

A Database Publication

ATARI USER

Vol. 4 No. 1 May 1988 £1.25

WIN

the sensational

**ATARI
GAMES
SYSTEM**

+ lots of
other prizes
in our

**BIRTHDAY
CONTEST**



How
to find
your way
around

REVIEWS: Thunderfox, Zybex, Olympiad 88, Super Soccer

LISTING: Explore the unknown in Mine Runner

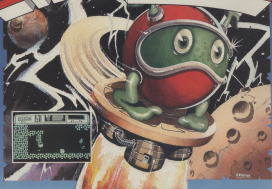
LISTING: Clever cassette verify routine

The Eidolon



FREE
when you subscribe
to Atari User

Starquake



In this delightful game you control BLOB, the Biologically-Operated Being, navigating him through 500 action-packed screens to rebuild the unstable planet's core.

Bubble Bus' Starquake is one of the biggest-selling games for home consoles, due to its incredibly addictive gameplay and cleverly animated graphics. It has received

such accolades as Game of the Month in Computer and Video Games, and was awarded a Crash Smash.

● What reviewer Bob Chappell said about the Atari version: "Starquake is top-notch fare... quality dripping from every byte!"

Don't miss out on this tremendous offer - 50% in the coupon on Page 61 without delay!

Available for	Product	Format	RSP	Special reader offer	YOUR SAVE	Offer including subscription*
Atari 8-bit (also enhanced)	Starquake	Tape	29.95	24.95	EA	FREE
		Disc	29.95	24.95	EA	FREE

*U.S. Current subscribers can re-subscribe early to take advantage of this very special opportunity.



Vol. 4 No. 1 May 1988

MANAGING EDITOR
Derek Macklin
GROUP EDITOR
Alan McLashan
FEATURES EDITOR
Ken Hughes
PRODUCTION EDITOR
Peter Glover
EDITORIAL ASSISTANT
Neil Forward
ADMINISTRATOR
Mike Cowley
REVIEW COORDINATOR
Pats Turndall
TECHNICAL EDITOR
Andre Wilby
ADVERTISEMENT MANAGER
John Snowdon
ADVERTISING SALES
Nara Laverick

 Tel: 0925 879980 (all nights)
0925 879980 (during office)

 Telex: 26271 MANDIE G
Creeting Rd, 70-88A020

Telegram Code: T1-MANDIE

Postal Address: 4 499893

Fax: 0925 879988

Published by:
**Database Publications Ltd,
Europa House, Billingsgate Park,
Aldingham, Merseyside, L31 4NP**


13.00 January-June 1988

 Subscription rates for
70 issues, post free:

 £25 — UK
£35 — Europe (incl. Euro)
£50 — Overseas (airmail)

0294 6298-9493

"Atari User" welcomes program listings and articles for publication. Material should be typed or 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 Database Publications Ltd entitle us on all rights reserved.

© 1988 Database Publications Ltd. No material may be reproduced in whole or in part without written permission. While every care is taken, the publishers cannot be held legally responsible for any errors in articles, programs, or advertisements. "Atari User" is an independent publication and Atari Corp. (USA) Ltd are not responsible for any of the articles they contain or for any of the opinions expressed.

Please name distribution (Europeas Sales and Distribution Limited, Unit 3, Europa Road, Wykehouse Lane, Hasting, East Sussex TN30 4NF, Tel: 0434 45943).

News	5
All the latest from the ever-changing world of the 8 bit Atari.	
Basic Revealed	9
View a program's token tables with our easy-to-use program.	
MicroLink News	13
More information on Britain's online database for micros.	
Biorhythm	15
At a low cost! Check your ups and downs with this super routine.	
Jigsaw	19
Pick up the pieces with this colourful and entertaining routine.	
Programmer's Challenge	21
We give you the program to solve the problem we set you.	
Cassette Verify	22
Having tape saving problems? Here's a utility to solve them.	
Reviews	25
We look at Zyles, Thunderfox, Winter Olympiad... and more.	
Map	32
Plan your route through the subterranean caverns of The Eridon.	
Hints and Tips	34
Help for gamers' continues with The Eridon and Spy Hunter.	
Rowloc	35
Our resident adventurer has some hints for The Dungeon.	
Birthday Bonanza	37
Atari XE Games system and £300 worth of software to be won.	
Mine Runner	39
It's a dodgy business with our tricky golden game of the month.	
Software Solutions	45
Your programming problems solved by our technical wizard.	
Five Liners	48
Another set of prize-winning retail programs from our readers.	
Easy Programming	50
We look further into simple animation techniques using Atari Basic.	
Mailbag	55
Your chance to get your news, views, means and name in print.	
Winter Olympiad	59
We look at the company behind this super sports simulation.	

All major listings in this issue are accompanied by checkmarks to help overcome typing mistakes. For full details of how they work, see the article on page 33 of the November 1987 issue of Atari User.

Link your Atari to the outside world with...

MicroLink

When you join MicroLink you've got the world of communications at your fingertips – 24 hours a day. You'll have immediate access to ALL the facilities offered by Telecom Gold ... and a great deal more besides.



Electronic mail – The cheapest and fastest form of communication possible. It costs the same to send a message to one million as to 500!



Telex – Link up with 60,000 telex subscribers in the UK and 1.6 million worldwide. You can even send and receive telexes after office hours or while travelling.



Telexmessages – Type in your message before 6pm and delivery is guaranteed by first post the next day (except Sunday), anywhere in the UK and USA.



Telex booking – Reserve train and theatre tickets, check flight details worldwide, or order from a vast range of products – from flowers to floppy discs.



Telexsoftware – Download directly into your Atari any program from the auto-loading library now available on MicroLink – both games and utilities.



Company searches – Obtain facts about any British limited company in seconds, and fully analysed financial information on over 100,000 major companies.



Translation – Access the biggest and most up-to-date multilingual dictionary in the world, with over 300,000 words.



News – Use the powerful search commands to pinpoint vital business information from the world's leading news services, newspapers and periodicals.



Telexpaging – If you also have a pocket telexpager you'll be alerted each time an urgent message arrives in your mailbox. So you're always in touch.



Gateways – Get through to New York in just five seconds – or any into the BBC computer in Luxembourg, which links you to 600 stations throughout Europe.



Two recommended packages

If you have an IBM interface:
Faxtelex W5000 V31, V32 modem + cable £118.10 PLUS Mini-Office II £719.954
Total price: £738.10

If you don't have an interface:
Telefax W5000 V31, V32 modem + Datatel interface + cable + Datatel software
Total price: £748.95

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

All you need – apart from your Atari – is a modem, which plugs into your telephone wall socket, plus suitable communications software.

We have provided two possible options on the left.

Whichever equipment you use, you will be able to call MicroLink, open your mailbox, save to disc any messages waiting for you, and disconnect in as little as two minutes.



More than 50 per cent of subscribers can connect to the MicroLink computer at local call rates.

To 000 001 0001
Fill in the coupon and send it to the address below. You will receive full details of services and costs, together with an application form. Complete this and return it to us and your local call will be able to use all the services of MicroLink and Telecom Gold.

Please send me full details about MicroLink, and information sheets about the following hardware and software options (please tick):

Pace package Miracle package

Name: _____

Address: _____

Postcode: _____

Send to: MicroLink, Europa House, Arlington Park, Arlington, Macclesfield SK10 2NP.

Cashing in on price rises

THE Atari 8 bit could be heading for a boom — courtesy of price increases which have hit the ST range.

While Atari has consistently cut production costs and pared its own margins, it has now announced that it can no longer absorb the financial difficulties caused by the world shortage of memory chips.

The shortage stems from Japanese restrictions on chip production — prompted by trade disputes with the States.

And particularly affected are dynamic random access memories (DRAMs) which are at the core of more powerful computers — and for users this translates as the higher the power, the higher the price.

In turn, this means that the 520 and 1040 STs have been hit by a hefty £180

each. Trade sources are positive this will boost 8 bit sales.

"We expect the recent price increase on the ST to make the Atari games machines a more attractive proposition", one leading dealer told Atari User.

"After all, you can now buy a complete Atari games system for little more than the amount of the price increase".

Atari has been trying for some months to buy out a chip manufacturing company "so that we are not subject to the whims of third party suppliers" according to one company spokesman.

And should the venture prove successful, prices could again fall.

But in the interim, the 8 bit market seems set for a resurgence.



Joystick is going a bomb...

WHEN is a joystick not a joystick? When it's a hand grenade of course. And that's the problem with Radtek's latest offering for the Atari 8 bit market.

The unusual design of the Terminator joystick has already caused security officers at Heathrow airport to refuse to let the device on board an aircraft.

"The trouble is that the Terminator is too realistic", said a spokesman for forces 601-607 4427.

"Airport authorities at Heathrow called us and said if we would warn our customers not to try and take the grenade-shaped device on board planes as hand luggage.

"Rightly they are concerned about the possibility of someone removing the cables from the joystick and disassembling the flight crew with what looks for all the world like a real hand grenade".

Radtek is now embroiling a conflict with all new deliveries of the Terminator joystick warning customers not to try to take it on board as hand luggage.

Price £79.95.

Silica backing for 8 bit Ataris

A MASSIVE commitment to the 8 bit games market has been made by Silica Shop with the purchase of 50,000 units.

"The reputation was built on the Atari 8 bit and we have no plans of dropping it in favour of the ST", said John Hambly, Silica's buying controller.

"We have a warehouse full of software for the machine with a tremendous selection of both old and new titles", he said.

The announcement from Silica comes as Atari is trying to set up a dealer network of 20 shops to promote greater support for the 8 bit market.

Plans to introduce new software display shelving in selected dealers stores are at an early stage, but some retailers are treating the new initiative with a little scepticism.

