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Published by
Batstone Publications Ltd,
 Europa House, Lillingstone Park,
 Lillingstone, Warwickshire, CV35 9EF

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News trade distribution: European Sales and Distribution Limited, Unit 1, Europa Road, Levenshoe Lane, Hastings, East Sussex TN39 4BB. Tel: 0424 432402.

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ATARI USER



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ATARI 1989-1990

This is the last issue of Atari User in its present form. Our January issue will appear in the new year on Page 6 ATARI USER, a new bi-monthly publication providing outstanding coverage of your Atari from the resources of the now longest established Atari magazines. Any correspondence for ATARI USER, including advertising and articles for publication, should be addressed to: Page 6 Atari User, PO Box 64, Hatfield, BT16 1DP.

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The great Christmas fun show

THE theme for this year's Atari Christmas Show is entertainment... and that means games galore for 8 bit owners.

The show, set for London's Alexandra Palace on November 25-27, will play host to more than 50 exhibitors, all offering brand new products on bargains in hardware, software and add-ons.

Headed the all-year line-up will be Atari itself, with a range of products demonstrating that it's still solidly behind the 8 bit game despite massive ST sales.

That deal commitment is evident from the leading software houses too - Tynesoft will be on hand with its complete range of software, including some titles on show for the first time.

One of the biggest attractions for gamers will be the Big Game High Score Contest, which will be open to all visitors.

Featuring Double Dragon, the ST version of the arcade game of the year from Melbourne House, the free competition will offer a major prize from Virginia Mastertronic for the overall winner.

There'll be any number of activities on display for both the 8 bit machines, and visitors looking for that extra add-on, or just a fresh batch of discs to fill up, will be spoilt for choice, with bargain prices for peripherals being the order of the day.

And for anyone who gets tired of Christmas shopping, there'll be a games arcade - the ultimate try before you buy experience.

Big promotion for 8 bit machines

THE Atari UK drive for dominance in the home computer entertainment marketplace shifts up another gear this winter.

A nationwide, £2 million TV campaign will include a new commercial for the XE in order to promote the machine and its latest leisure software offerings.

Atari UK boss Bob Dinslow told Atari User: "We consider this to be money well spent - there's a

lot of life left in the XE yet.

"We're promoting the 8 bit machines as much as we can. In particular we have the Atari Games Centres scheme which is becoming most successful with its attractive presentation of machines and software.

"At the moment we have 67 Atari Games Centres established all over the UK, and we expect this number will reach 110 by the end of the year".

Atari interest in the PC Show

EVEN in the rarified MS-DOS-dominated atmosphere of the PC Show there were products to interest Atari 8 bit users who were prepared to travel the recesses of Easts Court.

Masterin Software (0625 878888) made its debut in the XBOX marketplace with Lancelot, a triple adventure based on the Arthurian legend which offers a chance to win a £5,000 replica of the Holy Grail. Price £14.95.

Grandstream (01-247 6434) launched its Atari XL ver-

sion of the Alternative Reality-The Dungeons, price £14.95.

There was the first public showing by Level 9 (0344 405587) of Ingrid's Back, the satirical animated sequel to Gnomes Rango, price £14.95.

A new joystick for the Atari from Konix (0495 358165) made its debut. The £14.95 ergonomic Navigator was described by Konix director Sandra Holloway as "the best joystick we've produced - it's also the best looking joystick ever".

Cheswin (0202 556026) provided competition with the Starfighter, described as "the ultimate in joystick technology", price £14.95, and the "straightforward no nonsense" Challenger, price £5.95. The Mach 1 has been reduced in price to £10.95.

Little Office (061-686-1180) was showing its new Copi Clip document holder which attaches to a monitor in the same way as the firm's best-selling Things! but has a rotating arm. Price £5.95.



Pat's busy at Xmas

ONE of this year's most impressive performers in the budget entertainment market, *Alternative 0800 844320*, will be launching a game based on *boon* and TV character *Postman Pat*.

"*Postman Pat* is being programmed by a top team and we expect a Christmas number one for this game", said a spokesman.

LINK WITH THE SHADES

Latest additions to the facilities available on MicroLink include multiple fax and the opportunity to play the popular cult game *Shades*.

Subscribers can now send fax messages to up to 50 addresses simultaneously.

And up to 128 users at one time can play Europa's most popular online adventure game *Shades* - which involves a massive and mysterious universe populated by magical characters in search of treasure and status.



Cheswin's Starfighter

Better Basic Boolean

LEN GOLDING continues his Basic series by looking at quasi-mathematical short cuts

FASTEN your seat belts, because this month we're going to take off into the world of Boolean algebra. No, don't panic — it's nothing like schoolwork and hasn't only a slight passing resemblance to conventional maths. It's a lot easier to master for one thing, and allows you to perform all sorts of computing tasks which would be very cumbersome in conventional Basic. So it's worth a bit of effort to understand the principles.

The first thing to get clear is that Boolean Algebra is not a mathematical system — or at least, not the one you're used to. Boolean expressions look rather odd at first glance, since they resemble statements of fact, rather than algebraic equations or conventional Basic instructions.

Here are a few examples:

```
(X=2) AND (Y=3) OR (X=1)
(X=2) AND (Y=3) AND (X=1)
(X=2) OR (Y=3) -
```

A Boolean expression must be contained in brackets, and has to be phrased in such a way that it can be either true or false. If it's true, then the whole expression will behave just like the number 1. If it's false, the expression will behave like 0. For example, look at this statement:

```
(X>Y)=0
```

If the expression in brackets is true — that is, if Y is genuinely greater than X — then X will take the value 1. If, on the other hand, Y is less than or equal to X, then X will become equal to 0. The equivalent in conventional Basic requires two statements:

```
IF Y>X THEN X=1
IF Y<=X THEN X=0
```

or, more compactly:

```
(Y>X)=X
```

Even in a simple example like this,

the Boolean version is considerably shorter, and fits into a single statement, so there's no need for a newline or a colon. Here's one that's a little more complex:

```
(X=Y) AND (X<Y)
```

In this case X will become equal to 1 if both the conditions in the brackets are true — that is, if X is equal to Y and X is less than Y. In all other circumstances, X will take the value 0. Conventional Basic would put it in one of two ways:

```
IF (X=Y) AND (X<Y) THEN X=1
```

or

```
(X=Y) AND (X<Y) THEN X=1
```

You can also use OR in just the same way:

```
(X=Y) OR (X<Y)
```

This is the same as saying:

```
(X=Y) OR (X<Y) THEN X=1.
```

So far there's no major advantage over the familiar IF...THEN statements, but let's take a look at what happens if we go one stage further:

```
(X=2) OR (X=1)
```

Only one of the expressions in brackets can be true, since X cannot have two different values at the same time. If X=2 the statement evaluates to: X=X+1-0. If X=1 the statement becomes: X=X+0-0. Any other value for X will give: X=X+0-0. In other words, X is incremented if X=2, decremented if X=1 or left unchanged if X is any other number. Just the sort of thing we need for a joystick routine.

Conventional Basic, using IF...THEN statements, would require at least two program lines to achieve the above result. And Boolean statements can

carry on introducing more and more expressions, without constantly nesting new lines, and without peeling up at the first `=` and `condition`.

Two or more sub-expressions can be linked together into a single larger expression, like this:

```
N=(X>0 OR X<0) AND Y=0
```

Each sub-expression is first evaluated independently in terms of true or false, then the whole statement is examined to determine its overall truth value. In this case, if both sub-expressions are true, then `N` will take the value 1, but if either is false, `N` becomes 0.

