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Vol. 3 No. 3

July 1987

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THE LIVING DAYLIGHTS

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Produced by ALBERT R. BROCCOLI and MICHAEL G. WILSON Directed by JOHN GLEN Screenplay by RICHARD MARGULIN and MICHAEL G. WILSON

Executive Producers MICHAEL G. WILSON and MICHAEL G. WILSON

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Telephone Sales: 02 854-0851
Telex: 050001 MOHAWP G
Quoting Ref: TD MAG200
05048580

Printed in Britain
Published by
Dorland Publications Ltd,
Barnes House, 88 Chiswick Road,
Barnes Green, W4 3AL, Great Britain

ABC 00077 January-June 1986

Subscription rates for 12 issues (post free):

172 - UK
178 - Europe
190 - Overseas

"Atari User" welcomes program listings and articles for publication. Material should be typed on computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disk. Please enclose stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Dorland Publications Ltd will be on an exclusive basis.

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News media distribution: European Sales and Distribution Limited, Unit 1, Bampton Road, Loddon, Bedfordshire, MK43 0BN. Tel: 0454 611111. Fax: 0454 611112.

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AP01

Arcade prices lopped

ATARI is its games producer STV Software has slashed prices on its current and future arcade-style programs.

Recently released Joe & the Nuclear Caverns will now cost £7.99 on disc and £3.99 on cassette instead of £19.99 and £7.99.

The same new prices will apply to Garg - due out late July - and Pothole Panic featuring Joel which is due for release in the autumn.

"After talking to distributors handling our products we have decided to go for quantity rates instead of holding up prices", said Peter O'Connell, managing director of STV Software (021-378 1026).

"A look at the latest charts shows that budget games are among the biggest sellers today and we have to compete with them".

This month's new release, Garg, features an alien who washlands on earth and must locate and dig for the special crystals he needs to refuel his space ship.

Pothole Panic will be a follow-up to Joe & the Nuclear Caverns with Joe lost underground and having to dynamite his way to the surface.

Atari geared up for games market boon

THERE is going to be a dramatic upsurge in the games machine market this year, and Atari is determined to be ready for it.

It is no accident the company brought out the XE computer games system to complement its 130XE and redesigned 30 million-selling 2600VCS.

"We expect a major revival in the video console sector during the last quarter of 1987 if not before", a company spokesman told Atari User.

"We believe the average age of prospective buyers is getting younger because the big market for sub-£100 hardware was not catered for



Atari's XE games system

properly in 1985 or 1986.

"This means there are a lot of under 30s out there who aren't really ready for a proper Atari but are keen to get their hands on a games machine."

"And it doesn't hurt Atari's prospects that we already

have a games software range that is second to none".

Atari originally estimated it would sell 150,000 8 bit computers and games consoles in 1987. But this figure had to be hurriedly revised when advance orders for 76,000 units were placed in the first few weeks of the year.

The company began talking about selling at least 200,000 - and possibly a quarter of a million - games machines in 1987.

And, with orders for VCS machines currently standing at 80,000 units, even this figure looks like being exceeded before the beginning of next year.

Competition is hotting up

ATARI faces some stiff competition in what is expected to be a bonanza market for games machines this year, particularly at Christmas.

The company's new consoles will come up against opposition from Nintendo and Sega.

Mastertronic has just signed a deal for the UK distribution rights to the Sega Games Console and claims: "This is a very important

project for us - consoles are going to be very big sellers this Christmas".

But Atari would appear to have the edge over the competition.

The Nintendo Entertainment System - marketed in the UK and Europe by Mattel - costs £130 and the Sega Games Console £89 compared to the Atari XE at £89.99.

And while the Sega machine will be launched

with only 12 games cartridges and the Nintendo with about 37, Jack Tramiel has already promised the XE will be backed by more than 400 pieces of software.

In addition, Atari has the lead in persuading High Street stores to stock its new product.

Dixons, Currys and Woolworths are virtually certain to give shelf space to the XE, and W H Smith another probable outlet.

Micros in action

THE Driving Shopping Atari User Group took its message on to the streets in June to show people for micros is action.

An estimated 300,000 visitors to Telford Town Centre saw demonstrations of Atari hardware and software during the six-day exhibition.

It is the latest community venture by the group which has won praise for the way it provides computing advice and assistance to local voluntary organisations.

Serious attraction

MINI OFFICE II is well on its way to becoming the biggest selling serious software package ever produced for the Atari 8-bit range.

Launched at the Atari Computer Show in London in April, the product was an instant hit with the thousands of visitors who flocked to the November.

Several attendants stocked the package and they were impressed by its enthusiastic reception and

bumper sales.

The £79.95 disc - with its word processor, spreadsheet, database, graphics, comma and label printing modules - is continuing to dominate its sector of the market.

Mike Jones of leading distributor Software Express told Atari User: "Mini Office II is a fantastic product, which is why it is selling very well in all parts of the country - I even had an order for 10 from behind the other desk". And



John Hensley of Slice Distribution said: "There is nothing to compare with Mini Office II in the Atari 8 bit market. The nearest competition is American and twice the price".



Compart's 1300XE bundle

Shortages hit 8 bit sales

BRITAIN'S biggest Atari 8 bit dealer Computart says it is being driven out of the 1300XE market because the price of the machine has increased and supplies of vital peripherals have dried up.

Computart managing director Steve Burke told *Atari User*: "In our fall survey Atari has pushed the recommended retail price of the 1300XE from £89 to nearly £130 and at the same time stopped providing disc drives and printers."

"We are losing between £5,000 and £7,000 a week in lost sales because the 1050 disc drive and 1027 and 1029 printers are not available."

"These peripherals are essential to our 1300XE sales strategy and we are trying desperately to find alternative replacements at prices our customers can afford - but without much luck."

To combat the Atari price increase Computart is currently bundling the 1300XE with four arcade games, cartridges, Microblaster joystick with extra switches and Atari 1300XE handbook for £125 - £5 less than the official £89 for the machine alone.

"This adds up to a saving of over £30!", said Steve Burke. "We have about 50 Atari 1300XEs to bundle, and after they are sold we are not going to carry on selling the machine on its own for

£130 it just isn't worth our while".

Atari UK spokesman Peter Walker defended the company's decision to increase the price of the 1300XE. "When the present management took over it inherited practices it didn't like", he told *Atari User*.

"For instance, a word processing bundle including the 1300XE, 1050 printer and 1029 printer with software was being sold at cost."

"The management has discontinued this bee-shifting exercise and because of new confidence in the product is now charging what the market expects."

"Steve Burke has got it wrong about supplies of disc drives and printers. We have adequate stocks of 1050 drives and 1027 and 1029 printers in the UK to last until the end of this year, based on current demand."

"In September we are launching a replacement for the single 1050 disc drive - the XED551 double sided drive."

"And later on we will bring out the XMM801 dot matrix printer as a replacement for current printer models."

"In the last quarter of this year we'll also be selling a 'sports bag pack' of 1300XE and games software - but we are not doing any more bundling".

THE
GALLUP
CHART

TOP 20
ATARI SOFTWARE

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	•	GAUNTLET US Gold	9.95
2	•	ATTACK OF THE MUTANT CAMELS Mastertronic	1.99
3	•	MICRO RHYTHM Firebird	1.99
4	•	DEATH RACE Atari	2.99
5	▼	COLONY Building	1.99
6	•	FRENESS Mastertronic	1.99
7	•	GRIDRUNNER Mastertronic	1.99
8	▲	ARKANOID Imagitec	8.95
9	▲	GUN LAW Mastertronic	1.99
10	▼	BMX SIMULATOR Code Masters	1.99
11	▼	LEADERBOARD Access/US Gold	9.95
12	▼	FOUR GREAT GAMES Micro-Value	3.99
13	•	STRATOSPHERE Players	1.99
14	▼	SILENT SERVICE Microprose/US Gold	9.95
15	▲	WARHAWK Firebird	1.99
16	▼	LA SWAT Mastertronic	2.99
17	▼	NINJA Mastertronic	1.99
18	•	MINI OFFICE II Database	19.95
19	▼	GREEN BERET Imagitec	8.95
20	▼	CRYSTAL RAIDER Mastertronic	1.99

Compiled by Gallup/Microscope

Gauntlet enters the chart this month at number one, while MicroRhythm from Firebird and Mini Office II from Database offer non-games packages for your Atari - reviews of both are in this month's issue.

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Five liners

HELPOs from W.H. Ferguson

It is not long after an Atari user has obtained a disc drive that he discovers he is using a command called **Dos** almost as much as he uses the **PRINT** command. Consequently, I have written this program to allow **Dos** to be called at a single keystroke.

It uses a Vertical Blank Interrupt (VBI) to enable the help key to call the **Dos** menu from disc for Planetics. A second VBI allows you to alter the background colour when **Dos** is displayed, which is normally restricted to the default value colour of Graphics 0.

Pressing the reset button disables VBI's to the program also from this key, meaning that the VBI is reinitialised every time it is pressed.

The background colour is set to the value in location 7876 allowing you to alter the colour of the display more permanently than by just poking a different value into location 714. The background colour for the **Dos** menu

```

10 100 GOTO 10:END:GOTO 1000:GOTO 1000
20 1000: 1000: 1000: 1000: 1000: 1000
30 1000: 1000: 1000: 1000: 1000: 1000
40 1000: 1000: 1000: 1000: 1000: 1000
50 1000: 1000: 1000: 1000: 1000: 1000
60 1000: 1000: 1000: 1000: 1000: 1000
70 1000: 1000: 1000: 1000: 1000: 1000
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970 1000: 1000: 1000: 1000: 1000: 1000
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990 1000: 1000: 1000: 1000: 1000: 1000
1000 1000: 1000: 1000: 1000: 1000: 1000

```

is stored in location 1127.

This program is best used with the **1000E** and **Dos 2.5** since the Planetics installed with the **Dos** menu allows instant access when **Help** is pressed. If you do not have a **1000E** make sure that you have a **MEMUSK** setup when you boot the system otherwise you could lose your file by inadvertently pressing **Help**. Without **MEMUSK** the file will not be in memory on return to Basic.



LINE	CODE	LINE	CODE	LINE	CODE
10	1000	20	1000	30	1000
40	1000	50	1000	60	1000

ORGAN from L. Golding

TURN your Atari into an electronic organ in just five lines of Basic? Well, not quite. You only get one voice, there aren't any black notes and the sound comes in glorious mono-phony - but it will certainly repay five minutes typing time. Here is how it works.

Whenever you press a key, its internal code number (which is not the same as its Atari value) is stored at location 764. The program translates these keycodes into numbers which generate specific musical pitches when used in a sound statement.

Another address (783) indicates when the key is released, and this is used to turn the sound off by reducing the volume to 0. The 14 top row keys play a scale from B to A, which is a pretty useful range.

The tricky bit is converting keycodes into their respective pitch values, especially since the codes don't follow any logical sequence. It could be done by 14 IF...THEN statements, such as: **IF KEYCODE=31 THEN PITCH=80**, but this would slow everything down far too much.

It would allow you to play the Dead March convincingly but if you wanted something busy it would not be possible to get the speed.

Our solution is to store the pitch values in array(A) which can be indexed directly by keycodes, like this:

PITCH=A(KEYCODE)

Line 10 sets up the array, reads the pitch values from line 26, inserts them all in the right places and disables Break. Line 26 just makes the screen a bit prettier and line 40 handles the keycodes.

Address 764 contains a value of 0 if any key is being held down or a 0 if all keys are released. Address 764 contains the keycode of the last key pressed, as by using both of the values held in the locations together you can see which key is being used and for how long.

As it happens the top row keycodes are all between 1 and 30. These are used to point to individual elements in the array and so retrieve the correct pitch values.

The IF...THEN statement at the end of this line disables most of the remaining keys, and the zero elements in the array take care of any that slip through the net.

Line 50 generates the sound using a Basic expression to control volume. The value of **K=0** will set **K** if **K** is truly greater than zero, or 0 otherwise. And **K**, you will remember can be 0 or 0. So the expression **K*(K=0)** evaluates to 0 if the key is

pressed or 0 when it's released and this is precisely what we need to switch the volume on or off in the sound statement.

There are no chords or flats available so you will need to get sometimes in the right places for different tunes. Even so the instrument will cope with most nursery rhymes, a wide range of hymns and carols and a fair selection of popular songs.

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970 1000: 1000: 1000: 1000: 1000: 1000
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990 1000: 1000: 1000: 1000: 1000: 1000
1000 1000: 1000: 1000: 1000: 1000: 1000

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LINE	CODE	LINE	CODE	LINE	CODE
10	1000	20	1000	30	1000
40	1000	50	1000	60	1000

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WE described a gadget that responds to your voice in the March 1987 issue of *Atari User*. Now here's one that gives your Atari the power to talk back.

It's relatively inexpensive, straightforward to construct and easy to program. You can use it as a signalling device for visually handicapped people, an educational aid for students with reading difficulties or in

any situation where visual or text output is inappropriate.

It also has great novelty value. How about an adventure game with talking monsters or a spell-and-spell program for young children?

Now we'll describe how to build and test it and next month we'll cover its operation in detail, showing how you can easily add speech output to your own Basic programs.

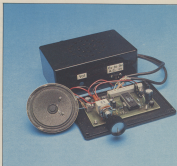


Figure 1 shows the circuit. Because the gadget draws over 100 milliamperes at full output it cannot be powered directly from the joystick ports, so some external supply is needed. R8, IC1, C1 and C2 are included so that you can use any AC source around 50 to 60, provided it can deliver at least 100 milliamperes.

The transformer supplied with disc drives, the interfaces and 410 program translators will work satisfactorily, and for this reason we've suggested using a power socket which will accept the plugs fitted as standard to those transformers.

Don't use the power pack which supplies your computer itself as there could be a danger of overload. In any case, the PSU supplied with XL/XE machines won't work with this gadget, since it delivers 5V DC. A 6V or 9V bell transformer such as Maplin FL375 works well, and has the advantage of being fully shielded to reduce the risk of mains shocks. You can, of course, buy a transformer for mounting permanently in the case - Maplin type YN140 is suitable. Current drain is around 30mA even when the unit is not speaking, so battery operation is not practical.

IC2 is the voice chip and it can produce 64 different speech sounds called allophones which, when

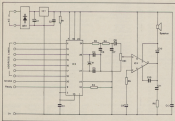


Figure 1: The circuit

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combined correctly, can generate any word in the English language. Each alphanumeric has its own code number from 0 to 83. To use the device set one of these numbers on the address lines in binary form, wait for pin 1 to go low then send a negative pulse to pin 20.

The chip does all the hard work and outputs a digital signal at pin 24. A low-pass filter (P3, P4, C8, C7) converts this into an audio signal which is then amplified by IC3 and appears as the chosen speech sound at the speaker.

The PCB foil pattern is shown in Figure 1 and, as always, an etched and drilled PCB is available from RSI Design who, incidentally, can also supply ready-built versions of this and all other gadgets in the series.

Figure 1B shows the component layout. Note the polarities for BR1, C1, C8, C9 and C12. BR1 has + marked while the electrolytic capacitors all carry a grey band with chevrons and 9 to indicate the negative side. All other capacitors and resistors can be fitted either way round.

Solder the leads of IC1 and bolt it into place along with its heat sink before soldering the leads. Make sure that IC2

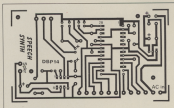


Figure 1: The PCB foil pattern

and IC3 are fitted the right way round (IC3 is upside down) and that all pins sit correctly into their intended sockets.

The screw terminal blocks make assembly and testing easy but you can omit them if you don't mind soldering leads directly to the PCB tracks. The

low-voltage AC supply is wired to the PCB connecting block through a switch controlled by WR3. You could use a cheaper unswitched pot if you are prepared to unplug the transformer whenever the unit is not in use.

When assembly is complete, inspect the board carefully to see that all



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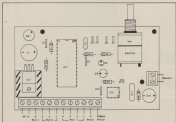


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Algebra Tutor (53)	£2.95
Algebra Tutor (54)	£2.95
Algebra Tutor (55)	£2.95
Algebra Tutor (56)	£2.95



Author	Year	Sample Size	Study Design	Findings
Smith et al.	2001	1,200	Longitudinal	Increased risk of depression in children of parents with mental illness.
Johnson et al.	2003	800	Cross-sectional	Higher rates of anxiety disorders in offspring of parents with anxiety.
Williams et al.	2005	1,500	Family Study	Genetic factors contribute to the risk of bipolar disorder.
Miller et al.	2007	900	Case-control	Increased risk of schizophrenia in children of parents with schizophrenia.
Thompson et al.	2009	1,100	Longitudinal	Early onset of substance use in children of parents with substance use disorders.
Anderson et al.	2011	1,300	Cohort Study	Increased risk of major depressive disorder in children of parents with depression.
Robinson et al.	2013	1,400	Family Study	Genetic factors contribute to the risk of bipolar disorder.
Lee et al.	2015	1,600	Case-control	Increased risk of schizophrenia in children of parents with schizophrenia.
White et al.	2017	1,700	Longitudinal	Early onset of substance use in children of parents with substance use disorders.
Black et al.	2019	1,800	Cohort Study	Increased risk of major depressive disorder in children of parents with depression.
Green et al.	2021	1,900	Family Study	Genetic factors contribute to the risk of bipolar disorder.
Clark et al.	2023	2,000	Case-control	Increased risk of schizophrenia in children of parents with schizophrenia.

polarized components are the right way round, all leads are correctly soldered and there are no stress blobs or threads of solder bridging adjacent tracks. Attach the two joystick leads and plug the unit into the computer, ensuring that lead 1 goes to port 1 and lead 2 to port 2.