Harry Neale of Red Bat Software said: "It is a great idea if it works. Had this happened about two years ago then the Atari 8 bit computer may have had a higher profile in the market place than it has today".

Conversion

AFTER a successful debut on the Commodore 64 and Spectrum, Nebulus — from Houston (8325 803288) — is being converted for the Atari 8 bit.

"Originality pays handsome dividends", said managing director Andrew Hewson. "We've had a number of approaches for the various conversion rights".

Gadgets Goulding

REGULAR contributor Len Goulding has landed a plum job — thanks to his articles in Atari User.

Len, who has been writing for the magazine since its early days, is perhaps best known for his gadget reviews.

And it was this that caught the eye of Carl Morse, who is the science coordinator for American forces in Germany and provides materials for USAF schools throughout Europe.

The 147 schools, with thousands of pupils of all

'joins up'

ages, all have computers installed — 2,908 of them.

Carl was so impressed by Len's articles that he's signed him up for a contract to assist school teachers with science-related projects in the classrooms.

Regular readers need not worry however, Len will still be contributing to Atari User and has a host of gadgets in the pipeline.

X marks comms blackspot

COMMUNICATIONS problems caused by British Telecom's new System X appear to be on the increase.

Difficulties arise when the new digital system is connected to the older analogue exchanges. To make the two compatible BT has had to attenuate the signal.

One outcome of the drop in level is that modems have difficulty in maintaining the line once logged on.

Rob Flemming of Pace Micro Technology said: "We have had a number of complaints from Atari users who are using our Nightingale modems. After a good deal of research, as well as a large number of expensive phone calls, BT admitted to causing the fault".

According to Flemming,

communication difficulties appear to get worse when dialling from one System X exchange to another.

"Not only are outgoing lines attenuated, but incoming lines as well. Between two new exchanges the loss in signal level is dramatic", he said.

A spokesman for British Telecom told Atari User: "We are aware of the difficulties being caused by our modernisation program. Once System X is in use nationwide it will actually improve data transmission and reception.

"To overcome the immediate problems, Atari users in a System X exchange can request British Telecom to unattenuate the line".

Loading chart leader

THE latest budget title from Atlantis - League Challenge - roared straight to the top of the Gallup Chart. However, as several readers have pointed out, the loading instructions on the title card are incorrect - instead of holding down the Start and Option keys, it's only necessary to hold down the Start key.

Drive delay rapped

ATARI UK is letting the side down, according to Karen Sutherland, manager of computer dealer Atari World in Manchester.

The latest arrives after repeated enquiries to Atari about the availability of disc drives for its 8 bit games machines.

Far despite Atari's announcement of its 20351 drive last summer, supplies still haven't reached the shops.

"I am furious about the situation", said Karen. "If a disc drive was really available I could sell at least 30 to

40 a week. Every time I contact the people at Atari to find out when supplies will be available they just say they are waiting for a boat-load to arrive from Singapore. It must be a very slow boat".

One outcome of the shortage is that the older 1080 drive is maintaining a high second-hand value with prices in the region of £25.

An Atari spokesman said: "We are still waiting for the disc operating system to be finished, which it should be in the next couple of weeks.

THE
GALLUP
CHART

TOP 20
ATARI 8-BIT SOFTWARE

THIS MONTH	LAST MONTH	TITLE (Software House)	PRICE
1	▲	SPEED ACE Ziggstein	2.99
2	●	ROCKFORD Mastertronic	2.99
3	●	STEVE DAVIS SNOOKER Star Ribbon	1.99
4	▲	SPACE SHUTTLE Firebird	1.99
5	▼	POLE POSITION Atari	12.99
6	▲	MILK RACE Mastertronic	2.99
7	●	FOOTBALL MANAGER Addictive	2.99
8	●	SPOOKY CASTLE Atlantis	1.99
9	▲	PLATFORM PERFECTION US Gold	9.95
10	●	NINJA MASTER Firebird	1.99
11	▼	LEAGUE CHALLENGE Atlantis	1.99
12	●	GAUNTLET US Gold	9.95
13	▼	PANTHER Mastertronic	1.99
14	▼	FELD Mastertronic	1.99
15	▼	HENRY'S HOUSE Mastertronic	1.99
16	▼	GHOSTBUSTERS Mastertronic	1.99
17	●	WINTER OLYMPIAD Tynesoft	9.95
18	●	FREDDAY Addictive	9.95
19	●	AGE OF ACES US Gold	9.99
20	▼	180 Mastertronic	2.99

Compiled by Gallup/Microscope

There are nine new entries this month, including a few old games making their appearance in the chart. The first game from Ziggstein goes to number one, followed by the entry of two old favourites in second and third positions.

NEW LOW PRICE ST!

ST PRICE INCREASE

Due to a worldwide shortage of memory chips, prices of many computers have gone up. From April 1988, the Atari ST range is now likely to be affected. For details of any price increases please return the coupon below for our price increase.



£260

+VAT=£299

ONLY FROM SILICA

Atari ST is a powerful computer with a wide range of software available. It is the most powerful and versatile computer available for under £300. It has a built-in hard disk drive, a 1MB RAM, and a 5.25-inch floppy disk drive. It is also compatible with the Atari 520ST computer. The Atari ST is a true multi-tasking computer, allowing you to run several programs at once. It is also a true graphics computer, with a built-in graphics card that allows you to use a wide range of graphics cards. The Atari ST is a true sound computer, with a built-in sound chip that allows you to use a wide range of sound cards. The Atari ST is a true networking computer, with a built-in network card that allows you to use a wide range of network cards. The Atari ST is a true expansion computer, with a built-in expansion slot that allows you to use a wide range of expansion cards.

FREE EDITOR KIT - Only From Silica

Free Editor Kit includes: Atari Editor, Atari Editor II, Atari Editor III, Atari Editor IV, Atari Editor V, Atari Editor VI, Atari Editor VII, Atari Editor VIII, Atari Editor IX, Atari Editor X, Atari Editor XI, Atari Editor XII, Atari Editor XIII, Atari Editor XIV, Atari Editor XV, Atari Editor XVI, Atari Editor XVII, Atari Editor XVIII, Atari Editor XIX, Atari Editor XX, Atari Editor XXI, Atari Editor XXII, Atari Editor XXIII, Atari Editor XXIV, Atari Editor XXV, Atari Editor XXVI, Atari Editor XXVII, Atari Editor XXVIII, Atari Editor XXIX, Atari Editor XXX, Atari Editor XXXI, Atari Editor XXXII, Atari Editor XXXIII, Atari Editor XXXIV, Atari Editor XXXV, Atari Editor XXXVI, Atari Editor XXXVII, Atari Editor XXXVIII, Atari Editor XXXIX, Atari Editor XL, Atari Editor XLI, Atari Editor XLII, Atari Editor XLIII, Atari Editor XLIV, Atari Editor XLV, Atari Editor XLVI, Atari Editor XLVII, Atari Editor XLVIII, Atari Editor XLIX, Atari Editor L, Atari Editor LI, Atari Editor LII, Atari Editor LIII, Atari Editor LIV, Atari Editor LV, Atari Editor LVI, Atari Editor LVII, Atari Editor LVIII, Atari Editor LIX, Atari Editor LX, Atari Editor LXI, Atari Editor LXII, Atari Editor LXIII, Atari Editor LXIV, Atari Editor LXV, Atari Editor LXVI, Atari Editor LXVII, Atari Editor LXVIII, Atari Editor LXIX, Atari Editor LXX, Atari Editor LXXI, Atari Editor LXXII, Atari Editor LXXIII, Atari Editor LXXIV, Atari Editor LXXV, Atari Editor LXXVI, Atari Editor LXXVII, Atari Editor LXXVIII, Atari Editor LXXIX, Atari Editor LXXX, Atari Editor LXXXI, Atari Editor LXXXII, Atari Editor LXXXIII, Atari Editor LXXXIV, Atari Editor LXXXV, Atari Editor LXXXVI, Atari Editor LXXXVII, Atari Editor LXXXVIII, Atari Editor LXXXIX, Atari Editor LXXXX, Atari Editor LXXXXI, Atari Editor LXXXXII, Atari Editor LXXXXIII, Atari Editor LXXXXIV, Atari Editor LXXXXV, Atari Editor LXXXXVI, Atari Editor LXXXXVII, Atari Editor LXXXXVIII, Atari Editor LXXXXIX, Atari Editor LXXXXX.

DEDICATED SERVICE - Only From Silica

Dedicated Service includes: Atari Service, Atari Service II, Atari Service III, Atari Service IV, Atari Service V, Atari Service VI, Atari Service VII, Atari Service VIII, Atari Service IX, Atari Service X, Atari Service XI, Atari Service XII, Atari Service XIII, Atari Service XIV, Atari Service XV, Atari Service XVI, Atari Service XVII, Atari Service XVIII, Atari Service XIX, Atari Service XX, Atari Service XXI, Atari Service XXII, Atari Service XXIII, Atari Service XXIV, Atari Service XXV, Atari Service XXVI, Atari Service XXVII, Atari Service XXVIII, Atari Service XXIX, Atari Service XXX, Atari Service XXXI, Atari Service XXXII, Atari Service XXXIII, Atari Service XXXIV, Atari Service XXXV, Atari Service XXXVI, Atari Service XXXVII, Atari Service XXXVIII, Atari Service XXXIX, Atari Service XL, Atari Service XLI, Atari Service XLII, Atari Service XLIII, Atari Service XLIV, Atari Service XLV, Atari Service XLVI, Atari Service XLVII, Atari Service XLVIII, Atari Service XLIX, Atari Service L, Atari Service LI, Atari Service LII, Atari Service LIII, Atari Service LIV, Atari Service LV, Atari Service LVI, Atari Service LVII, Atari Service LVIII, Atari Service LIX, Atari Service LX, Atari Service LXI, Atari Service LXII, Atari Service LXIII, Atari Service LXIV, Atari Service LXV, Atari Service LXVI, Atari Service LXVII, Atari Service LXVIII, Atari Service LXIX, Atari Service LXX, Atari Service LXXI, Atari Service LXXII, Atari Service LXXIII, Atari Service LXXIV, Atari Service LXXV, Atari Service LXXVI, Atari Service LXXVII, Atari Service LXXVIII, Atari Service LXXIX, Atari Service LXXX, Atari Service LXXXI, Atari Service LXXXII, Atari Service LXXXIII, Atari Service LXXXIV, Atari Service LXXXV, Atari Service LXXXVI, Atari Service LXXXVII, Atari Service LXXXVIII, Atari Service LXXXIX, Atari Service LXXXX, Atari Service LXXXXI, Atari Service LXXXXII, Atari Service LXXXXIII, Atari Service LXXXXIV, Atari Service LXXXXV, Atari Service LXXXXVI, Atari Service LXXXXVII, Atari Service LXXXXVIII, Atari Service LXXXXIX, Atari Service LXXXXX.