We saw an example of this nesting technique in last month's arcade game, which used a Boolean routine to move the gun right or left under joystick control. This was the line that did most of the work:

```
Y=(X<0) OR (X=0 AND Y=1) AND  
X<0:Y=Y+1:Y=10:Y=0  
Y=0:Y=0
```

It looks complicated but, if you work it out, you'll see it boils down to a simple `X1=X+Y*2` format, where `Y` represents the truth/false value of the entire Boolean expression in front of the minus sign, and `X` the value of everything after it.

In this example, `X1` is the new position, `X` is the old position and `Y` is the number returned by the joystick. The left and right screen boundaries are set at 0 and 10 respectively, to suit Graphics mode 1.

Because the joystick cannot be in two positions at once, only one of the two main expressions can be true at any given time — though they may both be false, of course.

This means that the entire statement can produce only three possible outcomes:

`X1=X+1-0` equivalent to: `X1=X+1`

or

`X1=X-1+0` equivalent to: `X1=X-1`

or

`X1=X+0-0` equivalent to: `X1=X`

Just like our simpler example earlier.

Here's an approximate translation of the whole Boolean statement into English:

"If the joystick is pointing right, or up-right or down-right, and if there is

room to move right, then add 1 to the current value of `X`. Conversely, if the stick is pointing left, or up-left, or down-left then, provided there is room to move left, subtract 1 from the current value of `X`. If the stick is pointing elsewhere, or if there is no room to move in the specified direction, then leave `X` unchanged. Whatever the outcome, set `X1` equal to the recalculated value of `X`."

It's a lot to squeeze into one line and Basic has to work hard to evaluate it — so it's a little slower than a properly-designed set of `IF...THEN` statements. But in many cases the reduction in program length and complexity is worth a small sacrifice in speed.

Here's another example of Boolean versatility:

```
N=(X=0) XOR Y=0
```

If `N` is 0 at the time of checking, it changes to 1, and vice-versa. I've used this technique in the Gadgets series to flash lights on and off, but it could work equally well in a game loop. For example, to toggle a character between two colours, or two shapes, as it moves.

If you want a Boolean statement to generate numbers other than 1 or 0, simple arithmetic will do the trick. For example:

```
N=(X=100) * (Y<100)
```

The value of `N` will be 0 if `X=100`, or 10 if `X` is any other number. Here's a novel application of this technique:

```
IF SOUND $,N,0,0:VOLUME  
1=70:GOTO 0
```

This plays middle `C` whenever the joystick is moved in any direction and falls silent when it is centralised. Can you see why? The last number in a `SOUND` statement controls volume: 0 is normal listening level and 0 is off.

If the joystick is centralised, it returns the number 10, so the Boolean expression evaluates to 0. The volume parameter therefore becomes 0*0 and the sound turns off. Any other stick position will return a number other than 10, so the volume parameter becomes 0*1, and you hear the tone.

Remember the musical joystick we described in February? It took 12 lines of Basic, with nine `IF...THEN` statements. Boolean algebra can do the

Turn to Page 87

← From Page 7

```

10 GOTO 100 IF X=0 OR Y=1
100 X=X+1:Y=Y+1:GOTO 110
110 IF X=10 OR Y=10 THEN GOTO 120
110 GOTO 100
120 PRINT "X,Y",X,Y
GOTO 100
    
```

Eight different pitch values are listed via Boolean expressions to the eight *write* stack positions. Only one of these can be true at any given time, so only one pitch value gets selected – the rest all become 0 and are ignored. Volume is controlled as in our previous example, turning on if the stack is moved, or off if it's centralised.

Boolean techniques can often come to the rescue when Basic is floundering. For example:

```

10 GOTO 100 IF X=0 OR Y=10 OR Z=1
    
```

This becomes GOTO 100 if X=0, or GOTO 300 if it's any other number, simulating the ELSE command, which

is missing from Atari Basic. Or how about this:

```

10 GOTO 100 IF X=0 OR Y=10 OR Z=1 OR W=1
    
```

This locks the program until the joystick trigger is pressed, then jumps to line 100.

Another interesting effect can be seen here:

```

10 IF X=0 OR Y=10 OR Z=1
    
```

If you work it all out, you'll see that N becomes 0 if the sub-expressions are both true or both false, but 1 if the two truth values are unequal. This simulates the Exclusive OR function, which Atari Basic doesn't possess.

● If you've stayed with us so far, you're now out of the Beginner league and ready to tackle Intermediate level programming. We'll make it start next month by looking at the multi-colour map modes – Graphics 3 to 7 – which, among other things, let you draw free-hand shapes on screen. See you then.



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Software

SCENE

STEPHEN FAWCETT reviews the new games software released for your 8 bit Atari

Hero to the rescue

Publisher: Joe Blade
Price: £1.99 (RSP)
Supplier: Players Software,
 Collins Park, Aldersham,
 Wrexham, Flintshire, NUT 40W
Tel: 07554-79427

In an ambitious raid, a group of dangerous terrorists led by the infamous Cruz Bloodfinger has kidnapped six of the world's leaders. A 30 billion dollars ransom is being asked for their safe release - and if it isn't paid they will all be killed.

The governments of the world have refused to pay and, as the deadline draws closer they have decided to take the only course of action left open to them - send in Joe Blade.

You play the part of Joe and armed only with a light, semi-automatic machine gun you must infiltrate Bloodfinger's massive base.

Red HQ is a central American country.

The base is heavily guarded by Bloodfinger's private army and underground henchmen. As you traverse the corridors, any contact with them will drain your strength until you eventually die.

Also located within the stronghold, in random locations, are six booby-trapped explosives, all of which must be armed. When this has been done you will have 20 minutes before they detonate to find all the hostages and reach the exit.

To arm the explosives you must rearrange the access codes into alphabetical order using left, right and fire on your joystick to swap the letters. If you don't do this correctly they will detonate and kill you.

You will also find

uniforms, ammunition and food scattered around the garbion.

When you eat the food you will find your strength rating will go back up to full. A uniform allows you to walk among the enemy troops without being drained of strength and the ammunition will replenish your limited arsenal.

The main action takes place within a scrolling window in the centre of the screen. At the bottom, reading from left to right, are indicators for men remaining, keys collected, bombs armed and the amount of ammunition you have left.

In addition is the time remaining indicator - which registers when all bombs are armed - and your overall score. At the top of the screen a bar indicates

how much strength you have left - when it reaches zero you are dead.

The graphics are brilliant and the sound effects - what there are of them - are excellent.

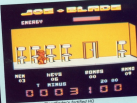
I particularly liked the ratchet of bullets you hear when you return to the main menu screen.

I first saw Joe Blade on the ST and thoroughly enjoyed playing it. Now it has been released for the 8 bit Atari and is just as playable - and an absolute bargain at £1.99. Go out and buy it straight away, you won't regret it.

Sound	7
Graphics	8
Playability	8
Value for money	10
Overall	8.5



The state of your health is always shown on-screen



You must infiltrate Bloodfinger's fortified HQ

Software

SCENE

Learn with Mickey



Product: Mickey in the Great Outdoors (West Games)
Price: \$9.95 (share)
Distributor: Atari World, 11 Fennel Street, Manchester, RM 3DL
Tel: 061-624-4941

obstacles he must try to overcome.

The game is split into two major activities: Mickey Goes Hiding and Mickey Goes Exploring and each is split into a further two, thus making four educational topics for the player to master.

The first of the two major activities is designed to develop and reinforce essential grammar and spelling skills. This is accomplished by helping Mickey finish incomplete sentences and by creating words out of scrambled letters.

The second is designed to develop and improve two basic mathematical skills – equation solving and number sequencing. You must guide Mickey through this second adventure by finishing incomplete equa-

tions and completing numerical sequences in their proper order.