Now plug in the AC supply, switch on and adjust the volume control to its half-way position. You should be able to hear a faint hiss from the speaker. If not, unplug everything and check the board again paying particular attention to components that could be

[illegible]

When all is well, type in Program 1 and run it. The box should say "DOW". Now you can experiment with other values for A (line 10) to explore the range of sounds it is possible to produce.

Many of these are not recognisable as speech sounds until they are strung together with appropriate delays and pauses between them. We'll explain how to make this possible next month.

Plugging the well into a case presents no major difficulties. And, for some of

[illegible]

1990	1991	1992
100	100	100
100	100	100
100	100	100

drill an accurate hole for WH's spindle. It will move about from vertically and from side to side as you want to adjust these tolerances.

The AJC speaker, if you're using one, needs a 3/8-in. square hole which can be cut with a fretsaw or carefully panned out from a 3/8-in. round hole using a Stanley knife. The speaker can be attached to the case by self-adhesive pads and a pattern of holes will serve in lieu of an expensive grille.

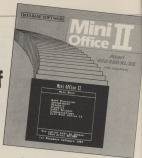
Next month we'll print out the allophone set and show you an easy way of generating meaningful speech.

Parts required for speech synthesizer

Resistors		Maplin Code		Maplin Code
R1	100k	Brown/black/yellow	M180K	
R2	4.7k	Yellow/black/red	M4K7	
R3/R4	33k	Orange/orange/brown	M33K	
R5	33 ohm	Orange/orange/black	M33R	
R6	1 ohm	Brown/black/black	M1R	
RRT	10k	Log pot (switched)	PWJST	
Single-ended Electrolytic Capacitors				
C1	47µ 50V 25%		FF16G	
C2	1 µmf 100V		FF01B	
C3	100 mfd 10V		FF10L	
C12	220 mfd 16V		FF12P	
Other capacitors				
CC2/C13	51 mfd disc ceramic		BB79D	
C4/C5	12pf Ceramic (insured "12pf")		WC45F	
C6/C7	22nf Ceramic (insured "22nf")		WC28K	
C10	22nf Ceramic (insured "n22f")		WB80Q	
C11	22 mfd polyester film		EX78B	
Semiconductors				
IC1	LM7805AC 5v regulator		GLPHJ	
IC2	SPC7058 Speech Processor chip		QY55E	
IC3	TDA2040 Power Amplifier		WC62T	
Miscellaneous				
	8 ohm miniature speaker		FWS0H	
	28 pin DIL socket		RL21X	
	8 pin DIL socket		BL57T	
	Twisted-pair test stick		FLS8N	
	12-way PC terminal block		SC24A	
	2-way PC terminal block		FT28N	
	2.5mm pinout socket		FT25T	
	Control knob for VCR		FE76L	
	Case log Maplin ADS box M850		YR80T	
	Pack of 1/8" x .054 spacers		PW33L	
	Pack of 1/2" x .054 pin buffers		BP12N	
	Pack of SGA nuts		BP18U	
	Pack of Adhesive pads		WB27Y	
All available from Maplin Electronics Supplies Ltd PO Box 1, Kewleigh, Exeter, EX6 8LR. Cost around £13.80 plus p.p.				
Special offers				
			1 PCB (Order code D8PM, price £2.00)	
			2 Janyko instruction books under pack AT711, price £2.00 each	
Available from PH Design, 137 Blenheim Avenue, Huddersfield, North Yorkshire.				

Take the tedium out of office chores

ALAN GOLDSBRO reviews
a package useful in both
home and office



THE Atari 8 bit computer, so long seen as only a games machine, takes on a new role with a feature-packed integrated system consisting of the six most essential pieces of business software in a single, user-friendly integrated package.

Mini Office II, from Database Software, has taken the 8 bit business market by storm. It puts together a range of programs you'd expect to be available only on more powerful computers.

The package comes on disc and is supplied complete with a well-written manual. There are six constituent parts to Mini Office II: A word processor, database, spreadsheet, graphics system, communications system and a label printer program.

Each of the six modules is self-contained and functions independently of the others, yet remains faithful to the design philosophy of an integrated suite of programs.

The solid base from which Mini Office II operates is the framework of an excellent menu-driven system which is standard throughout the six modules.

They ease the user into a friendly environment and get inside the many different and comprehensive features based on with suggestive quality and efficiency.

When you boot the disc you are presented with the main menu where you select the required module using the cursor keys and Return. The computer accesses the disc for the module to be loaded into ram and each one has its own series of menus from which options are chosen.

Looking at the word processor first, there are lots of further options avail-

able. Text can be created in either 20 or 40 column mode, edited and then previewed in 80 columns on another screen.

There are so many features in the word processor that there isn't room to describe them all here. Suffice to say that standard features such as Search and Replace, Cut and Paste, Justification, Insert and Overwrite modes are available.

Other features are Headers and Footers, automatic Page numbering, Merge text and Page conversion to name just a few. Some features that you would expect to find on more expensive word processors are missing but the features in the Mini Office II word processor are more than adequate for most situations.

Many of the commands are available from the built-in menus but the programmers have also included a mechanism for embedding the majority of commands directly into your text without even leaving the editing screen. In common with all the mod-

ules your work can be output to either an Epson compatible printer or directly to an Atari 1020 dot matrix printer. Print commands are available from the menu or can be embedded into text.

They can cope with different styles of print, line spacing, margins, header and footer offsets and number of copies. Text files which are too large to fit in ram can be chained together when printing out.

In the field of business software, databases are essential. The one in Mini Office II allows five types of field: Alpha, decimal, integer, date and formula. It's the final field which probably has the greatest power with not only the standard operators but many others often only found in spreadsheets.

Creating your database and entering records are done from separate screens and both are easy options. Records can be scrolled forward and backwards either singly or in groups of 10 or 100. Individual records can be marked manually or automatically, and marked records can be used to create a sub database from your main one which can be saved to disc as a separate file.

Searching for data follows the same easy style. Select on any field using standard operators such as equal to, not equal to, greater than or less than. Sorting data can be progressive all over your fields and indexed in ascending or descending order.

Mini Office II has some of the best facilities seen in an 8 bit database. Not only can you calculate formula fields on screen but any numerical field can be totalled across a whole data file.



Figure 1: Word processor menu

Merging with another Mini Office II database file presents no problems.

When it comes to printing records you'll find all the commands and structures that were so evident in the word processor. Records can be printed vertically or horizontally across the page and printer commands can be typed in to customize style and pitch.

As you'd expect from an integrated package, all the data can be used in either the word processor or label printer modules. I wish all databases could be this easy to use.

Mail merging is one of the additional features of Mini Office II. By using the word processor to define your letter you can send many people the same letter personalising each by merging their names and addresses from your database to the letter.

An essential feature of a successful office environment is the ability to forecast cash flow and financial viability. Spreadsheets are ideal for this and the one in the Mini Office II package is more than capable of looking after all that number crunching.

You enter data into cells by placing the cursor on top of the cell, typing in your value and pressing Return. Columns can be sized up to 16 characters wide and all the standard operators found in most spreadsheets are available. Calculations – the main part of any spreadsheet – can be carried out automatically or manually.

Cells may be replicated, justified and formatted to accept the usual types of commands and styles associated with large numbers and monetary applications.

Formulas can be replicated either absolutely or relatively or even a mixture of both. Some of the more powerful replicate functions of more powerful spreadsheets are lacking but the features available are adequate.

Loading and saving the Spreadsheet is standard, and partial save is also available. Cells can be jumped by using the effective 'Goto' command and files can be opened and frozen to assist input. The formulae constructions can be displayed on either screen or printer and the expected range of commands are available for the printer routine.

An impressive help screen is available for the numerous commands associated with managing the module and to wrap up this section there's the opportunity to save up to 30 rows or columns to disc in a form that enables the Graphics option of Mini Office II to read in as a data set.

The Graphics module provides a

powerful yet simple way to get your computer to display numeric data in an easy-to-understand form. It can be used in two ways: By entering data directly from the keyboard or by loading spreadsheet data that has been previously stored on disc.

Graphics includes Bar, Line and Pie Charts with further options of 2D or 3D displays. Up to three data sets can be used to create your graph and each data set can hold between two and 20 values.

Scaling of graphs can be manual or automatic with a grid option for visual clarity. Text can be added and overlaid



Figure 1: Graphics options

anywhere on the screen, bars, normally only seen in 16 bit programs, add a visual effect to an already impressive display of graphical data representation.

Pie charts can be selected from any of the three data sets with a range of fill options to ease identification of data. The bar graphs can display all three data sets at once either side by side or stacked. Negative values can be displayed visually and accurately.

Individual screens can be saved to disc and if required, printed out any time by Mini Office II or independently by a suitable graphics program. Alternatively, the stored screens can be used in other applications such as a slide show.

Again, print routines are for both Epson and 1024 printers plus you can print to a disc file for insertion into a word processor file between text. How's that for integration?

Going online with Mini Office II takes all the hard work out of linking your computer to another. The Mini Office II Communications system has been designed to work with both the Atari 850 Interface and suitable modem and the Miracle Technology's Dexton RS232 interface cable and modem.

Standard protocol options such as

MicroLink/Telecom Gold at 300/300 and 1200/1200 baud rate are part of the main menu. Communication protocols between other systems can be customised and links to bulletin boards worldwide can be set up with Mini Office II.

One powerful feature of this module is the macro keys which allow you to define a single key press to send quite long and complicated messages to the remote computer. Up to ten keys can be defined with 240 characters reserved for each macro.

The module is ideal for accessing systems such as MicroLink or bulletin boards, but unfortunately can't be used to access Proseal.

The final module is the Label printer – a handy feature in itself but when combined with information from your database makes a nice auto labeler.

Labels can easily be designed on screen using the editor, incorporating information from your database if required. You can produce address labels, stock labels or anything you set your database up to do. Alternatively, the module can work independently from the database to produce up to a 100 repeated labels.

The label printer can print text or data fields anywhere on the label. Their depth and width can be controlled and they can be printed more than one web wide. Label formats can be saved to disc so once you've created a design it can be accessed at any time. Test prints and printer controls are menu options that can enhance the quality of your labels.

There are a number of features not yet discussed that are available in every module. The screen colours can be changed right through the whole 256 variations, there's an invaluable overwatch option when saving files and a mini data site in memory allowing you to see databases and use associated functions such as delete and format.

Without doubt Database Software has broken all records in producing an excellent suite of programs useful both in the home or small office. The result is a superb blend of stand alone programs packaged together for the price of a single program. It may lack a few of the features of more expensive packages but at £79.95 it's the best value business program available for the 8-bit Atari market.

Product: Mini Office II
Price: £79.95
Supplier: Database Software, Juniper House, 41 Chesser Road, Hazel Grove, Stockport, SK7 8BY

NEWSLETTER

Take off with MicroLink

THE British Airline Pilots Association (BALPA) - has marked its golden jubilee by joining MicroLink.

Trade union for 5,000 commercial pilots, BALPA negotiated with 30 UK airlines and a similar number of foreign flag carriers who employ its members.

"We celebrate our 50th birthday this year, so it seemed an appropriate time for us to log on to the new information technology", said a spokeswoman. "Until now we've depended on the telephone - our office didn't even have telex."

"A very high proportion of our members are computer and communications enthusiasts when they're not flying. They'll be happy now. MicroLink has provided facilities for two-way electronic messaging between themselves and BALPA."

"Apart from improving contact with our members, we'll be able to use electronic mail and telex to communicate with airlines and other pilot associations throughout the world."

Legal advice goes online

MICROLINK has opened yet another world first by taking on board a unique electronic legal and financial service for firms and individuals.

Insight provides round-the-clock legal advice, help with tax and VAT problems, and insurance cover against the cost of litigation.

It serves a wide range of personal and business needs, resulting from minor problems, like disputes with neighbours up to full scale Customs &

Excise investigations.

A team of 50 solicitors and barristers provides a 24-hour legal advisory service. Any legal problem can be dealt with either by electronic mail or telephone. Full written advice on complicated matters is promised within 24 hours.

There is a legal fees insurance package covering solicitors' and barristers' fees, court costs, witness expenses, and opponents' costs in certain cases.

Personal financial advice

- on banking, pensions, insurance and tax - is offered during office hours and available in most cases through a local number. Written reports can be provided within 24 hours and consultants are available for personal visits.

Business membership of Insight also includes a wide range of special assistance for companies, covering such areas as staff insurance, tax, cash flow forecasting, pension scheme analysis and employee benefits.

Companies can also buy an Inland Revenue and VAT protection service, in the event of in-depth tax, PAYE or VAT investigation.

Company accountants can draw on advice from former Inland Revenue and Customs & Excise inspectors and get professional representation at hearings and tribunals. Up to £25,000 towards professional fees for preparing a case is included in the protection.

Two brand new Insight services will benefit from the immediacy of MicroLink communications. The first provides on-line mortgage quotations and information for property buyers.

The other supplies details about commercial finance, venture capital and other forms of commercial funding for established businesses and start-up schemes alike.

Insight, operated by Investment Marketing Services, is an electronic mail extension of the IIPC legal and tax advisory service which has been operating for seven years and has half a million UK subscribers.

Calling all subscribers

THE latest technological advance on MicroLink allows subscribers to enjoy all the common-criteria benefits of radiopaging for as little as 25p a day.

Thanks to a link-up with British Telecom's national radiopaging service, it means that MicroLink electronic mail and telex transmissions need no longer stay unattended on reaching their destination. And users won't be put to the trouble of accessing their mailbox when it's empty.

As soon as an Email or telex message arrives the radiopaging service is automatically alerted and the subscriber gets a "beeper" call.

The same procedure takes place in the opposite direction - messages in other people can't be ignored or overlooked if the addressee carries a radiopaging device.

There are also all the other advantages of radiopaging - like keeping users constantly in touch with their time.

CONSORTIUM FOR COMMS

A UK-wide association of community groups involved in computing has gone on-line with MicroLink.

Hampden Info Tech Consortium is a non-profit company formed by 45 adult education institutes, training schemes and local voluntary organisations in the London borough.

It supports member

organisations - including the City of London Polytechnic - that use computers for administration, maintaining databases, and courses in programming, business computing, design and desktop publishing.

Consortium executive director David Cheatham said "MicroLink will help our members of socially

useful applications of new technology - particularly the potential for development of a local online community database."

"We envisage starting with a directory of education, training and leisure information then gradually allowing local organisations, co-operatives and trades unions to set up closed user groups".

RHYTHM AT THE RIGHT PRICE

HOW do you fancy a digital drum kit for £1,999? I thought not!

Microhythm is a product of the ingenuity of S-B Systems — the boys responsible for Rhythym and Mini Master which are reviewed in the July issue of *Adam User*. It uses samples of actual drums which were recorded with their Rhythym system at a rate of 10MHz.

In fact, if you read that review you'll see that the Digidrum program supplied with the cartridge is virtually identical to Microhythm. In case you missed it — drums on you — here are a few more details.

The main screen uses a system of

IAN WAUGH
reviews
Microhythm's —
digital drums.

pull-down menus containing the following options: Patterns, Play, Edit, Tempo, Song and File. Patterns lets you select any one of 28 patterns. You can wipe them all at once or individually.

Edit displays a grid containing the selected pattern with the drums listed

down the left. You highlight a drum with Select, Shift moves the cursor on the grid to the right and a drum is toggled on and off the corner position with Start. The process could have been a bit easier, but it works fine.

The program loads with eight drum sounds, but only two can sound at the same time. The bass, snare, mid-tom and low-tom are mutually exclusive as are the cowbell, closed hi-hat, open hi-hat and hand claps. You can still write some good rhythms though.

Having programmed a few patterns you move on to the Song menu to string them together. A song can hold up to 32 steps and each consists of a pattern number and the number of times it is to repeat. If the pattern number is 0, the song will jump to the pattern number given in the repeat part of the step. If both are 0 the song will repeat.

File is where you save and load songs and patterns.