FINE FULL STOCK RANGE - Only From Silica

Fine Full Stock Range includes: Atari Full Stock Range, Atari Full Stock Range II, Atari Full Stock Range III, Atari Full Stock Range IV, Atari Full Stock Range V, Atari Full Stock Range VI, Atari Full Stock Range VII, Atari Full Stock Range VIII, Atari Full Stock Range IX, Atari Full Stock Range X, Atari Full Stock Range XI, Atari Full Stock Range XII, Atari Full Stock Range XIII, Atari Full Stock Range XIV, Atari Full Stock Range XV, Atari Full Stock Range XVI, Atari Full Stock Range XVII, Atari Full Stock Range XVIII, Atari Full Stock Range XIX, Atari Full Stock Range XX, Atari Full Stock Range XXI, Atari Full Stock Range XXII, Atari Full Stock Range XXIII, Atari Full Stock Range XXIV, Atari Full Stock Range XXV, Atari Full Stock Range XXVI, Atari Full Stock Range XXVII, Atari Full Stock Range XXVIII, Atari Full Stock Range XXIX, Atari Full Stock Range XXX, Atari Full Stock Range XXXI, Atari Full Stock Range XXXII, Atari Full Stock Range XXXIII, Atari Full Stock Range XXXIV, Atari Full Stock Range XXXV, Atari Full Stock Range XXXVI, Atari Full Stock Range XXXVII, Atari Full Stock Range XXXVIII, Atari Full Stock Range XXXIX, Atari Full Stock Range XL, Atari Full Stock Range XLI, Atari Full Stock Range XLII, Atari Full Stock Range XLIII, Atari Full Stock Range XLIV, Atari Full Stock Range XLV, Atari Full Stock Range XLVI, Atari Full Stock Range XLVII, Atari Full Stock Range XLVIII, Atari Full Stock Range XLIX, Atari Full Stock Range L, Atari Full Stock Range LI, Atari Full Stock Range LII, Atari Full Stock Range LIII, Atari Full Stock Range LIV, Atari Full Stock Range LV, Atari Full Stock Range LVI, Atari Full Stock Range LVII, Atari Full Stock Range LVIII, Atari Full Stock Range LIX, Atari Full Stock Range LX, Atari Full Stock Range LXI, Atari Full Stock Range LXII, Atari Full Stock Range LXIII, Atari Full Stock Range LXIV, Atari Full Stock Range LXV, Atari Full Stock Range LXVI, Atari Full Stock Range LXVII, Atari Full Stock Range LXVIII, Atari Full Stock Range LXIX, Atari Full Stock Range LXX, Atari Full Stock Range LXXI, Atari Full Stock Range LXXII, Atari Full Stock Range LXXIII, Atari Full Stock Range LXXIV, Atari Full Stock Range LXXV, Atari Full Stock Range LXXVI, Atari Full Stock Range LXXVII, Atari Full Stock Range LXXVIII, Atari Full Stock Range LXXIX, Atari Full Stock Range LXXX, Atari Full Stock Range LXXXI, Atari Full Stock Range LXXXII, Atari Full Stock Range LXXXIII, Atari Full Stock Range LXXXIV, Atari Full Stock Range LXXXV, Atari Full Stock Range LXXXVI, Atari Full Stock Range LXXXVII, Atari Full Stock Range LXXXVIII, Atari Full Stock Range LXXXIX, Atari Full Stock Range LXXXX, Atari Full Stock Range LXXXXI, Atari Full Stock Range LXXXXII, Atari Full Stock Range LXXXXIII, Atari Full Stock Range LXXXXIV, Atari Full Stock Range LXXXXV, Atari Full Stock Range LXXXXVI, Atari Full Stock Range LXXXXVII, Atari Full Stock Range LXXXXVIII, Atari Full Stock Range LXXXXIX, Atari Full Stock Range LXXXXX.

AFTER SALES SUPPORT - Only From Silica

After Sales Support includes: Atari After Sales Support, Atari After Sales Support II, Atari After Sales Support III, Atari After Sales Support IV, Atari After Sales Support V, Atari After Sales Support VI, Atari After Sales Support VII, Atari After Sales Support VIII, Atari After Sales Support IX, Atari After Sales Support X, Atari After Sales Support XI, Atari After Sales Support XII, Atari After Sales Support XIII, Atari After Sales Support XIV, Atari After Sales Support XV, Atari After Sales Support XVI, Atari After Sales Support XVII, Atari After Sales Support XVIII, Atari After Sales Support XIX, Atari After Sales Support XX, Atari After Sales Support XXI, Atari After Sales Support XXII, Atari After Sales Support XXIII, Atari After Sales Support XXIV, Atari After Sales Support XXV, Atari After Sales Support XXVI, Atari After Sales Support XXVII, Atari After Sales Support XXVIII, Atari After Sales Support XXIX, Atari After Sales Support XXX, Atari After Sales Support XXXI, Atari After Sales Support XXXII, Atari After Sales Support XXXIII, Atari After Sales Support XXXIV, Atari After Sales Support XXXV, Atari After Sales Support XXXVI, Atari After Sales Support XXXVII, Atari After Sales Support XXXVIII, Atari After Sales Support XXXIX, Atari After Sales Support XL, Atari After Sales Support XLI, Atari After Sales Support XLII, Atari After Sales Support XLIII, Atari After Sales Support XLIV, Atari After Sales Support XLV, Atari After Sales Support XLVI, Atari After Sales Support XLVII, Atari After Sales Support XLVIII, Atari After Sales Support XLIX, Atari After Sales Support L, Atari After Sales Support LI, Atari After Sales Support LII, Atari After Sales Support LIII, Atari After Sales Support LIV, Atari After Sales Support LV, Atari After Sales Support LVI, Atari After Sales Support LVII, Atari After Sales Support LVIII, Atari After Sales Support LIX, Atari After Sales Support LX, Atari After Sales Support LXI, Atari After Sales Support LXII, Atari After Sales Support LXIII, Atari After Sales Support LXIV, Atari After Sales Support LXV, Atari After Sales Support LXVI, Atari After Sales Support LXVII, Atari After Sales Support LXVIII, Atari After Sales Support LXIX, Atari After Sales Support LXX, Atari After Sales Support LXXI, Atari After Sales Support LXXII, Atari After Sales Support LXXIII, Atari After Sales Support LXXIV, Atari After Sales Support LXXV, Atari After Sales Support LXXVI, Atari After Sales Support LXXVII, Atari After Sales Support LXXVIII, Atari After Sales Support LXXIX, Atari After Sales Support LXXX, Atari After Sales Support LXXXI, Atari After Sales Support LXXXII, Atari After Sales Support LXXXIII, Atari After Sales Support LXXXIV, Atari After Sales Support LXXXV, Atari After Sales Support LXXXVI, Atari After Sales Support LXXXVII, Atari After Sales Support LXXXVIII, Atari After Sales Support LXXXIX, Atari After Sales Support LXXXX, Atari After Sales Support LXXXXI, Atari After Sales Support LXXXXII, Atari After Sales Support LXXXXIII, Atari After Sales Support LXXXXIV, Atari After Sales Support LXXXXV, Atari After Sales Support LXXXXVI, Atari After Sales Support LXXXXVII, Atari After Sales Support LXXXXVIII, Atari After Sales Support LXXXXIX, Atari After Sales Support LXXXXX.