To lead the game you must remove all cartridges from older machines and hold down the Option key on newer models while switching on. The program will load and you will be presented with the title screen.

Next comes the main menu from where you choose between the two major activities – pressing the Select key toggles between them. As one stage during an activity you can opt out and skip to the next section. Pressing Option moves you to a sub-menu where you can make your choice.

All Mickey's actions are controlled by a joystick plugged into port one, and the fire button will make his selection. Each action is always accompanied by an animated sequence so you know exactly what has happened throughout the games.

In Mickey Goes Hiding you select a word from a group of four in order to complete

a five word sentence. The missing word can be a noun, verb, adjective or adverb. By emphasising complete grammatical sentences, this helps develop effective writing and speaking skills.

The second activity involves rearranging a random pattern of four letters until they form a word. While doing this you become familiar with the correct placement of consonants and vowels, which will help build a firm foundation for good spelling skills.

In the first activity of Mickey Goes Exploring you have to select the correct numeral or arithmetic symbol to complete an equation. This activity exercises the ability to solve problems involving addition, subtraction, multiplication and division.

The second exercise – and to my mind the most difficult – challenges you to complete a logical pattern of numbers. By recognising the correct series of digits and then identifying these numbers which complete

Also ran...

Product: California Hot Action (L&L) (share)
Supplier: Alternative Software Ltd, 17/18, 3-4 Belfrage Industrial Estate, Poynton, West Yorkshire WF8 2JX
Tel: 0817 267037

YOU play the part of the local hotshot and street racer from the town of Chatterville and have been chosen as the local representative in the California

five. It's the biggest race in America – and the most dangerous.

Your little town has dished together and raised enough money to give you the choice of a Porsche, Ferrari or Corvette.

As with nearly all our racing games this one uses a first-in perspective for all the action. You control your car using a joystick plugged into port one. Pushing forward will accelerate your vehicle and pulling back

decelerates it. Left and right move the vehicle in that direction.

The main screen is split into three major sections. At the top is your time left to complete a course and your speed in mph. At the bottom is the scrolling road you drive along and sandwiched between them is the landscape.

The actual race is split into three stages, each of which must be completed within the time limit in order to



qualify for the next stage. Take care to avoid oncoming traffic, puddles

Software

SCENE



the pattern - for example, 2, 4, 6, 8, 10 - you build a firm foundation for moving on to more sophisticated mathematical principles.

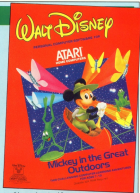
In the detailed manual there is a section detailing several non-computer based activities you can do with your child to further enhance their language and math skills. I found these particularly interesting and great fun when I tried them with my children.

Their favourite game is 'I'm Back' in which I drew

numbers and multiplication signs on their backs with my index finger. They had to work the answer out and write the answer on my back - great fun for the kids.

Mickey in the Great Outdoors is an excellent package. Well presented, superbly documented and, most importantly, very educational. Some of the questions asked are quite difficult, but you can get around them with a bit of parental contribution.

Because Mickey Mouse is



a well known character children of all ages will be able to relate to him and enjoy the activities all the more.

The only minor problem is a few American spellings.

Sound	4
Graphics	7
Learnability	8
Value for money	7
Overall	7

and trees by the roadside if you want to complete the run. Your car doesn't explode when you hit these obstacles, you just accelerate and lose valuable time.

On completion of the race your score is calculated by the amount of time left after each stage. Should you fail to complete stage one, your score will be zero.

Screen scrolling is quite smooth, but I have seen better. Sound effects are

unimaginative and rather dull. The car looks like a flattened dustbin on wheels - it accelerates like one, too.

All in all I found California Run an average car game. Not very spectacular and old hat. The only thing it has going for it is its low price.

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



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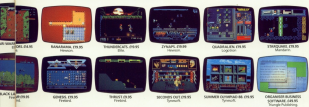
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THE party was a huge success. Bonfire Night has never been such fun. Then the morning after arrives and you have to tidy everything up into the bags with the rubbish and then down into your cellar to the rubbish bin. As you near the bottom you hear something going *tek...tek...tek*.

Somebody has activated your collection of experimental bombs and scattered them all around the cellar. Now you have to defuse them all without blowing yourself up. Luckily you know a little about explosives - they don't call you Gunpowder Charlie for nothing - so it shouldn't be too difficult.

Using your incredible jumping skills you bounce around the various levels of the cellar defusing the bombs. This may sound easy but the mischievous devil who planted the bombs has also laid a number of booby traps.

They come in the shape of huge rockets which fly randomly around the screen; if they hit you there will be a large bang. There is also a timer counting down the precious seconds you have left to complete a level.

You control Charlie through the four main screens and four puzzle screens using a joystick plugged into port one. You press fire to control the duration of Charlie's leap. You can also pause the game at any time by pressing the spacer.

Save and Run

You get 10 points every time you defuse a bomb and after completing a screen you are awarded a bonus depending upon the amount of time remaining.

After typing in the listing make sure you have a floppy before running it, and remember to check it with Get it Right! When all is well you can run the program.

You are presented with two options - disc or tape save. If you choose the former you must insert a blank formatted disc with Dos on it into drive one. Press C and an **AUTORUN**.SYS file will be written to it. Now all you have to do to load the game is turn the computer off and then on and the game will automatically load and run.

If you choose to create an autoboot cassette you must insert a blank, fully-reformatted tape into your recorder and press Play and Record. Press C and your autoboot version will be created. To load it you hold down Start and Option while switching your monitor. Reinsert the tape and press Play followed by Return to load and run Gunpowder Charlie automatically.

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 102 * 8 *****
 103 * 7 *****
 104 * 6 *****
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SOFTWARE *Solutions*

Your programming problems solved by ANDRÉ WILLEY

The past few weeks have been pretty quiet here at Atari User due to the postal strike, but I've still got a few letters in hand which present some quite interesting points.

The first question comes from abroad for a change, namely Madrid in Spain, where Klaus Ederogge Eckstein lives.

He's been working out complex graphical formulae using his trusty Atari, but has hit a slight snag when it comes to creating the neat user-oriented front end he is attempting to design:

“The most useful thing the programmer does is to draw the x-axis, y-axis and graph, then it allows you to zoom in to a part of the curve in order to take a closer look, or to pull back and see the whole graph.

The main loop of the program, the one which does all the calculation and plotting of the curves, is as follows:

```
000 000 .....
000 000 Formula: F(x,y) = 3x^2 + 2y^2
000 000 .....
000 000 100 to 1000 0.00100
000 1000 0000
000 1111
000 1111000000 10000
000 1000000000 10000
000 10 1000 1000 1000
000 10 1000 1000 1000
000 10 1000 1000 1000
000 10 1000 1000 1000
000 1000
000 1000
000 1111 1111 1111 1111
000 1000 1000 1000 1000
000 1000 1000 1000 1000
000 1000
000 000 .....
```

The variables U, G, BF, BF2 and F0

define the scale of the graph and the portion of the curve to plot. These would be set via a number of INPUT statements according to what view I currently require.

The routine would be entered via a GOSUB command after the computer was put into Graphics II and the colours set accordingly.

My big problem is that whenever I want to change the main equation I have to halt the program and edit the calculations on the 6502, Atari Basic or Turbo Basic which I also use, do not have an evaluate string command, such as those provided on the Commodore 720 and 850X machines.

This would allow the user to enter a string like $X=2.5*Y^2$ or $Y=2^X$ $2000+8*Y000+10$ and have the computer evaluate it like a program line.

I first tried to use the EVAL command, but it doesn't seem to work the way I wanted. Later I wrote each type of function into a special menu which would then ask the user to enter each parameter for the particular type of equation.