Some of the procedures you have to go through are a bit messy. For example, why can't you select another pattern from the edit screen and why can't you play a pattern from there too?

Still, what can you say for £1,999? I say go to your nearest software shop and buy one.

Producer: Microhythm
Price: £1.99
Supplier: Viridian Software, 24/26 New
Oxford Street, London, W1C 1PS
Tel: 01-279 0700



The title screen



The edit screen

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



Gauntlet - G.B. Beld. Enter a world of monsters, traps, mystery and combat in this ultimate role-playing fantasy game.



The Fall - Ocean. Voyage to 19th century Hong Kong for action and excitement with pirates, smuggling and mystery.



Metamorphosis - G.B. Beld. A fast, lightning reflexes to get past the pitfalls, obstacles and forbidden zones to reach the other side. And that's just the beginning!



Blastoff! - Imagine. The latest smash hit coin-op game. Are your reactions quick enough to handle 50 different play screens?



Star Raiders - Atari. Star Raiders are the only force strong enough to hold off the Zords. Your task is to command the Starfighter - can you up to it?

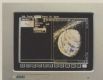


Flight Simulation II - Realistic. Test the controls of a Delta 100 or Learjet 250, with high speed 3D graphics for take-offs, landings and aerobatics. It's just like the real thing!

But it's not all fun and games.



Atari Word Plus - 5.0.1. Professional word processor featuring on screen spelling and integration of graphics including RT Mail for full control of remote letters etc.



Superbase Personal - Precision Software. All the features of CDB combined with full relational database power. Easy to set up, flexible, plus unique picture index facilities.



Atari Street Publisher - Microsoft. The complete desktop publishing package gives you page make-up combining text and graphics for sophisticated professional looking documents.



Atari Sales & Sales Distribution. Atari Professional is an integrated spreadsheet, database, and graphics package. IBM environment plus cross I/O-I compatibility.

Mixing business with pleasure is no problem with an Atari 520 ST. Not when you've got over 1,000 software titles to choose from.

You'll find all the latest games and a huge range of business titles from the top business software houses. And the range is growing all the time.

You won't be short of power, either. The Atari 520 ST is twice as powerful as most business micros.

So you'll be able to create spectacular colour graphics, even animate them to make your own films. If you're musically minded, you can compose and play a full symphony.

Or, for those who'd rather write programs than make, the 520 ST supports over thirty programming languages.

In fact, whatever you're looking for in a computer, you'll find it in the Atari 520 ST.

ATARI 520 ST
WORKS HARD. PLAYS HARD.



Your HINTS & TIPS

Vegas Jackpot

HINT: In the arrangement of each reel, so you know how many numbers are needed for the next money.

Reel 1	Reel 2	Reel 3	Reel 4
One 3	One	One	One
Two 1	Two 1	Two 1	Two 1
Three 1	Three 1	Three 1	Three 1
Four 1	Four 1	Four 1	Four 1
Five 1	Five 1	Five 1	Five 1
Six 1	Six 1	Six 1	Six 1
Seven 1	Seven 1	Seven 1	Seven 1
Eight 1	Eight 1	Eight 1	Eight 1
Nine 1	Nine 1	Nine 1	Nine 1
Ten 1	Ten 1	Ten 1	Ten 1
Jackpot 1	Jackpot 1	Jackpot 1	Jackpot 1
One 2	One 2	One 2	One 2
Two 2	Two 2	Two 2	Two 2
Three 2	Three 2	Three 2	Three 2
Four 2	Four 2	Four 2	Four 2
Five 2	Five 2	Five 2	Five 2
Six 2	Six 2	Six 2	Six 2
Seven 2	Seven 2	Seven 2	Seven 2
Eight 2	Eight 2	Eight 2	Eight 2
Nine 2	Nine 2	Nine 2	Nine 2
Ten 2	Ten 2	Ten 2	Ten 2
Jackpot 2	Jackpot 2	Jackpot 2	Jackpot 2

David Baxter and Jimmy Runeson.

Summer Games

On the 100 metres, wiggle your joystick round and round instead of left and right at up and down to get fantastic times. — Bill Jordan, Mike Morton, Colin.

Spellbound

SMASH the glowing bottle by dropping it, and use the broken glass to read the magical cards. The mirror displays your energy and the objects at the bottom of the screen.

The crystal ball can be used to locate people, except when you are in the 1st. — Paul Shaw, Graham, Leica.

Goonies

ON the first screen move one of the Goonies up to the attic where the printing press is and start printing some money. When the woman goes to get the money move the other Goonie down, go behind the water tank and jump diagonally at it. This knocks it over and makes the trap door open.

On the second screen, when the bat has gone past you, get on the lift and go to the bottom. Change to the other Goonie and move him to the end and when the bat has gone past again get on the lift and go down, but drop off on the ledge above the ladders.

Move the Goonie at the bottom onto the machine and this will raise the rack. Move the other Goonie on to the barrel and move him out a bit. Move the first Goonie to the left, dodge the gun, jump on to the ledge and get the key. This will open the door at the bottom.

On the third screen move one Goonie up to the man who is having the shower and move him

across the pipe, being careful of the steam.

Move the other Goonie to the pipe and then move the first Goonie down. A man with a gun will appear and you move the Goonie who is nearest the thinnest pipe up to the second set of ladders. The pipe will burst and you can get out.

On the fourth screen, don't move anywhere until the bats (that arrive when the bells ding) leave. Then trap the cannon balls by jumping on and off the little objects that come off the roof. Stand on the object at the bottom of the roof and the stars will disappear one at a time.

On the fifth screen collect all the skulls and push them to where there are already two skulls. To get on to the skulls from the roof, bounce on the object underneath the bones.

You need five skulls on the ladder to allow you to move to the next screen. — Marcus Edson, Waifar.

Leaderboard.

If you are having problems taking a lot of shots, getting past the green, press Escape and you will go past the hole with the amount of shots you have taken registered on the Leaderboard. This can be used to get to your favourite hole quickly. — Bill Jordan, Mike Morton, Colin.

Mercenary

WHILE you are holding it, the anti time bomb is used to repair damaged buildings. Just fire at the remains of a building and it will rebuild instantly.

The metal detector shows who owns a particular building by displaying a colour in the message window. Green is a paybar building, blue is a medical building, and red shows to the owner it. — Paul Shaw, Graham, Leica.

Montezuma's Revenge

At the start get to the top of the rope. Keep pressing (Shift), pull the joystick down and you will go down into a different room. — David Baxter and Jimmy Runeson.

Game

Ninja

AFTER collecting all six idols a secret trapdoor should appear in the top of the Grey Wall. Go through it and you should be in a blue room. Kill all the people and collect the last idol. After doing that go back to the beginning to complete the game. — Paul Shaw, Graham, Leica.

Superman

POSSIBLY the Break has repositioned Superman when he is in trouble. But be careful — this will also get you into more trouble if you're unlucky. — Bill Jordan, Mike Morton, Colin.

Star Raiders II

WHEN you are in the other star system and short on energy but don't have enough time to go to a space station to refuel, get energy by going to the sun. Once you are there you will have to get away quick or you will melt. If you do get away you will find your fuel tank is full. — Paul Shaw, Graham, Leica.

To help you destroy
the aliens



and defeat the
taxman,

we've massacred
the price.



For a limited period, the Atari 520 STM is even more of a knockout than usual.

We're offering it for just £449.95 (inc. VAT) complete with 5F384 disk drive, 5M125 mono monitor, a mouse worth £24.95 and 1st Word, worth £49.95.

So as well as saving you from the enemy, the 520 STM will also save you £184. You'd better hurry though, because it won't be long before our stocks are wiped out.

ATARI 520 STM
WORKS HARD - PLAYS HARD

After module mono monitor, the Atari 520 requires a standard colour TV.

Dump that screen . . .

Print your favourite pictures with this routine
from KEVIN MILFORD

THE Atari 1020 graphics printer has never been backed up by many programs to produce screen dumps, and with the exception of Mini Office II has never been fully compatible with recent word processors on the market.

At last, here's a utility that allows you to produce hard copies of your favourite pictures either on an Atari 1020 or Epson compatible printer.

To use this utility you must have QRTS pictures already stored in the format on disc. The kind of file produced by pressing the insert key while using StarWriter or any of the Micro Painter files that have been converted are good examples of pictures to use.

When you run the utility the screen will go blank for a few moments while the program initialises, then you will be asked to input your printer type - Atari or Epson.

After replying A or E you are asked for the picture filename which must always be entered in the form: `FILENAME.EXTENSION`. The program will then load the picture and display it in four shades of grey.

If the luminance distribution is not how you want it, press C and a single beep will sound. You can then swap the luminance value of the colour registers around by pressing the numeric keys 0 to 3 in order.

The program takes the key presses in pairs, so if you press 0 and 1 the values of those two registers will be exchanged. You may continue to swap the values until the luminance of the picture is to your liking.

Once you have the picture how you like it, press the arrow followed by F. Two beeps will be heard and the picture will then begin to be printed out after a slight pause. It takes a while to print out a full screen and it is printed four lines at a time with a pause as the next screen columns are calculated.

Essentially the program works by

converting seven columns of screen display into four rows of printer information. This is achieved by using the colour register information gained by the `LOCATE` command to index a series of arrays, which will give the pin density pattern required for the luminance obtained.

This is then fed into a further series of arrays ready for printing. The screen display contains four luminance - 0, 1, 2, 3 and 15.

The array `REG` contains the addresses of the colour registers 0 to 3 in sequence, so that `PEEKREG00` would return the value for register 0. Lines 185 to 225 obtain the colour register used at a screen location which is divided by three to give a luminance range of 0 to 3 (back to white).

Each pixel is four printer pins long and two pins high. Figure 1 shows the printer pin patterns used to represent the luminance range 0 to 3. As the printer head contains seven pins, seven screen columns are interpreted into four printer rows at the same time.

This gives rise to the high number of pattern arrays holding the decimal equivalent of the pin patterns. For example `PAT100,01` holds the first column of patterns 0.

Each pattern array has a direct relationship with one of the printer row arrays `PR0` to `PR4`. The contents of the pattern arrays are sent to the printer by lines 275 to 310 of the program.

The `CHR$` statements in the first `PRINT` statements set the printer up for high density `GRAPHICS` printing.

Line 315 prevents the program going into the abstract mode, and line 320 indicates the end of the loop. The `FOR...NEXT` loops of `K` and `Y` control the area of the screen being translated. Once the picture has been printed the program returns you back to Basic. If you want to print another picture, just type `RUN`.