FREE CATALOGUES - Only From Silica

Free Catalogues includes: Atari Free Catalogues, Atari Free Catalogues II, Atari Free Catalogues III, Atari Free Catalogues IV, Atari Free Catalogues V, Atari Free Catalogues VI, Atari Free Catalogues VII, Atari Free Catalogues VIII, Atari Free Catalogues IX, Atari Free Catalogues X, Atari Free Catalogues XI, Atari Free Catalogues XII, Atari Free Catalogues XIII, Atari Free Catalogues XIV, Atari Free Catalogues XV, Atari Free Catalogues XVI, Atari Free Catalogues XVII, Atari Free Catalogues XVIII, Atari Free Catalogues XIX, Atari Free Catalogues XX, Atari Free Catalogues XXI, Atari Free Catalogues XXII, Atari Free Catalogues XXIII, Atari Free Catalogues XXIV, Atari Free Catalogues XXV, Atari Free Catalogues XXVI, Atari Free Catalogues XXVII, Atari Free Catalogues XXVIII, Atari Free Catalogues XXIX, Atari Free Catalogues XXX, Atari Free Catalogues XXXI, Atari Free Catalogues XXXII, Atari Free Catalogues XXXIII, Atari Free Catalogues XXXIV, Atari Free Catalogues XXXV, Atari Free Catalogues XXXVI, Atari Free Catalogues XXXVII, Atari Free Catalogues XXXVIII, Atari Free Catalogues XXXIX, Atari Free Catalogues XL, Atari Free Catalogues XLI, Atari Free Catalogues XLII, Atari Free Catalogues XLIII, Atari Free Catalogues XLIV, Atari Free Catalogues XLV, Atari Free Catalogues XLVI, Atari Free Catalogues XLVII, Atari Free Catalogues XLVIII, Atari Free Catalogues XLIX, Atari Free Catalogues L, Atari Free Catalogues LI, Atari Free Catalogues LII, Atari Free Catalogues LIII, Atari Free Catalogues LIV, Atari Free Catalogues LV, Atari Free Catalogues LVI, Atari Free Catalogues LVII, Atari Free Catalogues LVIII, Atari Free Catalogues LIX, Atari Free Catalogues LX, Atari Free Catalogues LXI, Atari Free Catalogues LXII, Atari Free Catalogues LXIII, Atari Free Catalogues LXIV, Atari Free Catalogues LXV, Atari Free Catalogues LXVI, Atari Free Catalogues LXVII, Atari Free Catalogues LXVIII, Atari Free Catalogues LXIX, Atari Free Catalogues LXX, Atari Free Catalogues LXXI, Atari Free Catalogues LXXII, Atari Free Catalogues LXXIII, Atari Free Catalogues LXXIV, Atari Free Catalogues LXXV, Atari Free Catalogues LXXVI, Atari Free Catalogues LXXVII, Atari Free Catalogues LXXVIII, Atari Free Catalogues LXXIX, Atari Free Catalogues LXXX, Atari Free Catalogues LXXXI, Atari Free Catalogues LXXXII, Atari Free Catalogues LXXXIII, Atari Free Catalogues LXXXIV, Atari Free Catalogues LXXXV, Atari Free Catalogues LXXXVI, Atari Free Catalogues LXXXVII, Atari Free Catalogues LXXXVIII, Atari Free Catalogues LXXXIX, Atari Free Catalogues LXXXX, Atari Free Catalogues LXXXXI, Atari Free Catalogues LXXXXII, Atari Free Catalogues LXXXXIII, Atari Free Catalogues LXXXXIV, Atari Free Catalogues LXXXXV, Atari Free Catalogues LXXXXVI, Atari Free Catalogues LXXXXVII, Atari Free Catalogues LXXXXVIII, Atari Free Catalogues LXXXXIX, Atari Free Catalogues LXXXXX.

FREE OVERNIGHT DELIVERY - From Silica

Free Overnight Delivery includes: Atari Free Overnight Delivery, Atari Free Overnight Delivery II, Atari Free Overnight Delivery III, Atari Free Overnight Delivery IV, Atari Free Overnight Delivery V, Atari Free Overnight Delivery VI, Atari Free Overnight Delivery VII, Atari Free Overnight Delivery VIII, Atari Free Overnight Delivery IX, Atari Free Overnight Delivery X, Atari Free Overnight Delivery XI, Atari Free Overnight Delivery XII, Atari Free Overnight Delivery XIII, Atari Free Overnight Delivery XIV, Atari Free Overnight Delivery XV, Atari Free Overnight Delivery XVI, Atari Free Overnight Delivery XVII, Atari Free Overnight Delivery XVIII, Atari Free Overnight Delivery XIX, Atari Free Overnight Delivery XX, Atari Free Overnight Delivery XXI, Atari Free Overnight Delivery XXII, Atari Free Overnight Delivery XXIII, Atari Free Overnight Delivery XXIV, Atari Free Overnight Delivery XXV, Atari Free Overnight Delivery XXVI, Atari Free Overnight Delivery XXVII, Atari Free Overnight Delivery XXVIII, Atari Free Overnight Delivery XXIX, Atari Free Overnight Delivery XXX, Atari Free Overnight Delivery XXXI, Atari Free Overnight Delivery XXXII, Atari Free Overnight Delivery XXXIII, Atari Free Overnight Delivery XXXIV, Atari Free Overnight Delivery XXXV, Atari Free Overnight Delivery XXXVI, Atari Free Overnight Delivery XXXVII, Atari Free Overnight Delivery XXXVIII, Atari Free Overnight Delivery XXXIX, Atari Free Overnight Delivery XL, Atari Free Overnight Delivery XLI, Atari Free Overnight Delivery XLII, Atari Free Overnight Delivery XLIII, Atari Free Overnight Delivery XLIV, Atari Free Overnight Delivery XLV, Atari Free Overnight Delivery XLVI, Atari Free Overnight Delivery XLVII, Atari Free Overnight Delivery XLVIII, Atari Free Overnight Delivery XLIX, Atari Free Overnight Delivery L, Atari Free Overnight Delivery LI, Atari Free Overnight Delivery LII, Atari Free Overnight Delivery LIII, Atari Free Overnight Delivery LIV, Atari Free Overnight Delivery LV, Atari Free Overnight Delivery LVI, Atari Free Overnight Delivery LVII, Atari Free Overnight Delivery LVIII, Atari Free Overnight Delivery LIX, Atari Free Overnight Delivery LX, Atari Free Overnight Delivery LXI, Atari Free Overnight Delivery LXII, Atari Free Overnight Delivery LXIII, Atari Free Overnight Delivery LXIV, Atari Free Overnight Delivery LXV, Atari Free Overnight Delivery LXVI, Atari Free Overnight Delivery LXVII, Atari Free Overnight Delivery LXVIII, Atari Free Overnight Delivery LXIX, Atari Free Overnight Delivery LXX, Atari Free Overnight Delivery LXXI, Atari Free Overnight Delivery LXXII, Atari Free Overnight Delivery LXXIII, Atari Free Overnight Delivery LXXIV, Atari Free Overnight Delivery LXXV, Atari Free Overnight Delivery LXXVI, Atari Free Overnight Delivery LXXVII, Atari Free Overnight Delivery LXXVIII, Atari Free Overnight Delivery LXXIX, Atari Free Overnight Delivery LXXX, Atari Free Overnight Delivery LXXXI, Atari Free Overnight Delivery LXXXII, Atari Free Overnight Delivery LXXXIII, Atari Free Overnight Delivery LXXXIV, Atari Free Overnight Delivery LXXXV, Atari Free Overnight Delivery LXXXVI, Atari Free Overnight Delivery LXXXVII, Atari Free Overnight Delivery LXXXVIII, Atari Free Overnight Delivery LXXXIX, Atari Free Overnight Delivery LXXXX, Atari Free Overnight Delivery LXXXXI, Atari Free Overnight Delivery LXXXXII, Atari Free Overnight Delivery LXXXXIII, Atari Free Overnight Delivery LXXXXIV, Atari Free Overnight Delivery LXXXXV, Atari Free Overnight Delivery LXXXXVI, Atari Free Overnight Delivery LXXXXVII, Atari Free Overnight Delivery LXXXXVIII, Atari Free Overnight Delivery LXXXXIX, Atari Free Overnight Delivery LXXXXX.

PRICE MATCH - Only From Silica

Price Match includes: Atari Price Match, Atari Price Match II, Atari Price Match III, Atari Price Match IV, Atari Price Match V, Atari Price Match VI, Atari Price Match VII, Atari Price Match VIII, Atari Price Match IX, Atari Price Match X, Atari Price Match XI, Atari Price Match XII, Atari Price Match XIII, Atari Price Match XIV, Atari Price Match XV, Atari Price Match XVI, Atari Price Match XVII, Atari Price Match XVIII, Atari Price Match XIX, Atari Price Match XX, Atari Price Match XXI, Atari Price Match XXII, Atari Price Match XXIII, Atari Price Match XXIV, Atari Price Match XXV, Atari Price Match XXVI, Atari Price Match XXVII, Atari Price Match XXVIII, Atari Price Match XXIX, Atari Price Match XXX, Atari Price Match XXXI, Atari Price Match XXXII, Atari Price Match XXXIII, Atari Price Match XXXIV, Atari Price Match XXXV, Atari Price Match XXXVI, Atari Price Match XXXVII, Atari Price Match XXXVIII, Atari Price Match XXXIX, Atari Price Match XL, Atari Price Match XLI, Atari Price Match XLII, Atari Price Match XLIII, Atari Price Match XLIV, Atari Price Match XLV, Atari Price Match XLVI, Atari Price Match XLVII, Atari Price Match XLVIII, Atari Price Match XLIX, Atari Price Match L, Atari Price Match LI, Atari Price Match LII, Atari Price Match LIII, Atari Price Match LIV, Atari Price Match LV, Atari Price Match LVI, Atari Price Match LVII, Atari Price Match LVIII, Atari Price Match LIX, Atari Price Match LX, Atari Price Match LXI, Atari Price Match LXII, Atari Price Match LXIII, Atari Price Match LXIV, Atari Price Match LXV, Atari Price Match LXVI, Atari Price Match LXVII, Atari Price Match LXVIII, Atari Price Match LXIX, Atari Price Match LXX, Atari Price Match LXXI, Atari Price Match LXXII, Atari Price Match LXXIII, Atari Price Match LXXIV, Atari Price Match LXXV, Atari Price Match LXXVI, Atari Price Match LXXVII, Atari Price Match LXXVIII, Atari Price Match LXXIX, Atari Price Match LXXX, Atari Price Match LXXXI, Atari Price Match LXXXII, Atari Price Match LXXXIII, Atari Price Match LXXXIV, Atari Price Match LXXXV, Atari Price Match LXXXVI, Atari Price Match LXXXVII, Atari Price Match LXXXVIII, Atari Price Match LXXXIX, Atari Price Match LXXXX, Atari Price Match LXXXXI, Atari Price Match LXXXXII, Atari Price Match LXXXXIII, Atari Price Match LXXXXIV, Atari Price Match LXXXXV, Atari Price Match LXXXXVI, Atari Price Match LXXXXVII, Atari Price Match LXXXXVIII, Atari Price Match LXXXXIX, Atari Price Match LXXXXX.