However this method is still limited to the choices given in the menu – and also destroys the whole flexibility of the program since whenever I want to analyse a completely new function I have to change all the equations in the whole program. This includes the test on line 030 which is output directly to the Graphics II screen.

Now it is possible to enter a new formula into a variable or variables which will allow this kind of flexibility!

■ As you have correctly surmised in your most comprehensive letter, there is no simple way of telling Atari Basic

to evaluate a string as though it were a mathematical formula – the closest being the EVAL function, which is only capable of converting a string full of numbers into an ordinary numeric variable.

This is obviously of no real use to you, but thankfully a little lateral thinking will provide a rather elegant solution, simply by resorting to that old faithful known as Return key mode – which has cropped up once or twice before on these pages. In fact what we will create is a self-modifying program.

I'll first explain how this system works, and then provide you with a practical example by way of a subroutine which could easily be modified for use in many other programs.

The first thing required is to store the formula you wish to evaluate in a string – EVALS in my example. This would normally be input at some other stage in your program, but I have defined a simple formula on line 10 to show how the system works.

Don't forget that whatever you type in this string must be a completely valid Basic statement – although you could try using the TRAP command to catch the Error 17 that would otherwise be created.

Once this formula is stored in string form you can start to manipulate it. Changing line 200 to contain EVALS is easy enough, but how do we enter the string as a command on line 040?

This is where Return key mode comes into play, and we must first put the micro back into a standard test screen for the technique to work – hence the Graphics II command. Next we move a couple of lines down the screen and print out the text of the modified line 040. This is done on program line 1000.

Note that the exact text you print is entirely up to you, just so long as it

preceded by a line number (in this case 640) and is a valid Basic program line. You could even modify more than one line at a time using this method — just so long as they will all fit on to the screen.

```

10 PRINT "123456789"
20 GOTO 1000
30 END
1000 FOR I=1 TO 100: PRINT I;
NEXT I
110 GOTO 10
120 PRINT I;
130 PRINT "123456789"
140 PRINT "123456789"
150 PRINT "123456789"
160 FOR I=1 TO 10: PRINT I;
NEXT I
170 PRINT "123456789"
180 PRINT "123456789"
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990 PRINT "123456789"

```

Return key made administration

Next we must tell Basic what we want it to do after our new line has been accepted — which in this case is to continue running the program, hence the CONT command printed immediately after our new line.

Finally, we move the cursor back up to the top of the screen and enter the Return key mode using POKE 640-13. When the program reaches a STOP command (line 1070), the micro tries to enter each line of text from the current screen, just as though you had typed them in from the keyboard, and hence modifies line 640 accordingly. It then comes across the CONT command and continues the program where it left off.

All that remains to be done now is to de-activate Return key mode with POKE 640-13 and the job is complete — the new line 640 will have become part of the program and will execute whenever that section is used.

This technique could be extended to any type of program which requires user modification, and the only limitation is the amount of information you can fit onto a text screen in one go. If you require any more you must split it into multiple blocks with a CONT at the end of each.

Fermenting formula

Staying with pure mathematics for a while, Stephen Peckington from Chislebury in Berkshire is also having problems with formulas:

I recently read in a newspaper of Fermat's Formula, which has

remains unsolved for some time. The formula is:

$$x^n + y^n = z^n$$

I sat about writing a program on my 8080, which would go through some of the possibilities and display them on the screen.

All was going well and the program worked fine for powers of 2, for which I used the SQR function to calculate square roots. However, to work with other values of n I needed to use the general format of a $\sqrt[n]{x}$, which does not seem very accurate.

Using SQR(2) gives me the correct answer 1.4142, but 2^{1/2} (0.5) returns a result of 0.999999997. Please can you tell me what is wrong? Is there an alternative method or is my poor computer going senile?

What you have come across is known as floating point inaccuracy, and it is particularly severe on the 8 bit Asii. What has happened is that the formula used to calculate the result of raising a number to a given power is not accurate enough to give a full 8 decimal places — hence the error.

Depending on the degree of accuracy you require you can get the micro to adjust the final result to round up or down to, say, six significant figures.

The best way of doing this is to first

multiply the number by 100,000, round it up or down to the nearest whole number, and then divide it by 100,000 again to get back to the original value — albeit less some of the fine detail in the final couple of decimal places.

For seven significant figures you would use a multiplier of 1,000,000 instead, and for five you would use 10,000. The general format in Atari Basic is:

```

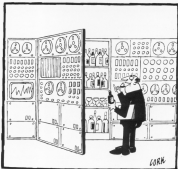
%R=1/100000
%R=NUMBER*%R/100000+INT(%R*%R)

```

The 0.5 added to the larger figure simply rounds any fractional part left over to the nearest whole number.

Although this will enable you to calculate the figures more easily, I think you might find the limitations of the single precision floating point system tend to give you some pretty vague results anyway — so perhaps good old Fermat's formula will remain unsolved for a little while yet.

Well that's about all the space I've got for this month. Now that the poster system is back into some sort of order, I trust you'll all be getting pen to paper, or overhead to paper in this day and age, and sending me lots more programming questions and problems.



EMERALD ISLE

by Francis Phythian





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WOOD

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ATARI USER

The Woods

ANDRÉ WILLEY
continues his look
at computer talk

RS-232 —

If you were all paying attention last month you should be now have a fairly good understanding of how a simple RS-232 interface functions, and what its needs and limitations are.

If you recall, data is sent from the computer to a given peripheral down

one wire and returned from the peripheral using a second line. There are a number of additional connections, but these are often left unused and can be discussed once the main principles are fully understood.

Unfortunately, no Atari 8 bit micro comes with an RS-232 interface, so if

you want to access devices such as modems and serial printers you must first buy a separate interface box. Normally it will be Atari's own \$50 module, and so we'll concentrate on this device.

The module contains its own re-implemented software which loads into the micro at boot time, in much the same way as Dos loads itself from disc. You'll find in practice that many third party interface units, such as IO's P-1 Connection, use exactly the same system — even down to the software control codes — so what follows should apply to most users.

If you are planning to use a modem, some form of communications software, such as that provided with Mini Office II, will be invaluable, but there may well be occasions on which you want to control the interface system directly. This is handled from Basic using IO commands, but there are a few things you should understand before starting on your first RS-232 program.

Distinct modes

Firstly, RS-232 is a bi-directional data transfer system. This means that bytes of data must be able to pass in either direction and, more importantly, at any time. You might, for example, have to deal with received information at the same time as transmitting your own message.

At 1200 baud this could mean up to 120 characters a second in either direction, so the software required to handle this is quite complex. More to the point, it must be monitoring the received-data line constantly so that no information is lost. This means that the micro will be completely tied up handling the RS-232 system and have no time for other types of information transfer such as to a disc drive or printer.

To get around this problem there are two distinct modes of operation for the interface — block mode and concurrent mode. The latter is used when full two way communication is required, but if you only need to send data you may select block mode, which frees enough processor time to allow any other I/O functions to take place.

