.**

Groans, no grunts

I OWN an Atari 800X, and was wondering when someone is going to release a 'wrestling' game for my computer. I think a company like US Gold could write one, as it has produced them for other computers.
I feel that the Atari has

Sharp for stereo, but not programs

RECENTLY I acquired an Atari 400. My knowledge of Basic programming is minimal, but enough to write programs of sufficient length to warrant the need for some peripheral storage device.

Several people have advised me that my Sharp stereo cassette player should be compatible, but I do not have the required multiport five pin Dats connector.

Could you let me know whether my stereo cassette is compatible and if so

where could I purchase the connector or where I can find the necessary information needed to build such a device?

In future, when my knowledge of Basic and financial circumstances have improved, I plan to purchase a disc drive. However, with such time I hope you will be able to help me find an economical solution to my storage problem. — **Teeter W Roberts, Mexal Bridge, Gwynedd.**

■ Unfortunately your tape

recorder will not plug directly into an Atari. An interface used to be available for converting the signal from a normal tape deck to one that your POKKY sound chip could understand.

However, we don't know if the company is still trading and so your only option is to buy an Atari deck. The 8020 is available for around £38 from various advertisers in this issue.

You could also take a look at the classified section of the magazine.

great capabilities for games, but a smashing game seems to be just what I fear I get - it would be a great success. Do you know if any are going to be made in the future? - **John Alan Robinson, Whitley Bay.**

■ We don't know if the Quest is going to release such a game for the Atari. An American software company did bring out a game called *Box 'n' Whisks*, but it was only ever released in America.

Gauntlet blues

RECENTLY I had a major disappointment while playing US Gold's *Gauntlet*. After nearly three hours I reached level 100 and I was horrified to see the same alien repeated over and over again after that.

At level 100 I remember finally overcame me and I was forced to turn the computer off. Was my copy of the game at fault, was it my computer, or is it a fault with the actual game?

Also, in *CGI Gold* planning to bring out International *Karate II* on the Atari? - **G.J. Higin, Dagenham, Essex.**

■ There is nothing wrong with your copy of the game. This is how it has been programmed. At the moment there appear to be no plans for International *Karate II*, but if it turns up a review will appear in *Atari User*.

WP on the 800XL

I HAVE just bought an Atari 800XC and would like to know if the Atari Writer Plus word processor is available on tape for it. Also, can Atari 5MB804 printers be connected to my computer without a Graphics 17 joystick? - **Charles Ferris, Goring Town, London, E16.**

■ The AtariWriter Plus program is a disc-based word

DIP in for those elusive £ signs

I WROTE that when I use Mini Office II with my Panasonic DX-F1684 printer it will print the elusive £ by simply keying a. Not so, one seems to have bothered to mention this in reviews of the handbook.

To find the manual address using print code strings to define it. There seems to be no reason why this should not work with other printers - have you any idea why it is



not recommended?

I would go on to say that, with Epson computers the Mini Office II seems superior to Atari Writer Plus, and the only complaint I can hear are that there seems to be no built-in underlining command or it consumes two of the 10 code strings

allowed, and double spaced print cannot be defined for just a document.

Does anyone know how to overcome these problems? - **J.E. Robinson, Millers, Cambrid.**

■ Whether the £ sign outputs a £ sign depends on the DIP switch settings inside the printer.

Most printers can be set to do this, but it's not always automatic.

processor. However, the old AtariWriter cartridge will work with a tape disk.

The 5MB804 printer is a dot matrix model designed for the ST Personal computers or the IBM PC and compatibles - it won't work on an 800XL.

Happy impulse

IN December I went to Croy's to buy a Wellington for our nine year old son's Christmas present. You guessed - I returned with an Atari 800C computer pack.

I had a great sense of guilt at my impulse buying, and didn't have a clue about computers at all.

As time has gone by my guilt feelings have gradually receded because of help from friends and reading Atari User. Gradually I have learnt that computers are not boring, they're really quite interesting. They have opened a whole new world of interest for me - which is quite amazing to a mere beginner! - **Nancy Campbell, Kirkby Stephen, Cambrid.**

Get it Right!

I DROVE an Atari 800XC and am now to participating and very new to learn. I typed

in *Boulder* from the June 1987 issue of *Atari User* but, by so I may, it won't run.

Could it be the program uses machine code and do I need an assembler (compiler)? - **J. Chapman Peterlee, Co. Durham.**

■ The program is written entirely in Basic and works fine on an 800XL if you use it in correctly.

You will find that you have made some typing error. Check the program very carefully using Ctrl R Right.

Starwars on hold

IN THE April 1987 issue of *Atari User* you said that a conversion of the Starwars coin-op series is planned for the Atari 8 bit by the end of the year.

Where is it? I was eagerly awaiting the release of this game and as the end of the year rolled around I noticed it was being released for other computers but not the Atari.

I am rather disappointed that 8 bit users seem to have been left out. Maybe we will be seeing it later in the year. - **J. Elliott, West Sussex.**

■ Domestic Software unfortunately changed its mind about releasing an 8 bit version of this superb game. It has no plans to bring out a

version, so we will just have to hope that another software company takes up the challenge.

Replacement switch

My children have an 800XC with 1010 tape machine with a broken switch. Do you know where I can get a replacement? - **Mrs K.B. Skipp, Hornham, W. Sussex.**

■ Replacement keys for the 1010 tape deck can be obtained from Silca Shop. The price is £1.12 - which includes VAT and postage and packing - for two keys. Silca Shop can be contacted on 01-309 1111.

Racing round the Atari

I HAVE an Atari 800XC and I would like to know if any car games have been released for it. Could you please give me a list of them? - **David Broad, Chichester, Sussex.**

■ A lot of car games have been written for Atari 8 bit computers over the years. They include Pole Position, Pitstop, Pitstop II, Baja Buggies, Rally Speedway, Racing Destruction 3D and many more.

Enter the magical world of Kerovnia!

This fascinating adventure features the most sophisticated parser around. You can type complex sentences and interact with the many characters, including some very intelligent animals.

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