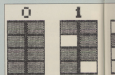


Figure 1: Atari 1020 printer pin patterns



PROGRAM BREAKDOWN

- 100-105 Set graphic mode and variables.
- 106-116 Find out your printer's price and the filenames of the picture.
- 116-215 Obtain the colour register and work out luminance values.
- 216-245 Sort picture arrays.
- 246-275 Send the array values to the printer.
- 276-285 Prevent the computer going into attract mode.
- 286 Indicate end of loop for the area of screen being interpreted.

```

100 REM *****
101 REM A GRAPHIC IS LOADED HERE *
102 REM *****
103 GRAPHICS SUBROUTINES:G0001,G0010,G0100
104 G0001:G0010,G0100:G0110,G0120,G0130
105 G0140,G0150,G0160,G0170,G0180,G0190
106 G0200,G0210,G0220,G0230,G0240,G0250
107 G0260,G0270,G0280,G0290,G0300,G0310
108 G0320,G0330,G0340,G0350,G0360,G0370
109 G0380,G0390,G0400,G0410,G0420,G0430
110 G0440,G0450,G0460,G0470,G0480,G0490
111 G0500,G0510,G0520,G0530,G0540,G0550
112 G0560,G0570,G0580,G0590,G0600,G0610
113 G0620,G0630,G0640,G0650,G0660,G0670
114 G0680,G0690,G0700,G0710,G0720,G0730
115 G0740,G0750,G0760,G0770,G0780,G0790
116 G0800,G0810,G0820,G0830,G0840,G0850
117 G0860,G0870,G0880,G0890,G0900,G0910
118 G0920,G0930,G0940,G0950,G0960,G0970
119 G0980,G0990,G1000,G1010,G1020,G1030
120 G1040,G1050,G1060,G1070,G1080,G1090
121 G1100,G1110,G1120,G1130,G1140,G1150
122 G1160,G1170,G1180,G1190,G1200,G1210
123 G1220,G1230,G1240,G1250,G1260,G1270
124 G1280,G1290,G1300,G1310,G1320,G1330
125 G1340,G1350,G1360,G1370,G1380,G1390
126 G1400,G1410,G1420,G1430,G1440,G1450
127 G1460,G1470,G1480,G1490,G1500,G1510
128 G1520,G1530,G1540,G1550,G1560,G1570
129 G1580,G1590,G1600,G1610,G1620,G1630
130 G1640,G1650,G1660,G1670,G1680,G1690
131 G1700,G1710,G1720,G1730,G1740,G1750
132 G1760,G1770,G1780,G1790,G1800,G1810
133 G1820,G1830,G1840,G1850,G1860,G1870
134 G1880,G1890,G1900,G1910,G1920,G1930
135 G1940,G1950,G1960,G1970,G1980,G1990
136 G2000,G2010,G2020,G2030,G2040,G2050
137 G2060,G2070,G2080,G2090,G2100,G2110
138 G2120,G2130,G2140,G2150,G2160,G2170
139 G2180,G2190,G2200,G2210,G2220,G2230
140 G2240,G2250,G2260,G2270,G2280,G2290
141 G2300,G2310,G2320,G2330,G2340,G2350
142 G2360,G2370,G2380,G2390,G2400,G2410
143 G2420,G2430,G2440,G2450,G2460,G2470
144 G2480,G2490,G2500,G2510,G2520,G2530
145 G2540,G2550,G2560,G2570,G2580,G2590
146 G2600,G2610,G2620,G2630,G2640,G2650
147 G2660,G2670,G2680,G2690,G2700,G2710
148 G2720,G2730,G2740,G2750,G2760,G2770
149 G2780,G2790,G2800,G2810,G2820,G2830
150 G2840,G2850,G2860,G2870,G2880,G2890
151 G2900,G2910,G2920,G2930,G2940,G2950
152 G2960,G2970,G2980,G2990,G3000,G3010
153 G3020,G3030,G3040,G3050,G3060,G3070
154 G3080,G3090,G3100,G3110,G3120,G3130
155 G3140,G3150,G3160,G3170,G3180,G3190
156 G3200,G3210,G3220,G3230,G3240,G3250
157 G3260,G3270,G3280,G3290,G3300,G3310
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161 G3500,G3510,G3520,G3530,G3540,G3550
162 G3560,G3570,G3580,G3590,G3600,G3610
163 G3620,G3630,G3640,G3650,G3660,G3670
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166 G3800,G3810,G3820,G3830,G3840,G3850
167 G3860,G3870,G3880,G3890,G3900,G3910
168 G3920,G3930,G3940,G3950,G3960,G3970
169 G3980,G3990,G4000,G4010,G4020,G4030
170 G4040,G4050,G4060,G4070,G4080,G4090
171 G4100,G4110,G4120,G4130,G4140,G4150
172 G4160,G4170,G4180,G4190,G4200,G4210
173 G4220,G4230,G4240,G4250,G4260,G4270
174 G4280,G4290,G4300,G4310,G4320,G4330
175 G4340,G4350,G4360,G4370,G4380,G4390
176 G4400,G4410,G4420,G4430,G4440,G4450
177 G4460,G4470,G4480,G4490,G4500,G4510
178 G4520,G4530,G4540,G4550,G4560,G4570
179 G4580,G4590,G4600,G4610,G4620,G4630
180 G4640,G4650,G4660,G4670,G4680,G4690
181 G4700,G4710,G4720,G4730,G4740,G4750
182 G4760,G4770,G4780,G4790,G4800,G4810
183 G4820,G4830,G4840,G4850,G4860,G4870
184 G4880,G4890,G4900,G4910,G4920,G4930
185 G4940,G4950,G4960,G4970,G4980,G4990
186 G5000,G5010,G5020,G5030,G5040,G5050
187 G5060,G5070,G5080,G5090,G5100,G5110
188 G5120,G5130,G5140,G5150,G5160,G5170
189 G5180,G5190,G5200,G5210,G5220,G5230
190 G5240,G5250,G5260,G5270,G5280,G5290
191 G5300,G5310,G5320,G5330,G5340,G5350
192 G5360,G5370,G5380,G5390,G5400,G5410
193 G5420,G5430,G5440,G5450,G5460,G5470
194 G5480,G5490,G5500,G5510,G5520,G5530
195 G5540,G5550,G5560,G5570,G5580,G5590
196 G5600,G5610,G5620,G5630,G5640,G5650
197 G5660,G5670,G5680,G5690,G5700,G5710
198 G5720,G5730,G5740,G5750,G5760,G5770
199 G5780,G5790,G5800,G5810,G5820,G5830
200 G5840,G5850,G5860,G5870,G5880,G5890
201 G5900,G5910,G5920,G5930,G5940,G5950
202 G5960,G5970,G5980,G5990,G6000,G6010
203 G6020,G6030,G6040,G6050,G6060,G6070
204 G6080,G6090,G6100,G6110,G6120,G6130
205 G6140,G6150,G6160,G6170,G6180,G6190
206 G6200,G6210,G6220,G6230,G6240,G6250
207 G6260,G6270,G6280,G6290,G6300,G6310
208 G6320,G6330,G6340,G6350,G6360,G6370
209 G6380,G6390,G6400,G6410,G6420,G6430
210 G6440,G6450,G6460,G6470,G6480,G6490
211 G6500,G6510,G6520,G6530,G6540,G6550
212 G6560,G6570,G6580,G6590,G6600,G6610
213 G6620,G6630,G6640,G6650,G6660,G6670
214 G6680,G6690,G6700,G6710,G6720,G6730
215 G6740,G6750,G6760,G6770,G6780,G6790
216 G6800,G6810,G6820,G6830,G6840,G6850
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218 G6920,G6930,G6940,G6950,G6960,G6970
219 G6980,G6990,G7000,G7010,G7020,G7030
220 G7040,G7050,G7060,G7070,G7080,G7090
221 G7100,G7110,G7120,G7130,G7140,G7150
222 G7160,G7170,G7180,G7190,G7200,G7210
223 G7220,G7230,G7240,G7250,G7260,G7270
224 G7280,G7290,G7300,G7310,G7320,G7330
225 G7340,G7350,G7360,G7370,G7380,G7390
226 G7400,G7410,G7420,G7430,G7440,G7450
227 G7460,G7470,G7480,G7490,G7500,G7510
228 G7520,G7530,G7540,G7550,G7560,G7570
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235 G7940,G7950,G7960,G7970,G7980,G7990
236 G8000,G8010,G8020,G8030,G8040,G8050
237 G8060,G8070,G8080,G8090,G8100,G8110
238 G8120,G8130,G8140,G8150,G8160,G8170
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242 G8360,G8370,G8380,G8390,G8400,G8410
243 G8420,G8430,G8440,G8450,G8460,G8470
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268 G9920,G9930,G9940,G9950,G9960,G9970
269 G9980,G9990,G1000,G1001,G1002,G1003
270 LOCATE 1,1:PRINT:GOTO 1000
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MANY Atari flight simulators and other games, such as *Mercenary*, use vector graphics to give the illusion of moving through three-dimensional space. This program — 3D Animation — demonstrates some of the techniques used to manipulate vector graphics.

Type in the basic listing and save it in the usual way. Unfortunately, because of the large size of ram used for storage and the use of Graphics 14, the program will only work on an 8000, or XL.

When you run it you must first plot a shape on the screen by moving the cursor within the framed section using a joystick. To prevent an out of range error when the shape is plotted the cursor will not move to the far right or left of the screen.

To plot a point simply press the fire button and after the first point has been plotted a line will be drawn back to the last one. Points can either be plotted as foreground or background. To change, press 1 for foreground or 2 for background before plotting the point.

After drawing a shape press Start to go to the plotting routine to set the number of plotting parameters. The first is the angle of rotation which is a value between 0.1 and 0.9. A value of 0.1 means that each shape plotted will rotate by a small amount and a value of 0.9 performs an almost complete rotation.

Then set the direction in which the object rotates (forward or backward, clockwise or anti-clockwise).

There are three types of axis rotation and all give the effect of the shape going into the distance and then coming closer again.

Rotation 1 spins the object on a flat plane and does not highlight the foreground/background division. Rotation 3 makes the shape rotate through a horizontal axis and rotation 2 through a vertical axis, while rotation 4 is a combination of rotations 2 and 3.

The computer calculates and draws the 13 individual shapes that make up the animation sequence. If the maximum 48 points are used this takes a few minutes and as each shape is drawn a machine code routine stores it in ram.

To animate the shape another machine code routine transfers the stored shape data from the ram storage area to the screen ram area. The high speed of machine code gives the smooth primitive effect.

To stop the animation press the spacebar and you can then either draw another shape or animate the same shape with different parameters.

You can demonstrate how fore-

Manipulating vector graphics

STEPHEN WILLIAMSON shows how to animate shapes

ground and background points affect a shape by entering the pyramid shown in Figure 1 — with all points as foreground — then animate it. Then return to the plotting section of the program and plot the shape again but with the points marked F as foreground and point B as background.

To do this correctly make sure that you are in Foreground mode (FGRE-GROU N2 is highlighted by inverse letters) to begin with and plot point F1. Move and plot F2, then F3 and back again to F4, (previously F1) in order to complete the outer triangle.

Press 2 to change to background and move to B5. Then change to foreground before plotting B6 the same position as F3. Return to background and plot B7 and finally change to foreground to move to F8.

You'll notice that the point in the centre of the triangle is a background point and lines F3, F1 and F2 are connected to it. Because all lines are connected to each other it is often necessary to draw over a line more than once, just as if you were drawing the same shape on a piece of paper without your pen leaving the surface of the paper.

When the pyramid with background point is animated, it will appear to be in three dimensions and not as the flat surface of the shape plotted without the background point. A maximum of 48 points can be plotted at any given time.

Let's look at how the program works. By convention, in a two-dimensional shape the horizontal position of a point is known as X and the vertical position as Y. So if you use the command PLOT 48,30, a point will be plotted at a point 48 pixels across the screen and 30 pixels from the top of the screen.

In order to represent a third dimension — depth — we can use the letter Z. Without the benefit of 3D Holograph TV we cannot actually plot 3D shapes using an Atari computer — but by clever use of perspective the mind can be fooled into thinking that a 3D object has appeared on the screen.

Figure 1 shows the three coordinate principle. Line X of the cube drawing represents the horizontal X axis and line Y is the vertical Y axis. Line Z is the depth or Z axis. Any point on line Z can be thought of as a measure of how far away the point is from the observer.

The program scales the Z axis so that a value of 0 gives the effect of an object on the surface of the screen. A negative Z value means that the object has left the screen and is near your eye, while a positive one takes it behind the screen. So, theoretically, an object can hit you on the head or disappear into the innards of your TV. Such is the paradox of a two-dimensional world trying to simulate a three-

Turn to Page 37



Figure 1: The pyramidal shape



Figure 2: The three dimensional wire

MicroLink

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microLink electronic mail and much, much more!

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Abstract

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Age Group	Very important	Important	Somewhat important	Not important	Don't know
18-24	65%	25%	8%	2%	0%
25-34	68%	22%	8%	2%	0%
35-44	62%	28%	8%	2%	0%
45-54	58%	32%	8%	2%	0%
55-64	55%	35%	8%	2%	0%
65+	52%	38%	8%	2%	0%

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dimensional environment.

The theory behind 3D vector plotting is complex, but a study of the program will show some of the techniques used. The variable **PNTN(I)** is used to hold the X coordinate of each point. **PNTN(I)** is the Y coordinate and **PNTN(I)** is the Z coordinate. The variables **LWGN(I)** and **LWGN(I)** keep track of which point links to which.

The equations in lines 1260 to 1550 include the equations for changing the coordinates of the points after each shape has been plotted. **ASX** is used both the **ASX** 1 and **ASX** 2 routines (see line 380).

Lines 300 to 500 draw the shapes and store them in memory. Line 500 finds the **SCALE** variable which, using the Z coordinate, determines the scale of the shape. The smaller it is the further into the distance it appears to recede.

Lines 510 to 160 draw the points on to the screen. Note that all points are made relative to the centre of the screen by adding 70. (The program uses a Graphics 14 screen of 160 x 160 pixels).

The program has been written primarily to be fun and to show that fairly

complex 3D animation sequences can be displayed without using vast amounts of complicated machine code.

Experiment with various shapes and

relations. Try altering the rotation equations (lines 1270 to 1400) or change the link relationships (variables **LWGN(I)** and **LWGN(I)**) and see what happens.

```

10 REM 3D ANIMATION
20 REM BY STEPHEN WILLIAMS
30 REM FOR ATARI 520E
40 REM
50 REM INITIALISE
60 GOSUB 1000
70 FOR I=0 TO 91
80 GOSUB 6000:GOTO 10
90 NEXT I
100 GOSUB 1000:GOTO 10
110 GOSUB 6000:GOTO 10
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480 GOSUB 1000:GOTO 10
490 GOSUB 6000:GOTO 10
500 GOSUB 1000:GOTO 10

```

```

510 REM 3D ANIMATION
520 REM BY STEPHEN WILLIAMS
530 REM FOR ATARI 520E
540 REM
550 REM INITIALISE
560 GOSUB 1000
570 FOR I=0 TO 91
580 GOSUB 6000:GOTO 10
590 NEXT I
600 GOSUB 1000:GOTO 10
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990 GOSUB 6000:GOTO 10
1000 GOSUB 1000:GOTO 10

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50	£50.00	£50.00	£50.00	£50.00	£50.00	£50.00	£50.00
100	£100.00	£100.00	£100.00	£100.00	£100.00	£100.00	£100.00
250	£250.00	£250.00	£250.00	£250.00	£250.00	£250.00	£250.00
500	£500.00	£500.00	£500.00	£500.00	£500.00	£500.00	£500.00
1000	£1000.00	£1000.00	£1000.00	£1000.00	£1000.00	£1000.00	£1000.00

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CP/M
RECEIVED

CP/M
RECEIVED

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Driven Skate Crazy

I *WISH* to complain about the game *Skate Crazy* that you published in the April 1987 issue of *Atari User*. I typed it in exactly as it was printed, but when I ran it the title screen appeared, followed by an error message for line 2140. I checked this line, and it was just as you had printed it in the magazine.

I took this line out of the program and ran it again. This time the error message was for line 3570, so I took this line out as well. When I ran the program again the title screen appeared with no error message. I thought I had corrected it but nothing else happened.

There is nothing wrong with my computer as it there something wrong with your program? Also, how do you use the Get It Right! table mentioned in the text? — **Victoria Crag, Bristles, Essex**

■ The listings that we print are taken directly from working copies of the programs, so we know that they are correct.

So why didn't this one work? Well, you don't really go into enough detail in your letter about what type of error occurred, but I'd hazard a guess that it was most likely an error number 6 or number 8.

These relate to the READ statement which occurs in both of the lines you had trouble with, and you will probably find that the problem is with the DATA lines associated with the READ on lines 2140.

If you take a look at the listing you will see that lines 1050 and 1060 read their numeric data from lines 1050 and 1050. Since these are both okay, the problem must be with the data which follows on lines 2000 to 2127.

This should be input via the READ command on 2140, so any typing mistakes will only show up when line

Are you having problems getting your programs to work? Write to: Software Solutions, Atari User, Bristles House, 65 Chester Road, Bristles, Essex, Stockport SK7 5NY, Hazel Grove, Stockport SK7 5NY.

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

SOFTWARE Solutions

Your programming problems solved by ANDRE WILLEY

2140 is reached. Thus, when you deleted 2140, the error then occurred with the next READ statement (on line 3570).

Since there is a lot more data later in the program it is unlikely that an error 8 (DATA exhausted) has occurred, so the error type you are encountering is more than likely an eight — telling you that the program expected a numeric value but found something else, such as a letter or punctuation mark.

Check through lines 2000 to 2127 to make sure that all of the numbers are correct, and that you haven't mistyped or missed out a digit, or typed a full stop instead of a comma. Any of these could cause the sort of error you describe.

You should never try to correct a program by simply removing an offending line. This is partly because the programmer has obviously put each line in for a specific purpose, but also because (as we have seen) the error is very often caused by a mistake on a completely different line.

The Get It Right table is one sure way to check that you haven't made any typing mistakes. Details of how to use it were printed in the August 1986 issue of *Atari User*.

Joystick action

I OWN an Atari 800X, and a 1050 disc recorder, and I find your magazine action-packed and crammed with great reviews of games. I am interested in programming but have a problem with inputting joystick movements.

Could you give me an example to show me how to move using the joystick and the fire button? — **P. Daymont, Bristles, Essex**

■ There are two commands you need

to know — STICK and STRG. The first tells you which direction the joystick is pointing, and the second tells you whether the button is pressed.

Each command is followed by a single number in brackets, normally a zero or a one, and this specifies which joystick socket you want to use. Thus STICK(0) would return the position of the first joystick, and STRG(1) would tell you if the button on the second joystick has been pressed. STRG gives a result of zero whenever the button is pressed, and a one at any other time.

The numbers returned by STICK are as follows:



The following short program demonstrates how to move an object (in this case an asterisk) around the screen:

```
10 GRAPHIC=0:REM 750,750
20 OPEN:FILE=0:REM GET START POINT
30 COLOR=0:PLT=0:PLN=0:PLT=0:PLN=0
40 IF (STRG(0)=1) OR (STRG(1)=1) THEN 4
50 IF (STICK(0)=0) OR (STICK(1)=0) THEN 4
60 IF (STICK(0)=1) THEN COLOR=1:PLN=1
70 IF (STICK(0)=2) THEN COLOR=2:PLN=2
80 IF (STICK(0)=3) THEN COLOR=3:PLN=3
90 IF (STICK(0)=4) THEN COLOR=4:PLN=4
100 IF (STICK(0)=5) THEN COLOR=5:PLN=5
110 IF (STICK(0)=6) THEN COLOR=6:PLN=6
120 IF (STICK(0)=7) THEN COLOR=7:PLN=7
130 IF (STICK(0)=0) THEN COLOR=0:PLN=0
140 IF (STICK(0)=1) THEN COLOR=1:PLN=1
150 IF (STICK(0)=2) THEN COLOR=2:PLN=2
160 IF (STICK(0)=3) THEN COLOR=3:PLN=3
170 IF (STICK(0)=4) THEN COLOR=4:PLN=4
180 IF (STICK(0)=5) THEN COLOR=5:PLN=5
190 IF (STICK(0)=6) THEN COLOR=6:PLN=6
200 IF (STICK(0)=7) THEN COLOR=7:PLN=7
210 IF (STICK(0)=0) THEN COLOR=0:PLN=0
220 IF (STICK(0)=1) THEN COLOR=1:PLN=1
230 IF (STICK(0)=2) THEN COLOR=2:PLN=2
240 IF (STICK(0)=3) THEN COLOR=3:PLN=3
250 IF (STICK(0)=4) THEN COLOR=4:PLN=4
260 IF (STICK(0)=5) THEN COLOR=5:PLN=5
270 IF (STICK(0)=6) THEN COLOR=6:PLN=6
280 IF (STICK(0)=7) THEN COLOR=7:PLN=7
290 IF (STICK(0)=0) THEN COLOR=0:PLN=0
300 IF (STICK(0)=1) THEN COLOR=1:PLN=1
310 IF (STICK(0)=2) THEN COLOR=2:PLN=2
320 IF (STICK(0)=3) THEN COLOR=3:PLN=3
330 IF (STICK(0)=4) THEN COLOR=4:PLN=4
340 IF (STICK(0)=5) THEN COLOR=5:PLN=5
350 IF (STICK(0)=6) THEN COLOR=6:PLN=6
360 IF (STICK(0)=7) THEN COLOR=7:PLN=7
370 IF (STICK(0)=0) THEN COLOR=0:PLN=0
380 IF (STICK(0)=1) THEN COLOR=1:PLN=1
390 IF (STICK(0)=2) THEN COLOR=2:PLN=2
400 IF (STICK(0)=3) THEN COLOR=3:PLN=3
410 IF (STICK(0)=4) THEN COLOR=4:PLN=4
420 IF (STICK(0)=5) THEN COLOR=5:PLN=5
430 IF (STICK(0)=6) THEN COLOR=6:PLN=6
440 IF (STICK(0)=7) THEN COLOR=7:PLN=7
450 IF (STICK(0)=0) THEN COLOR=0:PLN=0
460 IF (STICK(0)=1) THEN COLOR=1:PLN=1
470 IF (STICK(0)=2) THEN COLOR=2:PLN=2
480 IF (STICK(0)=3) THEN COLOR=3:PLN=3
490 IF (STICK(0)=4) THEN COLOR=4:PLN=4
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510 IF (STICK(0)=6) THEN COLOR=6:PLN=6
520 IF (STICK(0)=7) THEN COLOR=7:PLN=7
530 IF (STICK(0)=0) THEN COLOR=0:PLN=0
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590 IF (STICK(0)=6) THEN COLOR=6:PLN=6
600 IF (STICK(0)=7) THEN COLOR=7:PLN=7
610 IF (STICK(0)=0) THEN COLOR=0:PLN=0
620 IF (STICK(0)=1) THEN COLOR=1:PLN=1
630 IF (STICK(0)=2) THEN COLOR=2:PLN=2
640 IF (STICK(0)=3) THEN COLOR=3:PLN=3
650 IF (STICK(0)=4) THEN COLOR=4:PLN=4
660 IF (STICK(0)=5) THEN COLOR=5:PLN=5
670 IF (STICK(0)=6) THEN COLOR=6:PLN=6
680 IF (STICK(0)=7) THEN COLOR=7:PLN=7
690 IF (STICK(0)=0) THEN COLOR=0:PLN=0
700 IF (STICK(0)=1) THEN COLOR=1:PLN=1
710 IF (STICK(0)=2) THEN COLOR=2:PLN=2
720 IF (STICK(0)=3) THEN COLOR=3:PLN=3
730 IF (STICK(0)=4) THEN COLOR=4:PLN=4
740 IF (STICK(0)=5) THEN COLOR=5:PLN=5
750 IF (STICK(0)=6) THEN COLOR=6:PLN=6
760 IF (STICK(0)=7) THEN COLOR=7:PLN=7
770 IF (STICK(0)=0) THEN COLOR=0:PLN=0
780 IF (STICK(0)=1) THEN COLOR=1:PLN=1
790 IF (STICK(0)=2) THEN COLOR=2:PLN=2
800 IF (STICK(0)=3) THEN COLOR=3:PLN=3
810 IF (STICK(0)=4) THEN COLOR=4:PLN=4
820 IF (STICK(0)=5) THEN COLOR=5:PLN=5
830 IF (STICK(0)=6) THEN COLOR=6:PLN=6
840 IF (STICK(0)=7) THEN COLOR=7:PLN=7
850 IF (STICK(0)=0) THEN COLOR=0:PLN=0
860 IF (STICK(0)=1) THEN COLOR=1:PLN=1
870 IF (STICK(0)=2) THEN COLOR=2:PLN=2
880 IF (STICK(0)=3) THEN COLOR=3:PLN=3
890 IF (STICK(0)=4) THEN COLOR=4:PLN=4
900 IF (STICK(0)=5) THEN COLOR=5:PLN=5
910 IF (STICK(0)=6) THEN COLOR=6:PLN=6
920 IF (STICK(0)=7) THEN COLOR=7:PLN=7
930 IF (STICK(0)=0) THEN COLOR=0:PLN=0
940 IF (STICK(0)=1) THEN COLOR=1:PLN=1
950 IF (STICK(0)=2) THEN COLOR=2:PLN=2
960 IF (STICK(0)=3) THEN COLOR=3:PLN=3
970 IF (STICK(0)=4) THEN COLOR=4:PLN=4
980 IF (STICK(0)=5) THEN COLOR=5:PLN=5
990 IF (STICK(0)=6) THEN COLOR=6:PLN=6
1000 IF (STICK(0)=7) THEN COLOR=7:PLN=7
```