In concurrent mode any information which is sent or received is dealt with

Command	Parameters
OPEN #chan,aux1,aux-2,"Rn" (Initialise IOCB for use)	chan: IOCB channel number (1-7) aux1: 4 for concurrent input, 8 for block output, 9 for concurrent output, 13 for concurrent input/output (P-1 Connection uses 12 for I/O) aux2: unused (usually zero)
CLOSE #chan (Close current IOCB)	chan: IOCB channel number (1-7)
GET #chan,avar (Input single byte)	chan: IOCB channel number (1-7), avar: numeric variable for returned byte
INPUT #chan,avar (Input multiple bytes)	chan: IOCB channel number (1-7), avar: string variable for returned text
PUT #chan,avar (Output single byte)	chan: IOCB channel number (1-7), avar: value or variable to send (0-255)
PRINT #chan;text (Output multiple bytes)	chan: IOCB channel number (1-7), text: string or variables to send
STATUS #chan,avar (Get current status of RS-232 link)	chan: IOCB channel number (1-7) avar: IOCB dummy variable, PERR(240) gives error status, PERR(241) gives handshake status when in block mode, PERR(242)+PERR(243)*256 gives number of bytes unread in the concurrent input buffer, PERR(244) returns number of bytes in con- current output buffer (See also Figure 1)
IO 32,#chan,B,"Rn" (Force output of short block)	chan: IOCB channel number (1-7) (Block mode only)
IO 34,#chan,aux1,B,"Rn" (Set control lines)	chan: IOCB channel number (1-7), aux1: Sets values for DTR, RTS and XMT (See also Figure 1)
IO 35,#chan,aux1,aux-2,"Rn" (Set speed/stop bits/etc.)	chan: IOCB channel number (1-7), aux1: Sets baud rate & number of stop bits, aux2: Tells computer whether to monitor the CRX, CTS and DSR lines (See also Figure 1)
IO 36,#chan,aux1,aux2,"Rn" (Set parity/line feed/etc.)	chan: IOCB channel number (1-7), aux1: Bits translation mode, input and output parity and line-feed mode, aux2: "Won't translate" character (See also Figure 1)
IO 40,#chan,0,0,"Rn" (Start concurrent I/O)	chan: IOCB channel number (1-7) NB: No other IO commands are allowed once concurrent mode is activated.

Figure 1. RS-232 commands available from Basic

a serial in 8 bits

In real-time — as soon as you send a byte of data from your program it will be immediately transferred to the peripheral at the other end. Equally, any data coming from the peripheral will be instantly available to your program.

However, the use of concurrent mode prevents any other use of the serial I/O system — so no cassette, disc or printer operations are possible while concurrent mode is activated. Since they do not use the serial bus, internal operations such as access to the keyboard and screen are not affected.

Select your channel

Although block mode is more useful if you need to access other peripherals at the same time, two major limitations are imposed. Firstly there is no facility for the computer to receive RS-232 data from the interface — it is strictly an output-only system.

Secondly, all data sent by the computer is first stored in a temporary 32 byte buffer. This means that your data will not normally be transmitted until the block is full, and then all 32 bytes will be sent as a single block — in very much the same manner as the buffering system used for other output devices such as a cassette, printer or disc.

So much for theory, now let's see how the system works in practice. Once you've connected all your cables — and that's not always as simple as it sounds — you are ready to power up the computer and allow the interface software to load into memory.

This is automatic for a tape system, but disc users must specify that they wish the load to take place by use of the special `AUTORUN.SYS` file provided on their Dos disc. If you are in doubt, listen for a long high pitched beep sound during the final stages of the boot process. This is the special I/O driver loading and initializing.

You can use the I/O driver in much the same way as you would any other I/O driver. All of the usual commands are available, including `OPEN`, `CLOSE`, `INPUT`, `PRINT` and so on. Also a wide range of I/O commands are used to adjust various aspects of the data transfer. Although most I/O com-



"Are you sure you're sending the right control codes down the RS-232?"

Meaning of error bits returned by PEEK(M)

Bit	Decimal value	Meaning
7	128	Input data framing error (no stop bit found)
6	64	Input overrun error (computer missed some bits)
5	32	Input data parity error (if parity selected)
4	16	Input buffer overflow error (too much data)
3	8	Illegal interface option requested by user
2	4	External device not ready (if monitoring is on)
1	2	Error on block data output (Atari I/O bus error)
0	1	Error in command to interface module

Meaning of bits returned by PEEK(747) in block reads only

Bit	Decimal value	Meaning
7	128	DSR means DSR shows ready (true)
6	64	DSR previous DSR status (see for bit 7)
5	32	CTS means CTS shows ready (true)
4	16	CTS previous CTS status (see for bit 5)
3	8	CRX means CRX shows read (true)
2	4	CRX previous CRX status (see for bit 3)
1	2	Not used
0	1	Current state of received data line (1 or 0)

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masks may be used without first opening a channel. It is conventional to allocate your channel number with the OPEN command before proceeding.

Four modes are available when opening a channel, block output, concurrent (real-time) output, concurrent input and concurrent input/output. These are specified using the first parameter of the OPEN command:

OPEN H,L,B,W:

In this case the number B is used to specify block mode output. More information is given in Figure 1.

The PRINT and PUT commands work in exactly the same way as you would expect, and they may be used with channels opened for block or concurrent data transfer. On the other hand, INPUT and GET may only be used when concurrent mode is activated, but otherwise function as normal.

When you CLOSE a channel any remaining output bytes will be sent and the channel will be freed for other use, although any remaining concurrent input data will be lost.

Go to the menu of RS-232, you may wish to send data faster than the link is capable of transferring it - especially at lower baud rates. For this reason text is buffered in both directions, and if the output buffer becomes full CIO will wait until there is space before letting you send any more text.

XIO functions

The input buffer is much more important since you can't always stop the remote terminal from sending data to you, so the STATUS command is used to check the number of unread characters waiting in the input buffer.

After issuing such a STATUS command you may PRINT location Z17 and Z18 to give you the number of bytes currently waiting to be read. A good program should then GET or INPUT those characters until the buffer is empty. If the buffer gets too full some information may be lost, so you should check its status frequently.

When in block mode, STATUS can also be used to find the condition of the transmit end of the link via the Data Set Ready, Clear To Send and Carrier Detect lines. A number of other functions are available, each controlled by its own XIO command. These are listed in greater detail in Figures 1 through 4.

XIO 3D is only required when you are working in block mode, and it will force the software to send the current

buffer contents, even if that buffer is not yet full.

XIO 24 allows you to indicate your readiness to communicate with the remote device by setting the condition of the Data Terminal Ready, Ready to Send and Data Out lines.

XIO 26 is used to set the baud rate

(or speed) of communication, the number of stop bits and the number of bits sent per word (usually set to eight). This command is also used to determine what sort of control line monitoring should be undertaken

Turn to Page 28 ►

Add one number from each table to select the current control line status:

0	Don't change DTR
128	Set DTR to Not Ready (false)
192	Set DTR to Ready (true)
0	Don't change RTS
32	Set RTS to Not Ready (false)
48	Set RTS to Ready (true)
0	Don't alter the data output line
1	Set output line to 0 (false)
2	Set output line to 1 (true)

Figure 4: XIO 24: Set condition of output control lines

Add the following numbers, one from each table, to give a value for AuxC:

Value	Meaning
0	300 baud
1	45.5 baud (RTTY: 60 words per minute)
2	50 baud (RTTY: 60 words per minute)
3	56.25 baud (RTTY: 70 words per minute)
4	75 baud (RTTY: 100 words per minute)
5	110 baud
6	134.5 baud (used on some older IBM systems)
7	150 baud
8	300 baud
9	600 baud
10	1200 baud
11	1800 baud
12	2400 baud
13	4800 baud
14	9600 baud
15	9600 baud (19,200 baud with P-R Connector)
0	8 bits per word
16	7 bits per word
32	6 bits per word
48	5 bits per word
0	Ask 1 stop bit
128	Ask 2 stop bits

Use the following values for AuxC to select which lines to monitor:

Value	Monitor lines	Value	Monitor lines
0	None	4	DSR
1	CRX	5	DSR CRX
2	CTS CRX	6	DSR CTS CRX
3	CTS CRX	7	DSR CTS CRX

Figure 5: XIO 26 Details

D&D adventure released earlier this year which I haven't told you about before is *The Eternal Dagger* fromSSI - Strategic Simulations Inc. This is another fantasy game based very much on its close relative, *Wizard's Crown*. As is usual with this type of tale, an evil Necromancer has laid waste an island.