SO MUCH FOR SO LITTLE!

There is nothing that can compare with the incredible value for money offered by Atari's 520ST-Plus. For only £260 (incl. VAT), you can purchase a powerful 12MB main computer, with a 96 key keyboard (including numeric keypad), 5MB2.5" diskette, 256KB, a variety of 12" software, mouse controller, and a Free Control Set Drive. The 520ST-Plus has a 5" multi-tasker built-in, and comes with a lead to allow you to plug it straight into any domestic colour television set. The mouse controller is also built-in to the keyboard, so there are no messy external boxes. You couldn't wish for a more compact personal and business class Atari ST computer as more firms established in the UK, there are nearly 500 software titles already available for a wide variety of applications and the list is growing all the time. And there's not an where you buy your new Atari! For for any Atari ST computers from Silica Group, you will get a lot more, including a FREE Silica ST Starter Kit worth over £150. Head the 520ST-Plus for £260 because for the rest of us who've not already bought your new Atari, one price £260.7. For from Silica Group, the UK's best Atari Specialists. For further details of the range of Atari ST computers and the FREE Silica ST Starter Kit, complete and return the reply coupon below.

ATARI 520ST-PM NOW ONLY £260 (incl. VAT)
£260.70 incl. VAT. Add £2.00 postage. Order by 10th. Reply from 020 8486 to 020 8486 020 (no. 020)

ATARI 1040ST-F - NEW PRICE

Atari 1040ST-F is a new addition to the Atari ST range. It features a 10MB main computer, with a 96 key keyboard (including numeric keypad), 5MB2.5" diskette, 256KB, a variety of 12" software, mouse controller, and a Free Control Set Drive. The 1040ST-F has a 5" multi-tasker built-in, and comes with a lead to allow you to plug it straight into any domestic colour television set. The mouse controller is also built-in to the keyboard, so there are no messy external boxes. You couldn't wish for a more compact personal and business class Atari ST computer as more firms established in the UK, there are nearly 500 software titles already available for a wide variety of applications and the list is growing all the time. And there's not an where you buy your new Atari! For for any Atari ST computers from Silica Group, you will get a lot more, including a FREE Silica ST Starter Kit worth over £150. Head the 1040ST-F for £350 because for the rest of us who've not already bought your new Atari, one price £350.7. For from Silica Group, the UK's best Atari Specialists. For further details of the range of Atari ST computers and the FREE Silica ST Starter Kit, complete and return the reply coupon below.

MEGA ST's NOW IN STOCK

Mega ST's are now in stock. They feature a 10MB main computer, with a 96 key keyboard (including numeric keypad), 5MB2.5" diskette, 256KB, a variety of 12" software, mouse controller, and a Free Control Set Drive. The Mega ST's have a 5" multi-tasker built-in, and come with a lead to allow you to plug it straight into any domestic colour television set. The mouse controller is also built-in to the keyboard, so there are no messy external boxes. You couldn't wish for a more compact personal and business class Atari ST computer as more firms established in the UK, there are nearly 500 software titles already available for a wide variety of applications and the list is growing all the time. And there's not an where you buy your new Atari! For for any Atari ST computers from Silica Group, you will get a lot more, including a FREE Silica ST Starter Kit worth over £150. Head the Mega ST's for £350 because for the rest of us who've not already bought your new Atari, one price £350.7. For from Silica Group, the UK's best Atari Specialists. For further details of the range of Atari ST computers and the FREE Silica ST Starter Kit, complete and return the reply coupon below.



To Silica Group Ltd, Dept AT/ST/1988, 1-4 The News, Hatching Road, Slings, Kent, G4 6 4SD

PLEASE SEND ME FREE LITERATURE ON THE ATARI ST

Mr/Ms/Ms: Initials Surname:

Address:

Postcode:

If you already own a computer
Please tick this box

SILICUP (S. 1988) (CHS) 01-820 1111
173 The Square, Hatching Road, Slings, Kent, G4 6 4SD

LONDON 01-820 4830
Luton House 1st Floor, 207 Tottenham Court Rd, London, W1P 0JL

LONDON 01-820 1234 ext 3801
Surreygate 1st Floor, Oxford Street, London, W1A 1AB

Mini Office II



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

**Voted
Business Program of
the Year – 1985 AND 1986**
Algor Company, Inc.
**This package is
incredible value!**
See Star Home
Company Guide

WORD PROCESSOR

Compose a letter, set the print-out options using embedded commands or menus, use the mail merge facility to produce personalised circulars – and more!

SPREADSHEET

Prepare budgets or tables, total columns or rows with ease, copy formulae absolutely or relatively, use a wide selection of mathematical and scientific functions, recalculate automatically – and more!

GRAPHICS

Enter data directly or load data from the spreadsheet, produce pie charts, display bar charts side by side or stacked, overlay line graphs – and more!

DATABASE

Build up a versatile card index, use the flexible print-out routine, do powerful multi-field sorting, perform all arithmetic functions, link with the word processor – and more!

COMMS MODULE

Using a modem you can access services such as MicroLink and order a wide range of goods from flowers to software, send electronic mail, telex and tele-messages in a flash – and more!

LABEL PRINTER

Design the layout of a label with the easy-to-use editor, select label size and sheet format, read in database files, print out in any quantity – and more!

ORDER FORM

Please send my Mini Office II for the issue 000000151051 (IBM required, or 510' disc for £19.99)

I enclose cheque made payable to Database Software, or debit my Access/Visa card:

□□□□ □□□□ □□□□ □□□□

Exp. date

Signed

Name

Address

ORDER HOTLINE:
TEL: 0625 879828

3870 700 Database Software,
Europe House, Arlington Park,
Arlington, Massachusetts 01761, U.S.A.

I START this month's final look into the inner workings of Atari Basic with a small apology. If you read my Checksum Buster article in the April issue, as a good many of you did judging by the mail we have received, you might have been a little upset to find the message APRIL FOOL splashed all over your screen.

Sadly, re-assembling a line of text from a three digit checksum is impossible — there are many different permutations which can generate the same value. Apart from being a lesson in never trusting anyone — not even me — it does teach us quite a few useful things about how Basic works.

When you start the program, typing LIST just causes a page of (jotted) text with no line numbers or command words to be output. So, how can a program exist in a tokenised — or SAVE format — file if it contains nothing that could have been correctly tokenised in the first place?

The answer is that Basic only checks for the validity of a program line when you type it in or use EDITER. It therefore assumes that any SAVE'd tokenised file must have been error checked at the original time of entry and is now structurally correct.

What Checksum Buster does is create a file which is correct in terms of the individual tokens and pointers, but makes no sense as a logical program.

To understand it further, let's take a look at the file format used by Basic when you type SAVE or CLEAR.

The bulk of it consists of the tokenised program lines themselves in the format that we have been looking at so far. The variable name table must also be saved because the tokenised version of a program holds only the variable reference numbers and is meaningless without the corresponding names.

For some reason a SAVE'd file also contains the complete variable value table. I really don't see why it couldn't have been re-generated at LOAD time, saving a couple of hundred bytes on even the shortest of files. But if you know, why not drop us a line?

The only other information required by Basic is the contents of the zero page ram pointer table which is saved at the start of the file — see Figure 1.

One problem with saving this address pointer table is that it is only applicable to the current system setup. If, for example, you decide to move from a cassette system to a disc one, the value of LOMEM will be much higher due to the presence of Dos.

Since the first entry in the zero page table is LOMEM itself the first two

Learn your token tables

ANDRÉ WILLEY ends his look at Atari Basic by giving you a program to investigate listings

bytes in a SAVE format file will always be zero — calculated from LOMEM minus LOMEM. Similarly, the second two bytes — which represent the address of the variable name table — will always be 256 because this table is 256 bytes from LOMEM.

These seven offset values take up the first 14 bytes of the file, and are followed by the variable name, value and statement tables containing all the actual program lines.

The final element of the file is the current statement line — numbered 32768 — which contains whatever command Basic was currently processing.

Normally the last thing being worked on before a file is written is the SAVE command itself, and this is what you would usually expect to be found here.

This file format is shown in Figure 1, but you might like to see it in action for yourself by typing in the listing. As written it will only work on disc files

because there is no facility for random access within a tape file. However, cassette users might like to try modifying it to read a complete file into memory and examine it from there.

Type it in and check it with List & Right before running it. Be especially careful with lines 9480 to 9520 which contain a machine code routine.

After you type RUN, the program will check which version of Basic you are using and read the various rom-based test tables into the pseudo string arrays CMD0 and CMD1. These will later be used to display the correct text for each available token.

Once this is complete you will be asked to enter a filename. Use the full name — such as D:\FILE.BAS — of the Basic SAVE'd file you want to view. The first 14 bytes will then be read in and the rest of the file scanned to obtain the correct NOTE and POINT

Save to Page 12 ▶

Address	Name	Function
128/128	LOMEM	Lowest memory address accessible after Dos.
128/131	VNTP	Variable name table pointer (start address of VNT)
132/132	VNTD	Variable name table dummy (end address of VNT)
134/134	VVTP	Variable value table pointer (contents of variables)
136/137	STMTAB	Statement table (start address of tokenised program)
138/139	STMCUR	Current statement (address of first tokenised command line)
140/141	STRAPP	String/array pointer (address of string/array contents)
142/143	RLNGTE	Runtime stack (internal GOSUB FOR, NEXT addresses)
144/145	MEMTOP	End of current Basic program space

All addresses stored as two bytes, in standard 6667 low-high format

Figure 1: Basic's zero page pointer table

4 From Page 8

values for each of the file segments we are interested in – the variable name, value and statement table.