Most joystick routines will be similar to this one, but you might like to use it in conjunction with our recent article on Player Mouse Graphics to get some great effects.

Lurking Horro is just that..

by
Ruoloc

TALK about exhausted — there I was, minding my own business when these five *Mazgats* came into the local inn and started pushing and shoving people around. Well, not one to be slow in getting into a good fight, I brought out my trusty sword and laid into them.

The actual fight lasted no more than a few minutes — well I do have rather a lot of experience in these matters — but the real reason for my readiness was because of all the free drinks that the landlord gave me. He was so grateful for my assistance that we celebrated all night.

In fact, I have just got back to my cave in time for the posting and this month's column, so without much more ado let's see what's new in the world of adventure.

The first bit of good news I have for you is that there is a new Infocom adventure about to be released called *The Lurking Horro* and it's full of ghastly surprises and unpredictable fear.

Any horror fans who haven't gazed at the chilling classics of Stephen King and H.P. Lovecraft or shivered at the lightening images in *The Shining* and *The Exorcist* cannot call themselves horror fans. Now you can experience what horror is really like with Infocom's change from witty spoofs to interactive nightmares.

As the main character in the story, you have enrolled at the George Edwards Institute of Technology, and have heard nothing else except the stories about the old campus basements and storage rooms, some so sinister that they contain only rotting piles of unidentified junk.

You have heard about the decrepit underground tunnels crumbing into hundreds of piles of concrete, and have vowed never to set foot in any of them. You do, of course, one night with a blizzard raging and the wind howling, when a strange force draws you into the dark ether regions of the institute. Then an eerie sound grows closer... Stop, enough of this. I'm starting to get edge myself.

Suffice it to say that the adventure has been written by Dave (Zork, Spellbreaker, Suspect, and Starcrossed) Lebling and all the usual bits and

pieces are in the package. Make sure you read *After User* for a full review in the future.

The second bit of good news this month is that there is another new Infocom release imminent, and this one is called *Planetfall*. Yes, it is a sequel to *Planetfall*. After three years and countless requests, author Steve Mercurio has brought back that lovable robot Floyd in an adventure which puts the fate of the whole Galaxy in your hands as you are enlisted in the Stellar Patrol.

Your heroics in *Planetfall* earned you a promotion from Ensign Seventh Class to Lieutenant First Class in the very boring paperwork task force.

Life is just very tedious, and to top it all you are assigned to travel to a nearby space station to pick up some forms. Imagine your surprise when you discover that your companion for the journey is the mischievous and playful Floyd.

When you both arrive at the station, all is not well. The place is deserted save for an antechamber, a balloon creature and a brainy robot named Plato. Something is very wrong... but what?

This game is a worthy sequel to *Planetfall*, and Steve's humour, so apparent in *High-tilers* and *Leather Goddesses*, is well in evidence here. So watch out for another review.

I hope you like the map of *Alternate Reality*, on the next two pages tippin' around that place almost drove me bonkers, but anything to help fellow adventurers and I look forward to our meeting next issue, when all that is interesting in the world of adventuring will be served to you on a silver platter.

See you next
month





LEE from Walsall has bought Ultima IV and needs some guidance on how to find The Stones and how to get followers to join him. Ultima and my good friend Lord British have given us a tough nut to crack as the playing area is vast, so don't expect me to give the whole game away – it would take up too much space anyway.

Instead I will reveal to you where each rune can be found. Hospitality is in Moonglow, Compassion is in

Britain (in the first), and Water can be found at Tounia. Justice is hidden at Tisa, Sacrifice is in the first pit in Minos. Honour south-west of Trinalc. Spirituality is in Lord British's castle and Humility is in the village of Paves. Write back and tell me how you get on.

Nathan from Sheffield is having problems with Colossal Adventure and wants to know how to get the Platinum Pyramid out of the Plover room and where to find the pirate's treasure chest.

The trick in the Plover room is so small that only if you drop everything can you squeeze in. Once inside, just say FLOWER and you will appear at the Y2 rock room. Then say FLOWER again and you return and so forth.

The pirate skulls in the main maze and his chest is hidden deep inside it. You can actually get to it in four moves from a certain spot, but I am not going to spoil the fun for you.

Calvin from Nottingham has a

problem answering Graunch's riddles in Return To Eden. He doesn't know how to type the answers. Well, just type the actual SOLUTIONS. Calvin. And don't mess about with "The answers are", just type in the answer.

Ron White is having trouble with Belykko, he can't use the toilet to visit the sidescrow. Also, he can't get THROCK to work in SPELLBINDER.

The toilet is used by inserting it in the turnstile, if you examine it you will find a slot. THROCK is used by planting the weed in front of the Ogre and evoking the said spell, which will aggress the condition long enough for you to get past.

Phil Hardy cannot get out of the City in Lapis Philosophorum, even though he has the answer after returning the cat to the old lady.

The answer is to dangle the amulet in front of the guard's eyes. They will be hypnotised, and forget their orders not to let anyone out.

Drive into danger

IMAGINE a world where the only form of employment is driving an armour-plated car, full up to the brim with weaponry, along hostile roadways, fighting any other driver on the road in order to deliver cargo from one city to another.

Then, for sport and relaxation, do battle in a city's arena, pitting your car, driving skills and life against others for a prize of fame and wealth.

This is the world of Autoduel, a role playing adventure game in the Dungeons and Dragons vein but with a futuristic bent to it.

You begin with \$200 and just your legs for transport – which is Autoduel is decidedly unhealthy – so you need to get cash quickly to buy your first car and then begin your duelling career.

New recruits start in the arena on Amateur Night, where you are given a car to use on the track against five other hopefuls. If you win you get \$1500 and can start buying new equipment to add to your car.

As in all role playing games, your character develops as you progress in the game, and as you reach each new city the chances of getting more exciting jobs increase.

In each city there are a number of locations to visit where you listen for rumours, get repairs or buy new weapons. You can even sell off salvage from your on the road duelling and best of all is to become an FBI marshal and clear all the evil forces from the highways.

The game is based on Steve Jackson's board game Car Wars and Origin has used the Ultima team to convert it into a computer project. The packaging impressed me: You get a detailed manual, a full colour road map and even a mini pack of real tools.

The only flat tire in the game was its black and white display, which does not do much for the old Atari colour capabilities.















Still if you like playing role playing games this is the one for you.



Program: Autoduel
Price: £79.99
Supplier: Origin Systems, c/o Microvision, 2 Market Place, Farnham, Gloucestershire, GL9 8DA.
Tel: 0205 64320

alternate REALITY

The City

-  S - Shop
-  T - Tavern
-  G - Guild
-  S - Smith's
-  H - House
-  I - Inn
-  B - Bank
-  D - Dungeon entrance
-  C - Closed by order of the palace:
such as House of Ill repute
-  - Trap: One entrance, no exit
-  W - Wilderness entrance
-  - Direction of access through wall
or door (sometimes invisible)
-  - Two directional access
-  - Entrance (in this instance to a
shop)

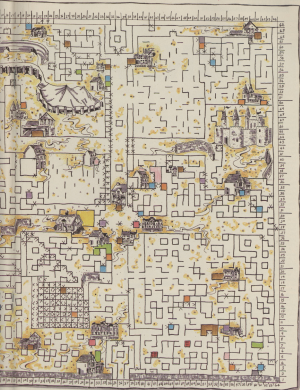
Access to dungeon, palace, arena, or wilderness from the city is only possible when the relevant part of the series is available.

N



E





DUCKDASH

BY JOHN GYMER

HURRICANE Harriet is heading towards your farm. Heavy showers have already turned your yard into a pool of mud and the worst is yet to come. All the animals have been put in barns and old sheds — except for those daffod ducks, who refuse to be rounded up. And you haven't got long before the hurricane hits. So you, farmer Dash, must hurry around the yard and collect all the ducks as quickly as you can.

Now this sounds very easy but there are dangers in the yard. Two deadly farmer-eating spiders have decided to shelter from the storm there, so as you race around collecting the ducks you must avoid them — or die.

The main problem with your yard is that as you run, your feet dig up the ground, and if you ever come in contact with one of the holes you lose a life. You also lose a life if a spider eats you or if you run out of time when the storm hits.

Also in the yard you'll find sticks, peels of mud which trap you — briefly — if you stand in them. These can also trap the spiders and this can add more gamesmanship to play.

When you finally escape from the pool of mud which (shows on-screen as a white cross) it will change into either a hole or a safe square you can walk on.

Two players can play the game with one player as the farmer plugged into port 1 and the other as the spider in port 2. This option can be selected from the main menu and adds a lot of fun to the program.

In play mode you can abort the game by pressing the start key, and for extra bonus points you can collect the coins — shown as yellow dots — that are scattered around the yard.

Once all the ducks on screen have been collected you are awarded bonus points for time remaining and you move on to the next screen which will have more ducks, more coins, more sticky ponds and faster spiders.

If at any time you lose a life you continue on the same screen until you

complete it or until all your lives are lost. The game then ends and you are returned to the main menu where you can select one of six levels.

One is easy and six is very hard, with the bonus points at the end of each screen calculated according to skill level selected.

VARIABLES

HSC	High score.
SC	Score.
SK	Skill.
X, Y1, Y2	Position of farmer.
X, Y1, Y2	Position of spider.
LVL	Screen level.
LIV	Lives.
TIME	Time left.
MEM	Address of character set.

PROGRAM BREAKDOWN

50-600	Main loop.
80-100	Farmer movement.
200-300	Spider movement.
400-500	Sound effects.
700-800	Main screen.
900-1270	Initialisation.
1280-1440	Modeline characters.
1450-1520	Music data.

```

10 REM *****
20 REM =      DUCK DASH      =
30 REM =      =              =
40 REM =      by John Gymer   =
50 REM =      =              =
60 REM =      Start Game    =
70 REM *****
80 DUCK = 0:00-0:00-0:00-1:00-0:00
  GOTO 100
90 REM == 1000000000 ==
100 DUCK=0:00:00:00:00:00:00:00
110 IF DUCK=0 THEN GOTO 100
120 DUCK=0:00:00:00:00:00:00:00
130 DUCK=0:00:00:00:00:00:00:00
140 DUCK=0:00:00:00:00:00:00:00
150 DUCK=0:00:00:00:00:00:00:00
160 DUCK=0:00:00:00:00:00:00:00
170 DUCK=0:00:00:00:00:00:00:00
180 DUCK=0:00:00:00:00:00:00:00
190 DUCK=0:00:00:00:00:00:00:00
200 DUCK=0:00:00:00:00:00:00:00
210 DUCK=0:00:00:00:00:00:00:00
220 DUCK=0:00:00:00:00:00:00:00
230 DUCK=0:00:00:00:00:00:00:00
240 DUCK=0:00:00:00:00:00:00:00
250 DUCK=0:00:00:00:00:00:00:00
260 DUCK=0:00:00:00:00:00:00:00
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730 DUCK=0:00:00:00:00:00:00:00
740 DUCK=0:00:00:00:00:00:00:00
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780 DUCK=0:00:00:00:00:00:00:00
790 DUCK=0:00:00:00:00:00:00:00
800 DUCK=0:00:00:00:00:00:00:00
810 DUCK=0:00:00:00:00:00:00:00
820 DUCK=0:00:00:00:00:00:00:00
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840 DUCK=0:00:00:00:00:00:00:00
850 DUCK=0:00:00:00:00:00:00:00
860 DUCK=0:00:00:00:00:00:00:00
870 DUCK=0:00:00:00:00:00:00:00
880 DUCK=0:00:00:00:00:00:00:00
890 DUCK=0:00:00:00:00:00:00:00
900 DUCK=0:00:00:00:00:00:00:00
910 DUCK=0:00:00:00:00:00:00:00
920 DUCK=0:00:00:00:00:00:00:00
930 DUCK=0:00:00:00:00:00:00:00
940 DUCK=0:00:00:00:00:00:00:00
950 DUCK=0:00:00:00:00:00:00:00
960 DUCK=0:00:00:00:00:00:00:00
970 DUCK=0:00:00:00:00:00:00:00
980 DUCK=0:00:00:00:00:00:00:00
990 DUCK=0:00:00:00:00:00:00:00

```





```

1  #include <stdio.h>
2  int main()
3  {
4      int a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z;
5      a=1;b=2;c=3;d=4;e=5;f=6;g=7;h=8;i=9;j=10;k=11;l=12;m=13;n=14;o=15;p=16;q=17;r=18;s=19;t=20;
6      u=21;v=22;w=23;x=24;y=25;z=26;
7      printf("a=%d b=%d c=%d d=%d e=%d f=%d g=%d h=%d i=%d j=%d k=%d l=%d m=%d n=%d o=%d p=%d q=%d r=%d s=%d t=%d u=%d v=%d w=%d x=%d y=%d z=%d\n",a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y,z);
8      return 0;
9  }

```

[illegible][illegible]

Twitter: @Penguin

Game

[illegible][illegible]

While the group of neurodivergent and postgender activists is small, it is still growing. The group is still in its infancy, but it is growing. The group is still in its infancy, but it is growing.

MicroLink

[illegible][illegible]

TIME	DATE	TIME	DATE	TIME	DATE
000	1962	000	1962	1999	1962
000	1963	000	1963	1999	1963
000	1964	000	1964	1999	1964
000	1965	000	1965	1999	1965
000	1966	000	1966	1999	1966
000	1967	000	1967	1999	1967
000	1968	000	1968	1999	1968
000	1969	000	1969	1999	1969
000	1970	000	1970	1999	1970
000	1971	000	1971	1999	1971
000	1972	000	1972	1999	1972
000	1973	000	1973	1999	1973
000	1974	000	1974	1999	1974
000	1975	000	1975	1999	1975
000	1976	000	1976	1999	1976
000	1977	000	1977	1999	1977
000	1978	000	1978	1999	1978
000	1979	000	1979	1999	1979
000	1980	000	1980	1999	1980
000	1981	000	1981	1999	1981
000	1982	000	1982	1999	1982
000	1983	000	1983	1999	1983
000	1984	000	1984	1999	1984
000	1985	000	1985	1999	1985
000	1986	000	1986	1999	1986
000	1987	000	1987	1999	1987
000	1988	000	1988	1999	1988
000	1989	000	1989	1999	1989
000	1990	000	1990	1999	1990
000	1991	000	1991	1999	1991
000	1992	000	1992	1999	1992
000	1993	000	1993	1999	1993
000	1994	000	1994	1999	1994
000	1995	000	1995	1999	1995
000	1996	000	1996	1999	1996
000	1997	000	1997	1999	1997
000	1998	000	1998	1999	1998
000	1999	000	1999	1999	1999

Reading the paper

ERNIE LITTLE eases the task of wallpapering

WHEN buying your rolls, did you ever think: "It'll even help with the housework?" And have since spent many hours trying to justify that very statement?