His conquest was made easier by a dragon which had stolen a holy relic from its normal resting place. You must first recover the relic from the dragon because without it you cannot hope to defeat the Necromancer and his evil army of undead.

Before you can even get down to playing the game, you must create four - yes, four - playing discs with the aid of the program. These are all needed during the whole game. That takes some time, so be patient. Then it's advisable to have at least a quick read through the detailed 38 page manual that comes with the two disc game.

Having carried out these preliminaries, you are ready to start. The game is played using the keyboard - mostly single key commands - and the good news is that plenty of on-screen prompts are provided. The bad news is that the frequent disc swapping and accessing time required takes a good deal of the fun out of the gameplay.

You commence with your adventurous band of eight characters just outside a town. Each of your characters has a number of attributes (intelligence, strength, dexterity and so on), skills, abilities, weapons, armour and sundry other items. You may tailor one or all of your characters to suit so just the sort of band you feel would fare the best in the coming adventure.

The main screen is a two dimensional map across which the characters trek. They can move in any direction, rest, search and make camp. On encountering other creatures they may elect to talk, run or fight them.

Combat can be quick - in which case the computer takes care most of the work and simply updates you on the progress of the battle - or tactical - in which case you take over all the decision making. Each round of tactical combat can take some time as many commands and movements are at your disposal.

The sound and graphics are nothing to get excited about, but are adequate for the purpose. What this game does have to offer is stacks of detailed and accessible data on every character and plenty of commands and options for you to play around with.

For instance, the combat commands

One that got away

by
Rouloc



allow you to ready an item, sneak, throw a weapon, turn an undead, cast any one of a vast number of spells - up to your acquired magical ability, naturally - load a bow or crossbow, defend, stand on guard, launch an aimed weapon, defensive or killing attack.

Magic spells include unlock, freeze, invisibility, paralyze, fear and protection at the easier end of the spectrum with fireball, lightning ball, magic blast, paralyze and life steal at the tougher end of the spell range. Prayers can be invoked to heal and help the band in a number of ways.

There are towns where you can visit the market place to buy and sell, the temple to pray and restore your characters' karma, inn or caucous, reststop and rest, docks to catch a ship, money changers to swap your less valuable coins for gold, the enchanters' shop to buy magic items and the alchemist's to create magic potions.

There are also dungeons to be explored, and here you can search, cast *Poofie* or *Night Vision* - so you

can all see in the dark of course - open and close doors and generally try to find what you can. Be very cautious here as these underground labyrinths are deadly. Numerous traps and monsters wait for you around every corner.

The Eternal Dagger has plenty in it - a vast land to explore, loads of characters, masses of stats and information and battles by the hundred. However, it is very similar to other games of this nature and you could be forgiven for thinking that when you've been saved, you've seen them all.

One of the drawbacks with a large game such as this is the constant disc swapping which is a real pain and slows down the action almost to the point of annoyance.

However, the SSI games have a large following and for those who enjoy this type of fantasy cam strategy game, *Eternal Dagger* is not likely to disappoint.

Until next month, keep your knapsack full and your sword arm strong.

Turn to Page 87

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HINTS AND TIPS

This month's hints and tips concentrate on Infocom's *Flundered Hearts*. This is not one of the most difficult adventures ever released, but nevertheless it still has its fair share of teasers.

It certainly has its place in adventuring history as one of the few adventures to safely feature a female as the lead character.

● **Can't put out the fire in the hold?**

Tear a piece off your dress, soak it in water and then throw it over the gate.

● **Want to leave the ship?**

Enter the cask and cut the line. Wait for the current to pull you to the island.

● **Laford giving you a hard time over the wine?**

When he's not looking, squeeze the leucosium into the green goblet. Say "No" when Laford asks if the green goblet is his.

Drink the wine. When you hear a clunk — the butter falling unconscious — get the spice and throw it in Laford's face.

● **Want to send a signal to the ship?**

Signal from the windage using the mirror after throwing the spice at Laford.

● **Can't find the secret passage?**

Get the hat, take the book from the bookcase, then press Sinistra — or island — on the globe.



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GET PAGE 6 NOW - YOU OWE IT TO YOUR ATARI!

I TOTALLY agree with the letter from Stephen Post in the September 1988 issue of Atari User - in particular his reference to several conversations he had with different computer owners. So I have decided to give you my own list of other computer owners and list them in order of splendor - I being the worst and I being the best onwards.

1. The BBC owner: Totally incredible. Has a high death rate in classroom arguments. He thinks the BBC is the best micro in the world despite its poor graphics, minuscule memory and high price. Classic quote: "The BBC really is a good bargain!"

2. The MSX owner: Insuperable. You would think he could understand the lack of software problem, but all he ever talks about is Konami games. It's a pity rom games play so slowly - especially Nemesis - and they are very expensive. Classic quote: "Konami, Konami, Konami" in a furious state.

3. The Commodore owner: Agghhh. He thinks his micro is the best in the world because it has all the latest games coming out for it. But why does it take so long to

THE COMPLETE USER GUIDE

load - even on disc? *Fighter Pilot* takes ten minutes and 37 seconds. Some owners even think Commodore is a British company. Classic quote: "I'm just loading a game, it's be ready in three weeks time".

4. The Spectrum owner: Barely sufferable. Like the Commodore owner he thinks his micro is the best because of the games for it. But he is at a loss for words when presented an colour disk, poor sound and the OS. Classic quote: "The sound is very realistic, it reminds me of a fly".

5. The Amstrad owner: Not too bad - at least in my experience, my brother owns one and he's all right. Owners tend to understand the lack of software because of their problems in Amstrad's early days. Classic quote: "Oh dear!"

My letter may seem unfair to some computer owners but it does reflect the concisest opinions of the

majority. I would think most Atari owners have, over the years, met people like this - I know I have! - Christopher Smith, Welwyn, Kent.

● Quite a letter Chris, but you missed one computer owner out - the ST owner. Classic quote: "Over rated"

Hollywood or bust

ON Monday September 12 I sat myself down in front of the television without the slightest intention of switching my computer on. The cult science-fiction movie *Blade Runner* was on and I wasn't going to miss it.

There I was enjoying the action when I caught sight of a nice Atari logo. At first I thought I was mistaken, but no, it was definitely there. Around this time the ST wasn't on the scene and the major Atari computer was the 8 bit.

This shows just how popular, and how well advertised, the 8 bit is in America. It's a shame Atari UK doesn't take heed of this and look after the best 8 bit like its American counterpart - Martin Wilkinson, Caterick, Yorks.

● This just goes to show what a star of the silver-screen your Atari 8 bit is.

Driven to piracy

I HAVE been an Atari owner for four years now and I use my machine mainly for entertainment. During this

period of time I have spent more than £300 on good quality share software. I am very proud of my all-original collection and I strongly speak against any form of computer software piracy.

What brings me to the point of my letter. During these four years of owning an Atari, the software supply has always been limited when compared to that available for many other machines. You could say I have, at times, needed some of these micro owners.

This isn't because the Atari can't match the quality of these micros - in fact it totally surpasses them in hardware design.

It's the fault of the software houses. They simply don't bother to convert popular programs to run on the 8 bit Atari.

About a month ago I came across two absolutely fabulous pieces of games software for my Atari and they have had me glued to my television set ever since - *Ellen* and *The Last Ninja*.