You will then be shown the information obtained from the first 16 bytes and be asked if you wish to view the variable name table or a program line. At this point you may also toggle between printer output and screen display by pressing the spacebar, or press the Escape key to select a new filename.

The variable listing will show the full name and reference number for each variable in the table, including those which may no longer be in use in the main body of the program. You will also see what type it is and the data stored in the variable value table.

Numbers are shown in an expanded

BCD layout, although you could change lines 1180 to 1220 to print them in normal numeric form if you wish.

The program listing will look very different to the form you are used to seeing from the LIST command. Individual statements on a single program line are shown separately, with an overall header for each and with each statement being numbered.

I've also omitted much of the normal expansion of string and numeric constants – so all numbers will be shown as `###` and all strings will be shown as `###`.

Equally, lines containing standard Ascl text – such as `ROM` and `DATA` – will be shown as `###-###` in place of the text itself. Variables will be displayed as `Var1`, `Var2` and so on. Implied commands will be shown

inside square brackets – such as the implied LIST as a line label.

`###-###-###`

which would be shown as:

`###-###-###`

These changes have been made to help you see the structure of the program without being distracted by the finer details. After all, if you'd wanted to see a normal listing, all you needed to do was type LIST.

If you try out this program on the Basic file created by last month's Checksum Buster you'll start to see how the seemingly impossible was created. All the lines of text were stored in the variable name table, with the final character of each in inverse video to fool Basic into thinking they are just long variable names.

So you've discovered that a complete program can't be made from its checksums, but you might have learnt more about the way that Basic functions and also that the tokenising system is not quite as rigid as it first looked.

There is a well known saying which applies very well to computers, and especially to Basic: it's impossible to make anything completely foolproof because fools are so ingenious.

PROGRAM BREAKDOWN

- 10-70 Initialise, dimension strings, and so on
- 80-90 Print the ROM message
- 100-200 Get filename, open the file and store NOTE values
- 200-300 Print file's header information
- 300-400 Menu choice and printer/screen select function

Printing out variable name table information

- 1000-1120 Get variable name and value data and print the name
- 1120-1180 Check for which type of variable
- 1180-1200 Print numeric variable information
- 1200-1260 Print numeric array information
- 1260-1410 Print string variable information

Printing out program listing from statement table

- 2000-2080 Get line number and print length details
- 2080-2100 Print segment number and length
- 2100-2120 Get command token and print expanded version from CMD\$
- 2140-2220 Get each operator token byte in turn, print expanded version from OPS and check for special cases such as `22-###` and `20` – end of statement
- 5000-5040 Subroutine to call Get-bytes routine from ROM

Initialising strings

- 6000-6040 Test for Revision A, B or C and gives a Basic error if none of these
- 6100-6170 Create CMD\$ from command token table in Basic rom
- 6200-6270 Create OPS from operator token table in Basic rom
- 6300-6380 Add special cases such as implied LET and so on
- 6400-6430 Read ROM\$T\$ data for binary Get-bytes routine
- 6500-6520 Data for machine code binary Get routine
- 10000-10010 File format error handler

Part I: These values will be added to LOMEM to form the zero page rom table.

Bytes	Contents	Function
0/1	0	File format flag (normal)
2/3	208	Displacement of the variable name table from the beginning of part two, plus 208
4/5	DWTC	Displacement to the end of the variable name table from the beginning of part two, plus 208
6/7	DVVT	Displacement of the variable value table from the beginning of part two, plus 208
8/9	DST	Displacement of the statement table from the beginning of part two, plus 208
10/11	DSTC	Displacement of the current statement line from the beginning of part two, plus 208
12/13	DCND	Displacement to the end of the file from the beginning of part two, plus 208

Part II: Starts at byte 16 of the file

0	VNT	Variable name table
DVVT-208	VVT	Variable value table
DST-208	ST	Statement table
DCND-208		End of file

Figure 4: SAVF and OSAVF file format

Bulletin Board update

The MicroLink Bulletin Board has just had a spring clean, and a backlog of 3,000 old messages removed. But at the rate at which it's being read, it won't take more than a couple of months to replace them.

The Bulletin Board is an area where anyone can leave a public message, start or join in a discussion on any topic or just ask for help.

The range of subjects covered is huge and always changing: cars are bought and sold, philosophy, pop music and poaching argued about and the reasons why somebody's software doesn't seem to work are revealed.

There are even the occasional trivia quizzes (well, do YOU know how many electric trainways are still running in the UK?).

There's nothing quite like it outside the world of computers, but be warned, it can be very addictive.

Preparing for Prime time

EVERYONE upgrades their hardware occasionally, and MicroLink is no exception. But it's not an Amstrad PC1640 they're getting.

For some time now, the rate at which people are joining has put a bit of a

strain on the old Prime 850 computer, and many users would agree that slugging it perhaps a mild way to describe MicroLink at peak times.

New work is underway to install a Prime 9815 - not only has it got a longer name but it's faster and better able to cope with the increased demand.

There's a lot of things to be done before the switch-over can happen, software has to be changed and the digital detritus collected on the old computer in its years of dealing with us humans has to be cleared up.

Exactly how much better the new service will be isn't clear, although technical people tend to use words like "massively" and get quite excited.

We're all eager to find out...

The MicroLink User's Manual

ONE of the projects that MUG is coordinating is the production of the MicroLink User's Manual. Designed to complement the information given to every MicroLink subscriber on old fashioned paper, the manual sets out to be an online way of describing the many facilities available on MicroLink from the point of view of the people who use them.

At first, MicroLink can

appear to offer a bewildering selection of things to try, and even for experienced users the different options can be confusing. And there's always a way to do things faster, or at less cost.

Of course, the information to help people do this has always existed, but it's been hard to find, and until now there hasn't really been any way for users to share their discoveries in such a way that others will be able to make use of them. The MicroLink User's Manual sets out to remedy this problem.

At the moment MUG is collecting the information. Sometimes the amount of data collected by users can be staggering - one subscriber mailed in over 1000 of hints and tips saved up over years. Of course, we're just as happy to hear from anyone with one good idea.

All the data will be indexed and made available; the exact design is still being discussed, but like anything else MUG does, it will be free to use.

User groups are good news

THE MicroLink Users' Group came about as a result of various subscribers asking whether there was any organisation run to help users.

User groups in any area

are usually good news; they form a focus for ideas, opinion and self-help and give the users a collective voice.

The flexibility provided by MicroLink and Telecom Gold make MUG particularly useful. There are no printing costs for newsletters and there's almost instant access to everyone in the group through the mail system.

MUG has been going for about a month now, and we've already formed a team of people who have volunteered to answer queries and help anyone with MicroLink-related problems.

It's a small world . . .

... but full of Telecom Gold computers, it seems. The UK Telecom Gold system, of which MicroLink is the most active part, is just one sector of a global network called Dialcom.

While MicroLink is System 72, and other UK computers are in the range 70 to 80, there are Dialcom computers almost everywhere. And like international telephone exchanges, they've all got their own numbers.

MUG'er Adrian Mann is trying to find out just which computers are where. This might seem an academic, if harmless, hobby, but such information as is available on MicroLink is difficult to find and (apparently) out of date.

And it could be the first step to organising an international group of Dialcom users, which really would be a first and another step towards the electronic community of tomorrow.

If you know anything about the Dialcom network, numbering schemes, then Adrian (MARS-ADRIAN on the mail system) and MUG would be glad to hear from you...

Odd offers

THE price for the most unusual use of MicroLink goes in . . . well, nobody knows. But the last month has seen some odd goings-on.

There have been people advertising for games shooting, others looking for burned out buildings and the usual range of online floral offerings to persuade moth-

ers and lovers that computers aren't so bad after all.

But you have to take your hat off, if nothing else, to Keith Channing. He helps run CIBRAL, Clothes Optional Recreation and Leisure, a national organisation dedicated to promoting the various activities enjoyed by those who feel happier without their

clothes on. And with a bit of advertising on the Bulletin Board and a touch of help from MicroLink themselves he's gathering together all those on the system who are similarly inclined.

Note that has to be the most original use for MicroLink.

Unless (of course) you know better...

MUCH MORE THAN A MAGAZINE



PAGE 6 has been supporting Atari computers for 5 years - coverage now includes both 8-bit and ST. Get the latest copy from your local newsagent or by subscribing.

We also support our readers in many other ways.

- * All 8-bit magazine programs on disk with bonus programs included
- * Books for beginners to experts
- * Dust covers for all Atari equipment
- * The widest range of Atari public domain software available anywhere

Phone us on 0785 57005 for further details or visit your local newsagent today

TOP QUALITY DISKS AT ROCK BOTTOM PRICES

Lot	5 1/4	8	10	160	128	512
Lot 1 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 2 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 3 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 4 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 5 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 6 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 7 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 8 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 9 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00
Lot 10 (1000) Packets/1000	10.00	10.00	10.00	10.00	10.00	10.00

Buy 10 or 100 disks and save more! Bulk prices apply to 1000 disks only. Minimum order 500 disks for 50% discount. (See, Buy 100, 500, 1000)

Quantity discounts apply to all orders. Delivery charges apply to all orders.

All items listed are subject to a previous order. Delivery charges apply to all orders. Delivery to a UK and a world price list. The above listed prices are approximate. Delivery charges apply to all orders. Delivery to a UK and a world price list. The above listed prices are approximate. Delivery charges apply to all orders. Delivery to a UK and a world price list.