In response to all these letters we get pleading for more domestic utilities, we've come up with a program to help you calculate how many rolls of wallpaper you will need when you decorate a room.

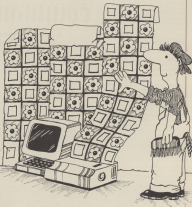
When the program is run you are requested to input the size of the room that you wish to decorate, both in length and height — these measurements should be in metres.

The height is between the skirting board and the ceiling, the length of the walls is the total distance around the room, including doors and windows to allow for any wastage.

You will now be asked for the length of the roll of wallpaper. Most rolls sold these days are preset to 10m by 60cm so you will usually enter 10.

The total number of rolls to buy will now be printed. The total to buy is derived from rounding up the total number of rolls calculated.

Please note that this is only intended as a rough guide, and doesn't take into account pattern matches.



VARIABLES

- A Height of walls.
- B Distance around room.
- C Length of roll.
- D Number of rolls needed.
- E Number of rolls to buy.

```
10 REMARKS 1=NO POSITION 2,3,4 20,30,40
11 PRINT "CALCULATE POSITION 1,2,3,4"
12 END
```

```
20 POSITION 2,3,4,5 REMARKS LINE 10
21 FOR A=1 TO 1000:NEXT A
22 REMARKS POSITION 2,3,4,5,6,7,8,9,10
```

```
110 POSITION 10,110 WALLPAPER CALLED
120
```

```
130 FOR A=1 TO 10:POSITION 2,3,4,5:PRINT
140:NEXT A
```

```
150 POSITION 2,3,4,5:PRINT HEIGHT OF WALL
160 IN METRES. 170:POSITION 11,120:PRINT A
```

```
180 OF WALL THEN 130
```

```
190 POSITION 2,3,4,5:PRINT LENGTH OF WALL
200 IN METRES. 210:POSITION 11,130:PRINT B
```

```
220 OF WALL THEN 140
```

```
100 POSITION 2,3,4,5:PRINT LENGTH OF WALL
200 IN METRES. 210:POSITION 11,140:PRINT B
```

```
220 OF WALL THEN 150
```

```
230 REMARKS:CALCULATE
```

```
170 IF 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WE already know how skilled and creative Atari users are, and we look forward to receiving your programs and articles for publication in future issues of Atari User. However, before you send your masterpiece off to us there are one or two points that you ought to bear in mind to make all our lives easier. We call them the 18 commandments...

The 18 commandments

A guide to presenting your masterpiece for publication

WHILE not wanting to put programmers creatively into a straitjacket, we've found that life can be made easier for the magazine, our readers and the programmers themselves if we stick to certain standards.

It has also occurred to us that it's no good our just knowing what we want. We have to tell you, our potential contributors. So here are our 18 commandments.

Don't be too daunted by the list—it's mostly just common sense and good programming practice.

■ **Send us your programs on tape or disc.** There's no point in just sending a listing and asking if we're interested—you can't expect us to evaluate a program from that. We may be good, but we're not that good! A cassette or disc with the program on is a must.

We rarely use two-part programs in the magazine. Games in two files may look professional, but they're the kiss of death as far as the magazine is concerned. Too much can go wrong when people type them in.

■ **Avoid using characters in variable names that lead to confusion** such as *i*, *j* and *k*. *I* and *O*. Meaningful variable names help as well—*ALPHA* is far more understandable than *A1*.

■ **Tell us what the program is supposed to do** and refer to it by name. You'll be amazed at the number of programs we get where the author forgets to tell us what it is all about.

In any subsequent correspondence, reference to "my program" can cause problems by its vagueness. Okay, we'd have the program on record somewhere, but life would be a lot easier all round if its author were less modest and admitted he was the genius behind Mega-movers.

■ **Label everything with the program's title** and your own name and address. Keep your own copy, too. So far the only existing copy of one particular

classic game hasn't disappeared in the post—but there's no reason to run the risk of yours being the first.

■ **If it's a game let us know how to "cheat"** so we can test out the higher levels. We're getting on a bit here and our reactions aren't as good as they used to be, but that they were up to much when they were as good as they used to be...

And an adventure-type game or whatever should come with a map of the rooms and any other relevant crib sheet. Much as we'd like to, we just don't have time to guess the name of Rumpelstiltskin's brother, no matter how much we admire your ingenuity. (Anyway, he works in our attic too.)

■ **Put more than one copy of the program on your tape or disc.** And if you want your submission back let us have a stamped addressed envelope with the name of the program on it.

You won't appreciate this unless you've run a computer magazine, but if you use tape please send each program on a separate cassette. If not, we just can't handle them. The rule is, one program per cassette—though recorded several times on it.

■ **Let us have a printed listing if possible.** Screen dumps or off-screen photos are much appreciated, though not vital. Diagrams are always of use. Often a point that's difficult to put into words becomes clear as crystal when you sketch it out.

■ **Give a description of the program**, what it does, why you wrote it, and outline the way it works and its variables and subroutines.

If it's a game let us have a plot. You'll get an idea of the sort of thing by reading the instructions to one or two of our games.

Maybe you could also give a few ideas for its improvement or expansion. Even if you can't get your upgrades to work, there's a good chance that one of our talented

readers will.

Every subroutine must be titled clearly with a MEM and should be referred to by it. Again, make the title meaningful. Also, when you *CALL*, use a MEM to indicate which subroutine you're using. For example:

```
MEM 0000 MEM: GET MYX 000
-
-
MEM 0010 MEM: PUT MYX 000
-
-
MEM 0020
```

At first this may seem to be far too much fuss, but it's not just for the readers' benefit. As your programs grow you'll find that such MEMs more than repay the effort by allowing you to keep track of your work.

When you write out your list of subroutines—which is vital—try to do it in this form:

```
MEM 00000 Show how to start...
MEM 00010 Make things up...
```

where the line numbers refer to the lines in which the subroutine is defined. Again, this helps by making things clearer to our readers—and you.

We don't expect your program descriptions to be classics of English literature, but it does help if they make sense and are easy to follow. Try reading them out loud—you'd be amazed how much such a simple technique can improve your writing.

Also, if you get stuck trying to put something into words use this trick: Tell someone what it is you're trying to put into words—then write it down. Before you reject this hint, try it—more than one professional writer owes his career to it.

■ **Make sure that the program actually works.** Try it out on your friends for

their editors (painful though it may feel). The acid test is to ask them to type it in. And — when you find yourself muttering through clenched teeth, "How could anyone be that stupid!" (the answer is "regularly") — read out the code in your own eye and allow your program to take account of the feedback.

It's not easy to do, as the all-too-frequent blunders among the editorial staff here testify, but it's worth it.

Instructions can make or break a game. Make sure that yours really do instruct. They should be complete and it helps if the spelling and grammar are correct. Apart from causing confusion, such errors also make programs look unattractive.

As well as misspellings, bad grammar, split words and general untidiness are all to be avoided.

Following even the simplest program can cause problems for the most experienced programmer — don't add to them unnecessarily. One major cause of having to return programs for modifications is colour-matching incompatibility.

You can develop a beautiful program making use of all the splendid colour the Atari has to offer, only to find that the action disappears in an inextinguishable fog on a monochrome TV — and vice-versa.

If possible, try your program on both types of television. User groups are invaluable here, as they are in all aspects of program development.

● Please do put lots of nice explanatory REMs in your programs. A couple of REM statements with nothing after them at the beginning of the program gives us room to put in our messages without messing up all the line numbers you have referred to in your program description.

● Avoid having lines with just a REM and nothing else. It may make the program look neater, but we won't welcome letters asking what the missing words are. Remember, people will be spending hours typing your programs into their micros. Make their life easier if you can.

● Desable space all your written matter. This means leaving a blank line between each line of text which is vital from our point of view — try to follow our style. We have our own ways of doing things. For example, we press the Return key, not the RETURN key as you might expect.

Just look how we do it in the magazines. Our programs are Program 1, Program 2 and so on, our diagrams Figure 1, Figure 2.

● If you must use long multiple lines don't go over 114 characters by using abbreviations for commands as

people then complain the lines are too long.

● Don't use abbreviations in text. They're exceptionally easy to miss — for the sake of typing two extra characters you can save our readers hours of frustration.

● Please, when you send us your work, include a separate page telling us that it is your own work, has not been offered elsewhere and that we have your permission to print it, if you don't we'll have to return it.

● It's always nice if a program can have an alternative key or joystick option.

● One of the major causes of programs crashing is because the user inputs something the programmer hasn't expected. All right, the idea shouldn't type in -888 when you ask him his age, but believe us, they will, out of sheer generosity — particularly if the program is educational. There is something about C64 programs that brings out the devil in us all.

So try out all the unlikely options — if you don't, some poor user will.

Actually, it takes a lot of skill to idiot-proof a program, as it is delicately woven in the trade. Often you're as involved in getting the program to work as it's supposed to that you just can't make the mental leap needed to see it as the passively misadventurous reader does — so try it out on your friends.

● Another invitation for a reader is

when he sees something like

PRINT

Exactly how many blanks it he supposed to enter? User

PRINT "HELLO" PRINT

for it spaces.

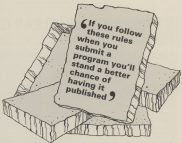
● Tell us who you are. We like to know your Christian name, and it is also interesting to know your age and profession. After all, we might reject your program, but if we know you were a fellow fellow we'd have been able to send you Discreet's "Fellow fellows" on the 100th for no time.

Also a telephone number — both home and work — with the correct STD code is really useful, and can save a lot of time.

Here endeth the 16 rules. If you follow these when you submit something to us you'll stand a much better chance of having it published. More importantly, you'll become a far more professional programmer.

And this letter you become the more satisfying it is.

Contributions should be sent to:
Features Editor, Atari User, Europe
House, 68 Chester Road, Havert
Grave, Shopport SK7 8NN.



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Your Local Software House

Shivers down the spine

Program: Phantom
Price: £7.99 (suggested), £8.99 (retail)
Supplier: Tynesoft, Addison
 Industrial Estate, Shipdon,
 Tyne and Wear NE21 4JF
 Tel: 091-434 4017

STRANGE things are happening – unexplainable and eerie occurrences. So when I picked up my copy of Tynesoft's latest game *Phantom*, shivers ran down my spine.

You are a professor of extra-physics who happens to be interested in psychic phenomena and built a portable nuclear accelerator, presumably in his garage. Now this reactor makes a large hole in spooky phenomena.

So with reactor in hand you are well prepared for the horrors that face you, or are you?

On loading I was greeted by the control panel featuring score, reactor level, heart rate (30 beats per minute) and an electrocardiograph (ECG), which resides on the bottom right of the screen.

Now it appears that you only have one life and the BPM indicator increases every time a ghost comes into contact with you – once this reaches 100 your old ticker will play out.

You arrive at the Old Inn, and are met with a plan view that looks more like a maze.

Scarrying around are ghosts, who as soon as they see you, begin to converge.

Easy, I hear you say, out with the nuclear accelerator and poof, the spoofs begin to vanish in clouds of ectoplasm. This is a pretty neat weapon as it wipes out several spoofs in one blast.

But there is one problem – you only have a limited supply of isotopes in your reactor and if you empty it you are in deep trouble.

How ones are scattered about the inn, but as discretion is the better part of valour, you can dodge the spoofs instead.

You have to battle your way round four screen levels of the inn, collecting keys and other items on your way.

You eventually battle with a large and very nasty ghost. At this point I realised that my heart rate did not go down in the maze from one level to the next. Indeed it only settled when I completed the inn and moved on to the Dungeon where a completely different set of mazes devised to have me for breakfast.

With 64 different rooms and the mansion and castle to explore there is plenty to keep you on your toes – especially as the difficulty and quality of mazes increase.

The graphics used throughout, are first-rate coupled with a wonderful



background tune. Character animation is superb both for spoofs and your player character.

My only quibble is that the spoofs can get you without you being able to shoot them. This is not a major problem because if you are good enough you simply sidestep them.

Instead of rampaging around the screen heading and slasting your enemy, with *Phantom* you must use tactics to negotiate each screen. This evasive angle adds a very addictive quality

to the game.

Phantom is original and well worth buying for the sheer pleasure of playing it. So when it comes to the final conflict and you have rambles in your attic or creepies in the cellar then "Who yer gonna call?" – Tynesoft.

Mal Pasworth

Sound	10
Graphics	9
Playability	8
Value for money	8
Overall	9



Weary wagging

Program: *Fraxsis*
Price: £1.99
Supplier: Microtronic, 8-12
 Paul Street, London EC2A
 4-9J
 Tel: 01-377 6880

ALTHOUGH *Fraxsis* describes itself as a game guaranteed to bring you total nervous collapse, my guess is that it is more likely to be caused by boredom from monotonous gameplay.

You are armed with a Station which is actually two thick bars, one running vertically down the screen, the other horizontally.

Each bar can be moved separately against a plain backdrop, the vertical one going left and right, and the horizontal bar, up and down. The movement is controlled by an appropriate tug on the joystick.

Enter the aliens, stage left, right, and all ways. These

particular meanies are not visually striking, being either circular, diamond or other sharp-angled shapes.

Your task is to destroy the heads before progressing to the next level.

The way to exterminate the infestation is by moving one of the bars across its path – the aliens explode on impact. If aliens are heading from the right, sweep the vertical bar from the left. Pink arrows on the bar point the direction the bar is currently taking.

You also have some smart bombs at your disposal, – triggered by pressing the fire button. They will rid you of all the aliens in the immediate vicinity.

And that's it, really. There are 40 waves of aliens to get through and while it gets faster and more furious, you are still simply wagging one of two bars back and forth. I grant that dextrous



handling of your Station is needed to make progress but the game failed to catch my imagination. It's all too much of a rushness.

Fraxsis was written by Tony Tetsushi, well-known arcade games fan. Despite his wide experience of arcade action, I'm afraid he hasn't produced a stimulating game.

Fraxsis doesn't come anywhere near generating the sort of excitement that many other games for the Atari have managed to deliver.

Better graphics, less simplicity and much more complexity variety might have invigorated my interest. As it is, although this game is cheap, you'll be advised to have a look at some others in the Microtronic range. This is not one of their finer offerings.

Bob Chappell

Sound	2
Graphics	2
Playability	2
Value for money	3
Overall	2

There you pogo

Program: *Sprong*
Price: £7.99 (boxed), £3.99 (cart)
Supplier: Red Rat Software,
 11 Farnell Street, Manchester M4 3DU
 Tel: 061-925 1955

THE main character in *Sprong* is some sort of demotated Aussie jumping around on a pogo stick. It brings tears to my eyes just thinking about it.

Anyways, you set off to find the fabled Lost Golden Pogo stick, spawned on by the wailing of Danny Boy. While I like to think I have an open mind on musical matters, I was glad to be able to turn this particular cacophony off.

You are given five lives to begin with and there are chances to win extra lives. Each screen has to be completed inside a time limit and there are 50

screens to pogo through.

Moving from left to right your progress may be checked by a number of obstacles and hazards. These include lava flows, raging fires, laser beams, acid rain, bomb-dropping helicopters, meteors and one or two others.

These can be dodged by careful timing of your movement or avoided by hugging on to and across platforms, conveniently drawn about the place. The platforms can be of the rock-steady or distinctly temporary variety.

You hop gently along, moving left or right. Pressing the fire button increases the height and length of the jump. The springing movement is good and leisurely and adds to the difficulty when trying to assess particularly tricky jumps.

Should you lose your last life 38 screens into the game, you don't have to go



back to the beginning next time round.

On restarting you can choose to begin at screen 10, 25, 30 or 48 depending on how far you reached. Even as an absolute beginner you can start on any screen between 0 and 8.

The graphics are bright and cheerful, though blocky and rather unimposed. The raging fires are little more than glowing embers, the background scenery could have come from Legoland and as for the lava flows – well I've seen more anim-

ation in our junkie store on bath night.

There's nothing new under the sun, as goes an old adage – and *Sprong* by Red Rat Software certainly does nothing to try to disprove it. On the other hand *Sprong* is well put together and is reasonably challenging.

Nick Reynolds

Sound	4
Graphics	4
Playability	3
Value for money	3
Overall	3

Cutting it fine

Program: *Hover Beaver*
Price: £1.99
Supplier: Mastertronic, 610
 Paul Street, London EC2M
 4AP
Tel: 01-297 6880

A GAME about lawn mowing by Jeff Minter? What, he of the megatons, all-action, rip-roaring, blast-em-out-of-the-sky fame? No, it can't be the same Minter.

But it is. *Hover Beaver* is not a new game — in fact it came out on the Commodore 64 way back in '83.

The game has you borrowing a neighbour's hover mower to cut a series of lawns. You've barely started cutting your first lawn when the neighbour decides he wants his mower back. Then begins the

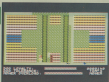
chase, you racketing around the lawns, Rover beds and hedgerows with the neighbour in hot pursuit.

If you go too far apart with the mower, it overheats and cuts out, leaving a hiatus in your manicuring exploits until it has cooled.

Should you send your mower ploughing across one of the many flowerbeds, an angry gardener joins in the pursuit.

One way of feeding off pursuers is to set Rover, your faithful dog, on to them.

The gardener and Rover, sensitive souls, will never cross a flower bed unless you have slashed a path through it. Not so the neighbour, who will transgress anything in his desire to recover the mower. It pays to play the vandal to keep



the edge on them.

You have three lives and 16 gardens to conquer. Thereafter, you get the lot again at a faster speed. You can begin on any of the first eight lawns you like and have a one or two-player game.

The view of the lawn is from directly overhead which, although it now looks a bit dated, is cleverly done.

Music is jaunty renditions

of "In an English Country Garden" and several effects are excellent. *Hover Beaver* offers many an enjoyable, fast-action bout of daily fun. Should be top of your shopping list.

Bob Chappell

Sound	5
Graphics	5
Playability	5
Value for money	10
Overall	5

Breaking out

Program: *Arkanoïd*
Price: £9.95 (one £12.95 plus
 postage)
Supplier: Imagine & Concept
 20 Ward, Manchester M20
 9AS
Tel: 061-627 6022

WHO would have thought that the game of '81 would be a relative of the legendary program *Breakout*?

Well, *Imagine* thinks it has a winner with its latest release *Arkanoïd*. It looks like *Breakout* but has many hidden surprises.

Imagine has already converted the original arcade version of *Arkanoïd* on to other computers including the ST with considerable success. But I'm sorry to say that the *Arkanoïd* 1-bit version is well below average.

The game has a very simple premise — you control a bat in the form of a short tube. This must be used to keep a bouncing ball from reaching the base of the screen. The ball must then be ricocheted among a

mass of coloured bricks, breaking down the wall until all are destroyed and then you go on to the next level. I know it sounds exactly the same as *Breakout* but there are nice additions to make it more fun.

Each level has a different pattern of bricks and various bricks need more than one hit to remove. Some have coloured, one-lettered capsules hidden behind them and as soon as you destroy one the capsule appears and falls down for you to catch.

Each capsule has a different colour, identifying label and different effects. Catching a new capsule will negate the operation of any previously caught capsule.

The last capsule in most cases is the L for Laser. Your bat turns into a double laser which can blast the bricks. The instructions do say that a D capsule exists — breaking the ball in to three — but I never got one.



Mouse & laser...

Released at intervals through slots at the top of the screen are shots that cause great confusion between you and the ball. If the ball collides and kills in-also the bat can rebound in any direction.

There are 32 screens to work through before the climax confrontation with the Dimension Changer, whoever or whatever that is.

Arkanoïd can be played by one or two players and the bat is controlled by either paddles, joystick or the keyboard.

I have seen and played the ST version and this makes me feel even more

gripping of the 1-bit version.

The game lacks in graphics, the colours clash making the game at times impossible to see. There is no music and it seems to give capsules out by the dozen making each level too easy to complete.

I feel that a lot more could have been done especially with such an easy programming task as *Breakout*.

Richard Vanner

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

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LOTS of pictures have dropped into our mailbox since last month's Palette, including some of the demonstration pictures from Red Hat's Technicolour Dream software illustrated here.

If you would like to see your masterpieces in print, send them to: Palette, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NT.



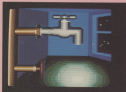
A bridge over the



Red hat logo



Watch 97



On tap



Going loco

SPECIAL FX



In this new series we'll delve deep into the unknown areas of your Atari computer. FX will give you some insight into what can be achieved by using a little imagination and harnessing the many hardware functions available.

We start off this month with a machine code routine that renders player missile graphics down the screen. This shows how it is possible to change the player missile graphic (PMG) X positions as the electron beam moves down the screen. Both a Basic version and the machine code source program are given.

Type in the Basic listing, save it and RUN it. A breakdown of how it works is given in Table 1. After a short pause the screen will display diagonal lines and stars moving across the screen.

Note that there are only four PMGs on the screen. How is this done? Well, let's look at the assembly listing.

Most of the work is done between lines 450 to 550. The X positions of each sprite are taken from location 26, which is increased every vertical blank (every time a TV frame is displayed). Then the positions are altered by the angle value, and the new PMG coordinates are set after waiting for the horizontal sync (HTSYNC) signal.

This procedure of changing the X-positions is continued until the value of the vertical counter (VCOUNT) reaches 128.

This indicates that the electron beam is near the base of the screen and nearly ready to re-display a new frame. Location 26 is increased by the Operating System during the vblank period, which gives a new position for the PMGs to start from.

Don't worry if you don't understand

RICHARD VANNER shows how to produce amazing displays with your micro

how the machine code works, because the Basic program has been written so that you can use the code in your own programs.

You could try altering the two angle variables, ANGLE1 and ANGLE2 or change the widths of the player missiles and the data stored within them.

Unfortunately, when you change graphics mode the PMG area becomes corrupted, so make sure you're in the correct mode when you

use the routines in your own programs.

Another limitation in the program is the fact that it spends all its time changing positions and checking for the Start key. To overcome this problem you must use a feature called the Display List Interrupt (DLI).

■ Next month we'll look at how to set up a DLI and give you listings that will split sprites and colours which will run independent of your Basic programs.

50-100	Sets up 1k of space for PMGs and sets up DLI which holds the machine code.
110-180	Tests the ANTIC chipenable PMGs and sets the player address pointers.
190-240	Clears all player graphics memory.
250-300	Fills each player with some form of data. You can change this to your own requirements.
310-340	Copies machine code data into A5.
350	Sets ANGLE1 and ANGLE2 to 5 and 75 respectively. Try changing these to various values. Low values for lines and high values for star type effects.
370-400	Sets player widths. Values coded here can be 0 or 2 normal, 1 double or 3 for quadruple size.
410-440	Prints a message on to the screen.
450	Calls the machine code that is stored in A5 with the two parameters ANGLE1 and ANGLE2.
460	Ends the program.
2000-2400	Holds the data for the machine code.

Table 1: Breakdown of the Basic program



Abstract: The purpose of this study was to determine the effect of a 12-week, low-intensity, supervised walking program on the physical and psychological health of sedentary, middle-aged women. The study was a randomized, controlled trial. The subjects were 40 sedentary, middle-aged women who were randomly assigned to either a walking program or a control group. The walking program consisted of 12 weeks of supervised walking, 3 times per week, for 30 minutes per session. The control group was instructed to continue their sedentary lifestyle. The subjects were assessed at baseline and at 12 weeks. The walking program had a significant positive effect on the physical and psychological health of the subjects. The walking program significantly improved the subjects' physical health, as measured by the 6-minute walk test, and their psychological health, as measured by the Beck Depression Inventory and the State-Trait Anxiety Inventory. The walking program also had a significant positive effect on the subjects' quality of life, as measured by the SF-36. The walking program was a safe and effective intervention for improving the physical and psychological health of sedentary, middle-aged women.

[illegible]

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

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00000000	00000000	add long left	none
00000001	00000001	clear MACC	clear
00000010	00000010		
00000011	00000011	add long left	
00000100	00000100		
00000101	00000101		
00000110	00000110		
00000111	00000111		
00001000	00001000		
00001001	00001001		
00001010	00001010		
00001011	00001011		
00001100	00001100		
00001101	00001101		
00001110	00001110		
00001111	00001111		
00010000	00010000		
00010001	00010001		
00010010	00010010		
00010011	00010011		
00010100	00010100		
00010101	00010101		
00010110	00010110		
00010111	00010111		
00011000	00011000		
00011001	00011001		
00011010	00011010		
00011011	00011011		
00011100	00011100		
00011101	00011101		
00011110	00011110		
00011111	00011111		
00100000	00100000		
00100001	00100001		
00100010	00100010		
00100011	00100011		
00100100	00100100		
00100101	00100101		
00100110	00100110		
00100111	00100111		
00101000	00101000		
00101001	00101001		
00101010	00101010		
00101011	00101011		
00101100	00101100		
00101101	00101101		
00101110	00101110		
00101111	00101111		
00110000	00110000		
00110001	00110001		
00110010	00110010		
00110011	00110011		
00110100	00110100		
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00110110	00110110		
00110111	00110111		
00111000	00111000		
00111001	00111001		
00111010	00111010		
00111011	00111011		
00111100	00111100		
00111101	00111101		
00111110	00111110		
00111111	00111111		
01000000	01000000		
01000001	01000001		
01000010	01000010		
01000011	01000011		
01000100	01000100		
01000101	01000101		
01000110	01000110		
01000111	01000111		
01001000	01001000		
01001001	01001001		
01001010	01001010		
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01001100	01001100		
01001101	01001101		
01001110	01001110		
01001111	01001111		
01010000	01010000		
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01011000	01011000		
01011001	01011001		
01011010	01011010		
01011011	01011011		
01011100	01011100		
01011101	01011101		
01011110	01011110		
01011111	01011111		
01100000	01100000		
01100001	01100001		
01100010	01100010		
01100011	01100011		
01100100	01100100		
01100101	01100101		
01100110	01100110		
01100111	01100111		
01101000	0		

MEGAPAC

520 STFM SYSTEM BY A.S.&T.

The new 520 STFM from A.S.&T. has been an instant success story. The system, the design Megapac/STFM was well received by all 500 STFM users. The 520 STFM is a powerful, high-performance computer system, easily and quickly installed in a standard office environment.

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OVER the past few months we've been looking at facilities provided by the Central Input/Output System — or CIO. You should now be familiar with the way that the operating system uses CIO to pass data to and from the various peripherals, and how you can use those same CIO handlers from within your own programs.

One of its most powerful and useful facilities is to supply a common protocol for data transfer. This allows a program to send or receive bytes of data without knowing anything about the hardware device it is accessing.

This makes it very easy to add new drivers to the existing set, and the CIO allows plenty of space in the Handler Address Table for just such a purpose.

The most complex driver that you are likely to come across is the disc operating system (or Dos as it is better known), and over the next couple of months I'll be showing you in more detail how it works.

There are many different types of Dos available, but the most common is the well known Atari Dos 2.0. This has been expanded recently to give us Dos 2.5, but the main principles of operation are exactly the same.

Various other manufacturers have produced their own Dos software but most of them use the same basic disc format. Many also add their own special facilities, but for the moment we'll concentrate on the standard Dos 2.0/2.5 format.

The first thing to realise is that a disc drive differs from most other peripherals in that it is a random access device — it can read and write data at various different positions on the disc under software control.

While a cassette must be set for record OR playback by the user, a disc is perfectly capable of being written to or read from whenever the computer requires. This opens up the possibility of transferring data between files on a single disc, or changing the data contained within one file — both of which are impossible when using tape.

Any Dos must therefore provide a number of operations. It must allow many different files to be stored and accessed on each disc and these must be capable of being read or updated and then deleted again when they are finished. There should also be a set of housekeeping routines for such tasks as copying files, altering the names of files, making new or backup discs and so on.

The disc drive is actually only cap-

A close look at Atari Dos