The catch? Well, both games are pirated and, as far as I know, haven't been released in the UK. I would like to know why they haven't been released? I'm not surprised some people are turned from buying originals. It is a shame that quality software of this nature is denied us. What makes it worse is that there are many more games where these two come from.

So, can Atari User tell me who is producing such wonderful games and why software houses haven't released them? Name and address supplied.

● Finally, we don't know who is producing these games. A few years ago there was a rumour that *Ellen* had been written, but Firebird had quashed its release. As to *The Last Ninja* we have heard nothing.

It is a possibility that independent programmers - those outside a software house - have produced the games at home.

HEAVEN'S ABOVE!

I READ with interest the review of the Atari Florentium in the August 1988 issue of Atari User. I have had the program for some time now, having bought it because of my interest in astronomy. I have discovered that it not only shows sights in the heavens, but depending on the city, it also shows local landmarks.

For example, in London it is the tower of Big Ben - but not the rest of the building. Other cities I have discovered this interesting feature in are: Toronto (CN Tower), New York (Empire State Building), San Francisco (Golden Gate Bridge).

Surprisingly though, Sydney's two famous landmarks aren't shown.

There could be others, but I haven't yet found them. I'm too busy viewing actual events (past, present and future. I own an 8 bit and ST - I don't have the heart to get rid of my 8 bit when I got the ST - and it's a shame the new machine can't match the older one in quality software of this nature. - E. S. Christie, London.

● It's nice to see you have still kept attached to your roots. But we have found that a lot of ST owners were formerly 8 bit enthusiasts who defected.

The VCS System

NEIL FAWCETT casts a critical eye over more rom cartridges for the 2600

I AM looking this month at *Dragster*, *Beamrider*, *Fire Fighter*, *Laser Blast*, *Skidriver* and *Grand Prix*. They come from a number of companies — Activision, Imagic and Sanjoco — and vary in quality.



Dragging along

Product: *Dragster*
Price: £9.95
Supplier: Activision, 23 Pond Street, Hampstead, London N6D 3PE, Tel: 01-439 1191

The *Dragster* cartridge tells you that you have just bought one of the most exciting video games ever designed. It also tells you that this is a very complicated game and takes a little time to learn.

In the very early days when *Dragster* first came out I would have agreed with the first comment — but not now. *Dragster*, as the title informs you, is about driving one of the world's fastest accelerating cars in a race against time.

As the clock counts down your stomach begins to churn with excitement and then it reaches zero and you are off down the track at around 100mph. You control your car with a joystick which operates the clutch,

gear stick and, as the Americans call it, the gas.

By combining several joystick movements you can change gears upward quickly and accelerate your car down the course — but remember, you can't go down through the gears.

Were this a new game I would criticise it heavily, but in view of it's years I'll pull my punches. The graphics are plain and the sound effects minimal. Gameplay is average, but I got fed up after I'd been racing only a short time.

Beam me up VCS

Product: *Beamrider*
Price: £9.95
Supplier: Activision, 23 Pond Street, Hampstead, London N6D 3PE, Tel: 01-439 1191

SET in the upper reaches of Earth space, a web of blue beams has spread everywhere. They are being used by alien life forms to invade our planet.

Will you just watch, or will you take the required action and fight? If you choose to fight it's time to roll up your sleeves, mount the beams and ride. If you opt to watch you're in for a terrible death at alien hands.



Animated graphics create a 3D perspective that virtually pulls you into the screen. Pulsating sound effects intensify the action as a dizzying array of objects zip from beam to beam.

The game features numerous different aliens to destroy. Each sector you enter is progressively harder and you must be on your guard at all times.

Beamrider involves fast action, is fun to play and tests your reaction time and nerve. If you have a good shoot-'em-up give it a try. It combines tomorrow's technology with game designer Dave Rolfe's fantastic imagination to forge a challenge you'll return to again and again.

Fiery challenge

Product: *Fire Fighter* (Imagic)
Price: £9.95
Importer: Atari World, 17 Pond Street, Hampstead, London N6D 3PE, Tel: 01-439 4941

MIDNIGHT. The city sleeps. Suddenly, a cry pierces the night: "Fire! A man's trapped up there!" A raging blaze crackles and climbs. A desperate man waves his arms and races from window to window, floor to floor. His situation looks hopeless.

Be strong. Double the flames with your hose. Line up your ladder and save him. Keep trying, you're his last chance — his only chance.

As the fire spreads even higher, he climbs a floor at a time to escape the blast. Only by reaching him with your ladder can he be saved. Put out the flames, turn your back to the fire engine, jump on and scramble up the ladder. These snatch him from his fiery peril to the safety of the ground below.

You direct your rescue operations

with the left joystick controller and when the game begins, your fire fighter appears on the fire engine. Move him to the front of the warehouse and turn the water on — you have a limited supply, so make it count.

Extend the ladder until it rests directly against the warehouse wall. Have the fire fighter jump back on to the engine by leaning the joystick to the right then move him up the ladder towards the man.

You've won the game when the ladder has been extended to the floor where the man is waiting and he joins you on the ladder.

Following this comes a jubilant rendition of "Fire he's a jolly good fellow" which signals a job well done.

Fire Fighter is a wonderfully addictive game which will keep you busy for some time. Adequate graphics and average sound effects complement the gameplay making this cartridge a winner.



Beat off the aliens

Product: Laser Blast
Price: £9.95

Supplier: Activision, 22 Pond Street, Hampstead, London N6B 2JN
Tel: 01-421 0520

All the intrepid commander of a fleet of intergalactic spacecraft, you're engaged in a vicious battle with a race of aliens — and they're no pushovers. Their radar systems track your every move and their force fields block your



every advance. Even when you destroy a wave of attackers, tougher, more skillful reinforcements replace them.

But keep on fighting: The more attackers you destroy the more points you earn, and eventually it will be your turn for reinforcements in the form of an extra life.

The screen is split into two main sections. At the top is your lead ship and reserve fleet. The remainder is taken up by the lunar surface on which the enemy bases you must destroy are located.

These ground attack forces are equipped with radar detection systems which help them aim their lasers at your ships. If you allow your ship to hover in one place too long, the enemy will quickly lose your ship in its sights, leading to disastrous results. By flying low to the ground you can keep your craft under the radar.

However, as the battle progresses each new regiment of enemy attackers has a stronger force field, which gradually forces your ship further away from the ground, making it an even easier target.

Don't give up when you take a direct hit. Even though your ship will quickly lose altitude you can still control its descent and crash into a base. This accomplishes two things — it destroys the attacker and it adds the value of the destroyed installation to your points total — which gets you even closer to receiving an extra ship.

The graphics, sound effects and playability of Laser Blast are average. If you have bought all the other 2600 cartridges and want another one for your collection buy it. But at the end of the day it's just another zap-the-alien shoot'em up.

Sunken treasure

Product: Skindiver
Price: £9.95

Supplier: Atari Home, 17 Pond Street, Hampstead, London N6B 2JN
Tel: 01-421 0521

FABULOUS wealth in the form of gold diamonds, rubies and emeralds await a brave diver. But beware, man-eating sharks, sea monsters and other dangers lurk below the surface protecting the sunken treasure. Many have tried to steal the booty from its watery grave, but all have failed never to be seen again. Now it's your turn, if you dare.

The game consists of two levels which must be completed. The first has you opening fish with your har-



poon gun. When you have filled them all you must enter the sunken galleon at the bottom of the screen — this will take you to level two.

Be very careful though, the walls of the galleon are sticky and if your diver touches them he will be stuck until you free him by pulling the joystick from left to right. If he hits the wall at high speed he will stay there until his oxygen runs out and he dies.