COPY HOLDERS



- 16.1400 Copyholder with Adjustable film
- Size 8.0" x 11.5" with smooth slide long-edge - £28.99
- 16.1400 Copyholder with Adjustable film
- Size 8.0" x 11.5" - £29.99

SPECIAL OFFERS

1.5" DISCS + LOCKABLE BOXES

20 x 80 1.5" DISCS 100	40 CAPACITY LOCKABLE BOX 100
ONLY £24.95	
40 x 80 1.5" DISCS 100	40 CAPACITY LOCKABLE BOX 100
ONLY £24.95	



50 x 80 1.5" DISCS 100	40 CAPACITY LOCKABLE BOX 100
ONLY £24.95	
80 x 80 1.5" DISCS 100	40 CAPACITY LOCKABLE BOX 100
ONLY £29.95	

1.5" TOP QUALITY BULK PACKED DISKS

	10	25	50	100	200
Single Sided 1.5" F.I.	£2.40	£2.95	£3.50	£4.05	£2.000
Double Sided 1.5" F.I.	£3.40	£3.95	£4.50	£5.05	£2.950

Rainbow Pack of five colours - New product!

Single Sided 1.5" F.I.	£7.95	£9.95	£11.95	£13.95	£24.95
Double Sided 1.5" F.I.	£9.95	£11.95	£13.95	£15.95	£29.95

Prices of 10 1.5" Disk come with Free Plastic Library Case (worth £1.40)
All items are supplied with labels and are certified 100% error free



Storage Bases

1.5" Lockable - Model 25	£7.49
1.5" Lockable - Model 40	£7.49
1.5" Lockable - Model 50	£9.49
1.5" Lockable - Model 80	£9.49
1.5" Lockable - Model 100	£19.95
1.5" Lockable - Model 50	£7.49
1.5" Lockable - Model 100	£9.49
1.5" Lockable - Model 150	£19.95
5.25" Cleaning Disc	£8.99
5.25" Cleaning Disc	£2.49
Disk Wiper	£2.49
ST Printer Cable	£24.99



PROFESSIONAL PRINTER STAND

The new printer stand is very attractive. It has a professional look, but your printer. Due to the unique construction of the upper panel, professional and semi-professional look, but it is not always the case. The new printer stand is professionally finished. The unique design allows easy access to the printer's front panel. The upper panel contains a large front panel with adjustable reference marks. Various controls. The new printer stand.

80 Cdn	£24.99
120 Cdn	£24.99

CENDEC DISK SUPPLIES

UNIT 3, THE METRO CENTRE, BRIDGE ROAD, CHESTERTON, KENT BR1 3BB
TEL: (0683) 53363 (9 Lines) (24 Hours) FAX: 8898 77737

Please note our opening and closing hours. Complete office hours in complete accordance with our sales office.

Manufacturer: All prices include 12.5% VAT and 100% duty. There are no hidden costs in our Personal and Professional software. Monday-Friday 9.00am-5.00pm





I HAVE kept the program to solve the gambling problem simple. When run, an evening at the roulette table just flies by. Line 100 defines how much money you have in your pot, with line 110 setting the size of the initial bet. If you like, you can put input statements in both those lines to vary the amounts when run. We can keep track of the largest bet we have placed with the variable LMPF.

Next we read in all the red numbers from the DATA statements into the array RED(). The casino might close before we are through so the total number of spins of the wheel possible is tracked in the variable TSP. Similarly the number of spins actually used is recorded in SPIN. A logic variable WIN/LOST indicates if we have enough money to cover our bet and line 210 sets up the victory pot — the amount we have when we decide to give up for the night.

So now we enter the casino and

OVER the last couple of months we have been outlining a problem for you to solve — together with some hints on how to go about writing a program to give the required answer.

I asked you to test out a roulette gambling strategy: To bet on the red numbers and, if you lose, to keep doubling the bet until you won. Many of you will have written your own routines to solve the puzzle, and mine is shown below. It follows the method described last

month, but is just one of the infinite ways that you may have approached it.

If you've solved the problem in a completely different way you'd like to see it, so send it to:

Mailing, Atari User, Europa House, Arlington Park, Arlington, Massachusetts, 02116 4AP.

We'll give 1TD for the best solution that matches exactly the problem as it was originally defined in the March issue of Atari User.

In the third part of this series Mike Cook presents his solution

start our first cycle of bets. Line 300 generates the random number as a result of spinning the roulette wheel. Lines 340 to 370 see if we have won and then we must take the appropriate action if we have won or lost. If we have won we add our winnings to our pot and end the current cycle of bet doubling. If we have lost we need to double our bet if we have enough money — if not we are bust.

Thus if the casino is still open we can place our bet again. After a winning cycle of bets we decide whether to call it a night or carry on.

So there you have it: You can see whether you will win. I made an adjustment to the program to run it continuously — keeping a count of how many nights I won and lost. I kept a

record of 1,800 spins of the wheel and won 521 times.

However, before you rush off to win a fortune consider a few more points. First, of all most casinos have house rules which limit the maximum and minimum bets and some tables limit the number of times you can double your bet. In addition you will have to subtract your entrance fee and any drinks you buy from your winnings. Some casinos might not get through as many as 200 spins a night, so you will have to change that.

Finally, it is rather a slow and boring way to make money. It's much better to hone your programming skill and make that pay.

So are you ready for next month's Programmers' Challenge?

```

10 REM PROGRAMMER'S CHALLENGE
20 REM THE SOLUTION
30 REM TO THE PROBLEM
40 REM (C)1991 MIKE COOK
50 DIMSPACE $:DIMCOUNT 1,0
60 POSITION 1,1:PRINT "PROGRAMMER'S CHALLENGE"
65:PRINT
70 POSITION 1,1:PRINT "-----"
80:PRINT
90 P="YOUR ROULETTE WHEEL"
100 P="(0-00)000"
110 P="(00-000)000"
120 P="(000-000)000"
130 REM HOW MANY SPINS OF THE WHEEL?
140 REM HOW MANY TIMES TO DOUBLE?
150 REM $="
160 REM $="
170 REM $="
180 REM $="
190 REM $="
200 REM $="
210 REM $="
220 REM $="
230 REM $="
240 REM $="
250 REM $="
260 REM $="
270 REM $="
280 REM $="
290 REM $="
300 REM $="
310 REM $="
320 REM $="
330 REM $="
340 REM $="
350 REM $="
360 REM $="
370 REM $="
380 REM $="
390 REM $="
400 REM $="
410 REM $="
420 REM $="
430 REM $="
440 REM $="
450 REM $="
460 REM $="
470 REM $="
480 REM $="
490 REM $="
500 REM $="
510 REM $="
520 REM $="
530 REM $="
540 REM $="
550 REM $="
560 REM $="
570 REM $="
580 REM $="
590 REM $="
600 REM $="
610 REM $="
620 REM $="
630 REM $="
640 REM $="
650 REM $="
660 REM $="
670 REM $="
680 REM $="
690 REM $="
700 REM $="
710 REM $="
720 REM $="
730 REM $="
740 REM $="
750 REM $="
760 REM $="
770 REM $="
780 REM $="
790 REM $="
800 REM $="
810 REM $="
820 REM $="
830 REM $="
840 REM $="
850 REM $="
860 REM $="
870 REM $="
880 REM $="
890 REM $="
900 REM $="
910 REM $="
920 REM $="
930 REM $="
940 REM $="
950 REM $="
960 REM $="
970 REM $="
980 REM $="
990 REM $="

```

Missing in Oxide

Load and save errors? **LEN GOLDING** gives answers to prayers with a verify utility



THE Atari cassette system is beautifully designed and always works perfectly every time. And if you believe that you'll believe anything.

Have often have you typed in a long program and CSAVED it, only to find later that there's a fault on the tape? A cassette file can be tested in only one way — by trying to load it. But this destroys the original program in memory, so if the file happens to be faulty you've lost all your hard work.

All kinds of things can go wrong

The connecting plug may have worked loose, especially since terminals are fitted to only two of the 13 pins. There may be dead spots on the tape — perhaps from too much re-recording — and some tapes designed to record music are inherently unreliable when used for computer data.

The cassette unit itself can develop hardware faults — keys get stuck, heads get dirty or drift out of alignment and drive capacitors develop flat spots — especially if you leave the

recorder for long periods with Play locked down.

On some older computers there's a bug in the operating system which interferes with the cassette handler routine — the usual fix for this is to do an LPRINT before saving anything to cassette, and ignore the ERROR 130.

There's even the possibility of pilot error — you might have forgotten to plug the recorder in or, on 410 models, left the power supply disconnected, or neglected to press both Play and Record.

The cassette handler has no way of knowing what, if anything, is plugged into the serial port — you could attach an electric toothbrush, for all it cares.

Whatever the cause, the result is likely to be ERROR 130, described in the manuals as a DataLink communication error and in more colourful language by users who have to endure it.

This little autoboot program provides an answer. It simulates the LOAD or LOAD "C:" or ENTER "C:" commands, without disturbing the contents of memory. You will hear the beeps and whistles from the TV speaker, just as though the file was loading as usual, and any problems are therefore easy to detect.

But if a fault occurs your original Basic program will still be there in memory, so you can keep on trying until you produce a perfect copy.