Part 6 of Andre Willey's series on the Atari's input/output facilities

able of five very simple operations. The first is to format a blank disc. This effectively partitions the new disc into 120 separate blocks of data known as sectors (see Figure 1).

Each of these is 128 bytes long so a full disc can store 92,160 bytes (90K). The 1050 drive is also capable of formatting in a special enhanced density mode which contains 1600 sectors instead of 120 thus giving a total capacity of 102,400 bytes (100K).

The next three operations that the drive can perform are *Write Sector*, *Write Sector with Keyfile* and *Read Sector*. These allow you to store or retrieve raw data into any sector. Finally the drive can also list the computer know its current status and provide information about the last

From Page 82 >

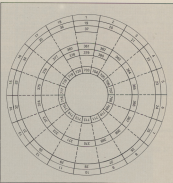


Figure 1. Sectors on a single density Dos 2.5 disc

operation is completed and the type of disc in the drive.

In addition, you may recall from Len Golding's series on autobooting that the OS is only capable of a very simple boot operation — that of loading a set of consecutive sectors from the start of whichever disc is in drive one when the power is turned on.

All this leaves us with a picture which is a far cry from the all-singing Dos specifications outlined earlier. If all the computer can do is manipulate these sectors containing just 128 bytes, how can Dos ever do all those clever tasks we are by now used to?

Perhaps now you understand why I stated that Dos is probably the most complex — and largest — of the device drivers. It's also why Alan decided to load it in from the disc at power-up time rather than permanently use up an extra 10k of memory space that would be completely wasted as far as tape users were concerned. The whole of the original OS only took up 10k, so incorporating Dos as well would have doubled the ram space required.

The very first Alan Dos (Dos 1, would you believe!) loaded this entire 10k block of machine code into memory in one go, thus reducing start work speed in Basic to a meagre 25k on a 48k machine.

It was quickly realised, however, that not all that program code was needed all of the time. When programming in Basic all that you require are the new Open/Close file and data transfer routines, plus a few BIO commands for other functions. Certainly

there is no point in wasting the extra memory taken up by the menu system which is only needed occasionally.

Dos 2.0 splits this software into two parts. Part one, contained in the DOS.SYS file, is the actual 5k disc handler routine used by BIO. Part two, the 5k DUP.SYS file which is only loaded when you type DOS, contains all the menu facilities such as duplicate disc and copy files (See Figure 11).

The routines contained in the DOS.SYS file allow the user to do all the things we require of a disc system without concerning ourselves with which sectors are being used. Dos works out which sectors it will have to use for which files, and all we need worry about are filenames and the bytes of data contained in them.

You may have noticed a slight discrepancy in what I've said so far. If the file DOS.SYS tells the computer how to treat sectors as separate files, how does the DOS.SYS file ever manage to load itself into memory? Well, the simple answer is that it doesn't!

The first three sectors of a Dos format disc are reserved for a special bootstrap loader capable of loading and running the DOS.SYS file itself. These sectors load at 5780 via the normal disc autoboot method and are also responsible for setting up the BIOS, DOSBNC, MEMLO and WATADD pointers.

These allow Dos to sit within the CIO environment, and prevent it from being overwritten by any other software (such as your Basic program). In

addition this code will be run again whenever System Reset is pressed in order to reinitialise the disc handlers.

Once the boot process is finished you will see the familiar READY prompt from Basic. If you type PRINT PEEK you will get a result of 30.174 bytes — or about 32k. Without Dos this figure would be 37.800, so Dos has in fact taken up 5,626 bytes of memory.

This doesn't include the disc utilities menu, which is only loaded from the DUP.SYS file when you type DOS. This uses up an extra 5k of memory, which will, of course, wipe out any Basic program you might be working on. To avoid this, you can set up a file called MEM.SAV on your Dos disc.

When this is present, the first 5k of your program space is saved into this file as soon as you type DOS. Then, when you have finished with the utilities menu and you enter B to return to Basic, the contents of the MEM.SAV file are copied back into memory and your program is instant once again.

At this point it's worth mentioning one of the major differences between Dos 2.0 and Dos 2.5 — the version. As you will know if you use a 1300E, Dos 2.5 allows you to use that extra 84k of banked memory as a second disc drive. It also stores DUP.SYS and MEM.SAV on the ramdisk which means that there is no appreciable delay while the reloaded operation takes place.

If you don't have a 128k machine and must use a normal floppy disc for the MEM.SAV file it takes a little over 21 seconds before the menu appears. Without MEM.SAV this is reduced to just seven seconds, so many people react to simply SAVING their programs before typing DOS.

To understand the disc system a little better, let's look at the way the

DISC OPERATIONS SYSTEM 2.0 VERSION 02-00
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1. DIR DIRECTORY	3. FORMAT DISK
2. RMV COPY PROC	4. DUPLICATE DISK
3. DELETE FILE 132	5. CHECKY COS
4. REMOVE FILE	6. RMV AT ADDRESS
5. LOCK FILE	7. CHECKY MEM 300
6. UNLOCK FILE	8. CHECKY 45 FILE
7. WRITE DOS FILES	9. FORMAT SINGLE

SELECT ITEM OR **ENTER** FOR MENU

Sectors	Contents
1-3	Boot Information
4-388	Free for files
389	VTDC
389-388	Directory Information
389-719	Free for files
720	Not available from Dos

Figure 11. Disc sector map for single density Dos 2.0 disc

computer uses these 720 (or 1040) sectors to store your programs.

Figures 11 and 12 show the disc format for a Dos 2.5 disc in single or

Turn to Page 54

Sectors	Contents
1-3	Boot information
4-255	Free for files
256	VTDC
257-258	Directory information
259-1023	Free for files
1024-1845	Not available from Dos

Figure 30: Disc sector map for enhanced density Dos 2.0 discs

enhanced density. The first three sectors are always used for the boot information. These may not be used for file storage, even if you don't actually have a DOS.SYS file on that particular disc.

There are three other types of sector on the disc - directory sectors, file data sectors and the Volume Table of Contents (VTOC).

The directory information is contained in eight sectors near the middle of the disc (sectors 281 to 288). It is here that all of the file names are stored, plus any other information about the files such as length, starting sector, status and so on.

Each entry is 16 bytes long, so every sector can contain details of up to eight files - giving a maximum of 64 files per disc.

Just prior to the directory sectors comes the VTDC sector, numbered 289. This is probably the most important sector on the disc because it holds the table of free space which is referred to each time you want to write any information to the disc.

As each sector is filled up, Dos looks at the VTDC to find the next available unused sector. When this sector has been allocated to a file it is removed from the VTDC free list and marked as being unavailable. Only when you delete a file from the disc are those sectors marked as again being free.

The rest of the sectors on the disc are available for storing the files themselves, with the exceptions of sector 720 on a single density disc and sectors 1024 to 1845 in the case of enhanced density discs.

When Dos 2.0 was first developed, the software authors wrote their brand new system to use all 720-disc sectors, numbering them from 0 to 719. The

hardware designers of the pit 810 disc drive, however, programmed the unit to respond to a sector numbering system using numbers from 1 to 720 - most unusual in computer terms. Hence Dos 2.0 couldn't use sector 720 and the hardware couldn't use sector 255.

On a 1040 sector enhanced density disc, sector 720 is used just like any other but in this case the last few sectors can't be accessed because of a limitation of the 18-bit file sector numbering system used by Dos 2.0 which was never designed to go beyond 1024 - This means you lose 12 sectors at the end of each disc.

Why Atari designed the 1056 to use this unusual system of 1040 128-byte sectors, when the established norm for extra storage capacity was by then to use just 720 256-byte sectors, no one is quite sure - but the upshot of it all is that you lose about 3% of space from every enhanced density disc.

Next time we'll continue looking into the disc system and see how it stores and keeps track of all of your files and data. See you then.

The truth about TELEX

How much does it cost to go on Telex?

You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you £1,304 (the Whispac), the cheapest ECTSP2 (see Chartwell). You will also need a separate telephone line, costing £181 to install, plus £408 a year rental. That's a total outlay over the first year of a minimum of £2,193. (All prices include VAT.)

Or you could do what most (and more Atari users are doing) - use your *Atari* to double as a Telex machine. And just add your ordinary telephone!

How do I turn my Atari into a Telex machine?

All you need is a modem and appropriate communications software for the communications in your house, a telephone, and a subscription to MicroLink. Telex is just one of a growing number of services available to Atari users on Telex. MicroLink, then, lets you use the same bit of hardware, at a happy, go shopping, create your own closed user group, send telegrams and electronic mail right round the world, download file transferware programs directly into your home... and much more.

But why use Telex?

Because it's a standard means of instant communication between business. Today there are 150,000 Telex machines in use in Britain - and more than 2 million worldwide. It's good to instantly speed up business communications - just as quick as using the phone but far more efficient, because you have a hard copy of every "conversation" for your records.

But there's a big bonus you get when you use MicroLink for Telex that the conventional way doesn't offer.

With MicroLink you don't have to be in your office to send or receive Telex messages. You can just as easily use your computer at home (or even a portable) - so now you can check whether there are any Telex messages waiting for you - anywhere, anytime. That's for your business efficiency!

Know the price?
See Page 4

Program to suit the 1029 printer

I AM considering buying Mini Office II but would like a few points clarified. Would my Atari 1029 printer work with this particular program as most of the other utilities I own totally ignore this printer.

Also will the spreadsheet software program operate using split baud rates and if it will not can you please explain what baud rates are available to me? — A. F. Sharp, Tonside.

■ Mini Office II supports the Atari 1029 printer throughout the entire package as well as allowing the use of all known compatible printers.

The package allows you to create graphic dumps of all forms of graphs on your Atari 1029 printer as well as working perfectly with the other modules of Mini Office II.

In regard to your other query, the communications package does not allow split baud rates but does offer 300, 600, and 1200 baud, which facilitates most of the modems on the market for Atari computers.

Replacing keys

WITH reference to a letter in the July 1987 issue of Atari User concerning the moving of the Pause key on a 1010 tape recorder and replacing

a broken key with it, I recently did the same thing to my 1030 tape recorder and I replaced the broken key with the Pause key.

I then found that *Silica Step* actually did replacement keys for this cassette. I sent off for two keys and received the keys very promptly for a price of £7.12 which included VAT, postage and packing. *Silica Step* can be contacted on 07 308 1711. — Kevin Kingsnorth, Banbury.

Buying a disc drive

I OWN an Atari 800X1 and tape recorder and am now considering buying a disc drive. I am unsure about what I get when I buy one, which Dos is the best to buy and how to use it. What sort of further accessories will I get and do I need to load this Dos every time I use my drive? — W. Golding, Liverpool.

■ When you buy an Atari 1050-disc drive you will get a power pack, serial IO lead and discs. On one of these discs you will find Dos 3.5 which is not the best of the

Dos files available but is probably adequate for your needs.

When working from Basic you must load your computer with Dos first or you will not be able to save any programs to disc once you have written them.

You do not always have to load Dos. When you load most games you simply use the game disc.

You receive a comprehensive list of commands on your screen when you load Dos, allowing you to format discs, copy Dos discs and generally edit and manipulate files from one disc to another.

As to which is the best Dos, all have very similar command options but you will find that Dos 3.5 is the most friendly and easy to use.

Software problems

MY friend has recently bought a new Atari 1040ST computer and it comes with a built-in mouse. This has a connector that looks the same as the joystick one on my Atari 800X2. Does this mean that I can use the

mouse on my Atari 800X2? — D. Redmond, Haregate, N. Yorks.

■ The connection is the same on both mouse and joystick and you will find that the mouse produces a value in location \$A018 (\$C180 hex) when you move it. The problem is that no software is yet available which recognises the values output by the mouse.

Music on call

THIS read seems a very simple question, but is it possible to play normal music through the Atari 1030 tape recorder and also is it possible to run the recorder on and off via Basic without using the CLOAD or CSAVE commands?

This came to mind when I tried to write a program to play some Christmas carols and found that I couldn't get the hang of the second channels so I gave up in desperation.

Then I wondered if it was possible to play and control music through the recorder and so solve my problem. — S. Burton, London.

■ Yes, it is possible to play music through your 1010 tape recorder but the sound will come through the TV speaker and may sound a little distorted depending on the age and quality of the speaker inside your TV.

The way that this is accomplished will answer your second query as well. It is possible to control the recorder from Basic but it is hardly ever documented in manuals. To turn it on you simply type POKE \$A016,\$2 then press Return.

If you put a music tape in,

Turn to Page 60 P

Connecting up to MicroLink

I OWN an Atari 800X2, disc drive and printer and wish to expand my system to include a modem. I was wondering if I joined MicroLink would I be able to have it charged directly to the instead of to my parents on the phone bill.

My other problem is that my system is in a converted shed and the phone is on the ground floor. Would the modem and the phone have

to be side by side? — M. Broadbent, West Yorkshire.

■ The only charge on your phone bill will be the cost of the telephone calls to the MicroLink computer. MicroLink charges are billed to you separately and payment is by a direct debit from your bank account.

To work out how much you would owe your parents for the use of the phone, the MicroLink bill specifies the

connect time to the system at both peak time and off-peak times. You will, therefore, be able to calculate the total phone call charges. Because your system is in the attic, it will be necessary for you to get an extension from the telephone socket downstairs to a socket in the attic. It is possible to buy such extensions from most electronics shops.

press Play on the recorder and turn the volume on your TV up you will hear the music. If you want to turn it off type POKE 54818,80 then press Return. By including this in your programs you can have exciting music without the effort of programming it.

Software checkmate

In a news item in the June issue of Atari User it states that CDS Software claim that their chess program is the first 3D chess program for the 8 bit Atari. I would like to point out that Chessmaster 2000 from Software Country has been around much longer so I feel that the claim is invalid. — Len Fort, Sunderland.

Atari on tape

COULD you please tell me how the Atari music series information to the tape recorder. This point is of particular interest to me after reading your excellent series and I would like to

ATARI USER Mailbag

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

The address to write to is

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

know more on the technical side of how it is done. Also, what is this Foley chip that is often mentioned in articles. — A. J. T. Buckton, Manchester.

● The way that the Atari writes information to the tape recorder is in fixed-length blocks at 800 baud (physical bitstream). Then a serial transmission is used to read or write data to the recorder.

The sound chip inside your micro handles any data streams coming into or out of your Atari in a set order: 1 start bit (space), 1 data bit 10 space, 1 mark, then one stop bit (mark).

Your sound chip sends or receives a byte by least sig-

nificant bit first. The recorded block is 132 bytes long and is broken down into marker characters for measurement of speed followed by a control byte then by 128 data bytes and finally a checksum byte.

The chip that you have heard referred to as Foley is in fact the sound chip and was given this name when the machine was first built.

The chip was new and is not available in any other micro and like the other new chips inside the micro such as Antic and OTA was given a name. The Foley chip also creates all the sound outputs that are available from Basic allowing you to obtain superb sound simply.

Taxman's warning

IN THE article "Check up on the taxman" published in the June issue of Atari User there were some errors.

Overall it would be unwise for your readers to rely on the accuracy of the machine for checking their PAYE tax deductions. For the majority the machine will be in error by *percent* only, but for those whose taxable pay averages over about £740 per week, the error could be quite large. — G. G. Lawton, Inland Revenue.

Wrong listings?

I READ your magazine every month and find it very interesting. But whenever I type in one of your listings it never works, so I retype it and retype it checking every character and they still never work. So I have come to the conclusion that none of them work and that your listings and all printed wrong.

Could you please explain how the second channel's work. — G. Gilling, Iffe.

● All the listings are taken directly from working programs and they are checked before we publish them so that they are correct. The problem is that even a small typing error will stop them working.

Take a lot of care when you type them in and make use of the Get It Right program that we published in the August 1988 issue of Atari User. This program will help you in your efforts, correct your typing errors and get a working program.

There are many complex ways of producing sound on Atari home computers, but it nearly always comes back to the Basic sound command. This takes the form of SOUND 1,10,10,10 and the numbers shown can

Adapting an Apple drive

I RECENTLY acquired a pair of Apple IIe disc drives which my 10m Dad scrapped. When I tried to plug them into my 80087, I found that there appears to be no socket for it to fit in. On the back of the disc drive there is a 20 way ribbon cable and a label giving a warning — remove the cable only in the Apple II interface card. I have one of these, and now know that the drives are single side, double density, 48 track, 80 sectors per inch.

Inside the drive there is a disc analogue card, so can you please explain to me

why I cannot use these drives on my micro. What modifications would I need to make and would I need to use the interface card? If so how would I connect it to my 80087. Would I also need a separate power supply as the drives take their power supply from the computer, and when connected should commercial software run on this drive? — J. A. Oatkins, Essex.

● The disc drives on the Apple II computers are rather different from most other drives as they use a lot of electronic interfacing.

This is why the interface card must be bought to use with the Apple II.

Unfortunately as useful lot of work on the electronics would have to be done to make it compatible with an Atari computer. It would probably not be worth the trouble when you could sell the drives and put the money towards a fully compatible Atari 1050 disc drive.

You would get Dos, and the correct lead and a power supply and you would have no problem running any of the commercial software available.

has changed to any other number within the parameters of the SOUND statement.

The first number indicates which sound channel you wish to use in the range Q10-3 and the second number indicates the rate you want to use. This can range from 0 to 255, giving you a lot of variety.

The third number indicates the distortion level of the note with the number 10 indicating a pure note. This number can range from 0 to 14 in even numbers only.

Finally the fourth number indicates the volume level of the note and this ranges from 0 to 15 with 15 being the loudest. By experimenting with this command you will be able to create some very interesting sound effects, and if you refer to the five finger section of this issue of Atari User you will find a program that will turn your computer into an electronic organ.

Adding a modem

I AM interested in adding a modem to my Atari 800 setup so that I can access *MicroLink* as advertised in *Atari User*. However, I am not clear exactly what sort I need and what additional software and hardware will be required. Can I access *Proteus* through *MicroLink*?
— Chris Reed, Milton, Kansas.

- Adding a modem to your system is not as expensive as many people think and can be very useful.
- There are several available for you to choose from. Prices range from £140 for a manual modem to a few hundred pounds for ones which will dial the Modem number for you automatically.

You will also need an 800 number box or a land connection your Area directly to a modem. You will also require a computer.

Abstract

Unfortunately you cannot access Prostate through MicroLink at present, but it may be possible in the future although no definite date has been set.

Holiday tips

YOUR readers may be interested in an idea I recently used to help me enjoy my holiday better. One of the things I dislike most is writing postcards, so I used *Mini Office* to my help.

Before I departed I set up a database file of my friends' names and used the label printer to print them out on sticky labels. Then I printed out an equal number of labels with the following text on them:

Having a great/cheap time,
 another country/old friend,
 still called/young/ poor,
 food/strong/love/older
 at last use the ship shop,
 people are friends/friends

It was done just a matter of taking two children and a stamp in the cards, deleting any inappropriate words and signing them. I hope this new sending idea will enable your readers to enjoy their holidays rather than waste them writing cards. And when it comes to Christmas, I've got the same as the ready to address the envelopes of the card. —
—Jim Jones, Cleveland

Converter converted

Q. WATSON'S five-line decimal to hexadecimal converter in the May issue of *ASCII* User is great. However, rather than entering 4-15871360, numbers, I find that adding 160768 to the end of line 50 makes the machine more useful.

Since typing in Dave Miller's Field from the March issue of *Steel Line*

For family been able to get near my Alan for my wife playing on the benefit, it's a great program, and if she paid me what she's lost I could probably afford an \$10 fee more.

Finally, in the more
 fortunate by Colin Wright
 in the June issue of *Alibi*
 List, the last is hidden in
 line 2 by `POWERS`. I sug-
 gested `POWERS`. I also
 included a `POW` `ALL` in
 line 5 to verify the source in
 the interview when an error
 message is displayed. You
 seem to have used `POW`
`ALL` on these findings.

Support missing

In the May issue of *Star User*, which my son buys every month, there was a letter from someone who had sent for something from Computer Support UK, advertised in your magazine. They had not received it.

I also want for something
down there, because it's

We have been trying to contact them since August 1995. Although we asked the help of consumer services all we got was promises.

After letters sent by our solicitor there was still no answer, so we applied for a court summons. We were given a judgement against Mr Lawson of Computer Support Inc.

The Smiths have told us that there is no one at any point at 753 Parrott Street. — Mrs. M. C. Sanderson, Greenhough, Rotterdam, York.

Mass formatter

NOTE: I received the June 1987 issue of *Aspi User* (got very great enjoyment out of reading it. I would like to say it is one of the best issues I have read since its onset.

These results are consistent with the hypothesis that the

across and in the Five Living
Miles Community programs.

In Steps 1 and 2 the Spring should drop below 1000psi which are not on the top band!

They are meant to be the clear screen changer SCHW/1250 which is obtained by pressing Groups + Control + Clear. - A. B. O'Neill, Hunts.

Display lists

I HAVE had an Atari 800XL for two years and have had to try to know what a display list is. I think it has something to do with the graphical mode but that seems to be the limit of my knowledge on this subject. — B. Wain, Didsbury, Manchester

- The display list is a series of numbers that describes the way in which the graphics chip - write - must display the screen. The address pointer is where the display list begins in at location 00000010 (5230-5231).
- The July to December 1985 issues of Atari User contained a comprehensive guide to the subject.

Cursor flashing

I WAS delighted to see my former teaching position referred to in the Fine Living section of the June issue of *Real Living*.

Unfortunately I have to admit there is a bug in the code as pointed, which results in requests were not having the protection against system calls as expected in the test. The request does need the other calls.

That she is to replace the deceased member in the state is line 20 to 24 by 20 June 20 when did come out.

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- **Q. What is the purpose of the study?**

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– Anthony Ginn, writing about the Atari ST version in the May 1986 issue of the Atari User

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Received at Bureau of Census (October 1991)
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