Inside this ship lurk three huge sea monsters which protect the treasure. You can't kill them if you shoot at them so you must dodge them by swimming away. You will notice some

Form to Page 58 in

4 From Page 37

narrow openings in the sides and walls of the ship which your ship can go through, but the sea monsters can't.

Watch your oxygen supply at all times. After retrieving a treasure chest or, if your oxygen supply is too low, you will have to return to level one.

The graphics and sound effects are reasonable as is the gameplay, but I recommend you try before you buy. It is one of those games that some people will love and others hate.

Life in the fast lane

Product: Grand Prix

Price: £9.99

Supplier: Activision, 23 Pond Street,

Camposid, London W8AD 2PN

Tel: 01-427 1107

BUCKLE UP, snap your chin strap, adjust your goggles and get ready to handle a high-powered formula racing machine. You'll need all the nerve,

anticipation and reflexes of a world champion race driver to master the circuit facing you.

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You'll hear the sound and fury of a true Grand Prix event. Your engine whines louder and higher as your car reaches maximum revs. Your wheels turn faster on the asphalt and your competitors zoom by. If you hit your brakes, your tyres squeal.

It's you against the clock, the road and the other drivers in a race to the finish line. This all sounds great fun, and it is. The graphics and sound effects aren't brilliant but at least your car looks like a car - unlike some games I could name.

You have the choice of four tracks - Watkins Glen, Brands Hatch, Le Mans and Monaco. The main difference between them is the number of bridges you have to negotiate.

A couple of slow practice runs through the courses will help you get the feel of the track. You'll also find that, just as in real racing, the faster your car is going, the easier it is to lose control. That's why pacing is so

important - try to think ahead and anticipate what's coming up next.

When you pass a car you'll almost never have to worry about it catching up with you from the rear. So keep your eyes on the road ahead - that's where the action will be.

Grand Prix is very playable and well priced at £9.99. If you like a challenge and fancy a spin give it a try.



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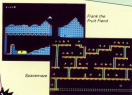
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OVER the years a number of companies have produced several strategy/adventure games on the Atari 8 bit micros. Perhaps the best known of these software houses isSSI - Strategic Simulations Incorporated.

However, it hasn't had a monopoly. Gensoft produced the best fantasy based graphics adventure due to appear on the scene - Alternate Reality I and II. Origin Systems also entered the market with the fabulous Ultima series and set a high standard of quality.

When Alternate Reality: The City appeared it was a huge leap forward for computer-based adventures and is to this day the most comprehensive computer-fantasy game I have played.

In it you are waking one day when a giant alien spaceship descends and hovers above your city. Soon it begins razing people and beaming them up to be transported across the universe to an alternative reality - another planet where they are treated as slaves.

This is where the adventure begins, with you being let loose to explore the city in an attempt to escape fortune - just like E.T. Unfortunately, your journey is hampered by the strange life forms which inhabit the labyrinth of roads and alleyways that make up the huge city complex.

Your encounters can range from

being bothered by a beggar to being zapped by a wizard. Luckily a number of options are open to you, and if you think about a situation carefully enough you can often get out of it easily.

The sound and graphics are of an outstandingly high quality. Each building you enter is accompanied by a multi-coloured visual image of a

shopkeeper or sage, depending on where you go. Usually the owner of the premises sings a short song to you.

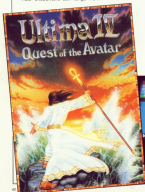
The sequel to this fantasy world, The Dungeon, offered me another multitude of delights. Similar in layout - that is, rooms, passageways and mazes - to the original adventure, you are now classed as an experienced citizen in the city. This is why you are allowed to venture deep into the underground catacombs in an attempt to learn more about this strange world.

Each adventure comes with a comprehensive booklet outlining everything you will need to know to survive. A partial map is included in the package and you should use it as a base for exploring and mapping the rest of the game. Also included is an artist's impression of major Dungeon sites.

As you can see from the screen shot, the graphics are brilliant and

MICRO

STEPHEN FAWCETT takes a look at what the 8 bit Atari has to offer adventurers and wargame players



Alternate Reality: The City

BATTLEFIELD

colorful. It's a shame that DataSoft hasn't brought out any more modules to add to this series. I would buy them straight away.

Soldiers at the ready

My next choice comes from the selection of wargames currently available fromSSI - Strategic Simulations. Computer Ambush is based on the exploits of a group of American GIs who are engaged in combat with a squad of German troops in a small village somewhere in France.

The first thing you read when you open the game manual is the following quote taken from The Art of War, written by Sun Tzu around 500 BC referring to the tactical deployment of troops in a battle.

Those those unable to understand the dangers inherent in employing troops are equally unable to understand the advantages of doing so.

This just about describes this tactical wargame in full. Computer Ambush captures the nerve-ringing excitement and fear of war.

I rate this as SSI's best simulation. A superb vocabulary of commands and instructions are available to you and the documentation is first class. If you like a good fight give this one a try, even though it carries a hefty price tag - £18.99 - it's well worth every penny.

Four times an adventure

In the beginning of 1990 a young programmer called Richard Garriot created a fantasy adventure game called Ultima. Based in the mystical world of Emeric, a band of brave adventurers must explore the magical lands in search of fame and fortune.

Released by Sierra On-Line it went on to sell around 100,000 copies worldwide. This was the start of a fantasy empire which was to set the standards for other companies to follow.

Following this marvellous adver-

ture came Ultima II, Ultima III: Exodus, and Ultima IV: Quest for the Avatar. All four went on to sell well around the world - especially in Japan where computer-based adventuring is very popular.

Methodical game play and superb computer interaction create a vivid world to romp around and an article about adventures just wouldn't be complete without mentioning the Ultima legends.

Futuristic combat

Several years ago Steve Jackson brought out a game called Car Wars. It was a huge success and promptly sparked a large amount of interest in the competing community.

In the latter part of the 1980s Origin Systems released Autabaal which is based on the original board-style Car Wars. Set in the 21st Century somewhere in the NE of America, death licks round every bend of the highways.

You build a battle car and cruise around the motorways blasting the scum which inhabit them. As with all the Ultima series, the packaging is

excellent. The box contains a miniature toolkit - a very nice touch.

Marvelous game play and a huge range of commands and actions available to you guarantee you will be addicted to this one for a long time.

Which one to buy?

The number of wargames/adventures for you to choose from is vast and you must consider what exactly you want from a game. If it is too complex you will soon lose interest and if too simple you'll tire of it quickly.

A game has to strike a happy balance. Most of the SSI strategic simulations require a lot of reading and knowledge of all the rules. On the other hand, Origin games are usually playable without even reading the manual - though you usually die very quickly.

The Alternate Reality series are very user-friendly and enjoyable. If you are just starting out adventuring or wargaming on a micro be very careful what you buy. An awful lot of people have been put off by a bad choice.

It really can be a fun experience re-creating famous battles of old on your 8 bit Atari, so give it a try.

Game	Company
Conflict in Vietnam	MicroProse
Decision in the Desert	MicroProse
Nato Commander	MicroProse
Crusade in Europe	MicroProse
Ultima	Origin
Ultima II	Origin
Ultima III	Origin
Ultima IV	Origin
Ogre	Origin
Autabaal	Origin
Alternate Reality: The City	Origin
Alternate Reality: The Dungeons	US Gold/DataSoft
Mech Brigade	US Gold/DataSoft
Broadbites	SSI
Computer Ambush	SSI
Wargames Construction Set	SSI
Fields of Fire	SSI
The Eternal Dagger	SSI
The Cosmos Balance	SSI
War in Russia	SSI
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