Making the autoboot cassette file is very easy — Program 1 does it all for you. Lines 20 to 140 are identical to

```

10 REM Program 1: Checks an Autoboot
cassette file containing the words to
store.
20 DATA "PROGRAM-LOAD" REM save
a file into the top of RAM as a
binary buffer.
30 FOR I=0 TO 40:GOTO 40:GOTO 110:GOTO 1
40 GOTO 1
40 DATA 196,96,133,264,94,119,100,10
1,130,106,78,133,101,141,14,101,11,11
7,146,5
40 DATA 160,201,177,48,3,141,106,117,4
6,140,200,177,51,1,141,106,117,75,5
40 DATA 12,86,238,14,47,14,101
50 REM Load the program (temporarily) to
the reserved buffer area
60 G=GET:GOTO 101
60 GOTO 110:GOTO 101:GOTO 101
70 REM Save "PROGRAM-LOAD" as a
binary buffer into the reserved memory
area
80 DATA 11,1,128,17
90 G=GET:GOTO 101,101,110:GOTO 101:GOTO 101

```

```

100 REM
110 DATA 8,1,1,1,11,7,148,10,142,2,111
24,76,141,154,141,277,1,148,7
110 DATA 141,112,2,148,148,141,206,2,9
6,141,100,8,114,101,148,108,140,1,149,10
110 DATA 141,111,117,75,1,140,1,107,140
21,148,4,107,74,3,148,107,107,100,3
110 DATA 149,7,117,48,1,101,140,108,10,1
1,141,111,148,1,107,140,1,107,101,107
110 DATA 10,5,148,1,107,140,3,149,108,1
17,11,4,148,8,147,75,1,101,140,108
110 DATA 10,107,148,108,1,107,75,133,104
1,141,106,141,100,3,140,73,149,11,111
,44
110 DATA 1,107,148,108,147,2,141,11,11,10
14,4,47,14,107,1

```

10 071 111	80 100 101	110 071 101
10 030 101	90 100 101	100 070 101
10 090 111	100 111 101	110 070 101
10 034 101	110 111 101	100 067 101
10 082 111	100 107 101	110 070 101
10 070 101	110 107 101	100 110 101
10 071 101	100 067 101	110 065 101

those used in several previous cassette autoboot routines are explained in our articles in *April 1988*, so you may already have a file with them on. The DATA at lines 40 to 80 holds the autoboot master code and lines 100 onwards contain the Verily routine itself.

Type in Program 1 and – with fingers crossed – **CSAVE** a copy. Insert a blank, fully re-wound cassette and run the program. After a few seconds you will hear the familiar double beep. Now follow the usual **CSAVE** procedure and the machine code routine will be written to cassette in autoboot format. From now on you'll use this new tape, so Program 1 shouldn't be needed any more. But keep it in case you've made any typing errors and need to change it later.

Before you can use the Verily routine however, it has to be loaded into memory. Rewind the tape with the autoboot program on it, switch power off then switch on again while holding down the Start key. When the single beep sounds, proceed as for **LOAD** and the autoboot program will install itself before Basic takes control, changing the screen border colour to grey if.

Incidentally, if you don't like the colour change, replace the 14B at line 180 with 2 and make a new autoboot tape. You can always double-check that the routine is installed, by typing **PRINT PEEK(1870)** – the result should be 104.

You can now carry on programming just as though the new routine wasn't there. When you've finished use the usual **CSAVE**, **SAVE "C:"** or **LIST "C:"** commands, and your program will be saved to tape.

Now's the time to check that it's a good copy. If the file was made using **CSAVE**, then type **R=USR180211**. This simulates **LOAD**, with its short inter-posed gaps. If you used **SAVE "C:"** or **LIST "C:"**, then type **R=USR180211L**. This lets the routine work with long inter-posed gaps, to simulate **LOAD "C:"** or **BATCH "C:"**.

In all cases the file is loaded 128 bytes at a time into the cassette buffer. A top-notch Verily routine would check each byte against the Basic program in memory. However, this would make the code much more complex, and greatly increase the autoboot loading time. Apart from which, it's extremely rare for just one or two bytes to be corrupted – if the file will load at all, it's almost certain to be a good copy.

To keep things simple and minimise typing, we've taken the safe option – our routine simply reads the file and does nothing with it. During the reading process you will hear the

HOW THE PROGRAM WORKS

If you're into machine code you might like to take a look at the source listing. If nothing else, it will remind you what a cassette autoboot file looks like. The header starts with 3, then contains the file length in 128-byte sectors, followed by the load address and initialisation address.

On power-up, and before Basic takes control, the operating system does a JSR to the sixth byte after **LOADADDR**. This puts it at **CONTROL** where the cassette motor is turned off and the Carry flag cleared to indicate a successful load.

The RTS at line 380 returns control to the operating system, which then does a JSR to the initialisation address. This resets **MEMEND** and changes the screen border colour to let you know that the routine is installed. Pressing **Reset** repeats the JSR to **INIT**, reinstating the new **MEMEND** and border colour values.

The RTS at line 380 hands control to Basic, leaving the rest of the machine code routine safely tucked away and ready for your **USR** command.

The **USR** routine itself starts at line 410 with a PLA to detect whether or not a parameter was inserted. If not, it assumes that the file to be checked uses short IRGs. If any parameter was passed then long IRGs are selected. The specified mode is programmed by

storing either **80** or **8D** into the second auxiliary byte of **IOCHR #7**. We chose the **IOCHR** since it's the one used by the operating system for most external IO transactions.

Lines 430 to 760 load the file, 128 bytes at a time, into the area reserved for cassette IO – **CASBUF**. So long as no error occurs, the 6602 processor's Sign flag remains at zero until the end-of-file. Consequently line 760 will loop back for another chunk of data. When the reading process stops for any reason the Sign flag is set, so the routine drops through to **ENDTEST** with the error number automatically stored in the **IOCHR** Y register.

If it's error **80** – end of file – everything is alright, so we set **IOCHR#7** without keeping the speaker. If the error number is anything other than **80**, lines 870 and 880 simulate the pressing of **Control+2** on the keyboard, and this produces a beep. The error number is copied into **ERRNOLO** at address **5762** – decimal 1932 – in case you need to inspect it when Basic gets control again.

The last few instructions from 840 to 880 close **IOCHR #7** and ensure that there will be no continued whistling from the speaker when cassette IO is finished. **Control** is then handed back to Basic by the final RTS.

usual sounds from your TV speaker, so any problems are easy to detect and any fault will produce an extra loud beep. When the test is either successfully completed or aborted the cassette motor is switched off and control passes straight back to Basic, which prints the usual **READY** message.

If you're desperate to discover what type of error occurred, you can find out by typing **PEEK (1922)**. An error-free file will leave 128 here, but any fault will insert its own identity number – usually 140.

Once you have a cassette copy which tests out successfully you should be safe to try loading it back into your micro's memory using **LOAD**, **LOAD "C:"** or **ENTER "C:"** as appropriate. The Verily routine does not need to be in memory for this operation, though it can be if you wish. And that's all there is to checking that you've made a good copy of your program on your tape.

```

10 CASBUF=1024
20 CH=10
30 CH=CH+16
40 CH=CH+16
50 CH=CH+16
60 CH=CH+16
70 CH=CH+16
80 CH=CH+16
90 CH=CH+16
100 CH=CH+16
110 CH=CH+16
120 CH=CH+16
130 CH=CH+16
140 CH=CH+16
150 CH=CH+16
160 CH=CH+16
170 CH=CH+16
180 CH=CH+16
190 CH=CH+16
200 CH=CH+16
210 CH=CH+16
220 CH=CH+16
230 CH=CH+16
240 CH=CH+16
250 CH=CH+16
260 CH=CH+16
270 CH=CH+16
280 CH=CH+16
290 CH=CH+16
300 CH=CH+16
310 CH=CH+16
320 CH=CH+16
330 CH=CH+16
340 CH=CH+16
350 CH=CH+16
360 CH=CH+16
370 CH=CH+16
380 CH=CH+16
390 CH=CH+16
400 CH=CH+16
410 CH=CH+16
420 CH=CH+16
430 CH=CH+16
440 CH=CH+16
450 CH=CH+16
460 CH=CH+16
470 CH=CH+16
480 CH=CH+16
490 CH=CH+16
500 CH=CH+16
510 CH=CH+16
520 CH=CH+16
530 CH=CH+16
540 CH=CH+16
550 CH=CH+16
560 CH=CH+16
570 CH=CH+16
580 CH=CH+16
590 CH=CH+16
600 CH=CH+16
610 CH=CH+16
620 CH=CH+16
630 CH=CH+16
640 CH=CH+16
650 CH=CH+16
660 CH=CH+16
670 CH=CH+16
680 CH=CH+16
690 CH=CH+16
700 CH=CH+16
710 CH=CH+16
720 CH=CH+16
730 CH=CH+16
740 CH=CH+16
750 CH=CH+16
760 CH=CH+16
770 CH=CH+16
780 CH=CH+16
790 CH=CH+16
800 CH=CH+16
810 CH=CH+16
820 CH=CH+16
830 CH=CH+16
840 CH=CH+16
850 CH=CH+16
860 CH=CH+16
870 CH=CH+16
880 CH=CH+16
890 CH=CH+16
900 CH=CH+16
910 CH=CH+16
920 CH=CH+16
930 CH=CH+16
940 CH=CH+16
950 CH=CH+16
960 CH=CH+16
970 CH=CH+16
980 CH=CH+16
990 CH=CH+16

```

Turn to Page 24 >

Listing 8 Machine-code version of Program 1

Software

SCENE

Thunder from the heavens...

Proton Thunderfox
Price: £49.99 (suggested)
Supplier: Atari Corp (UK),
Atari Europe, Railway
Terence, Slough, Berkshire
SL2 8EQ
Tel: 0753 33344

A HEAVILY armed enemy transporter ship is carrying Diabolite energy crystals for the approaching Phalon war machine.

Once these have been installed in the deadly Phalon war machine they will turn it into the most powerful destructive force in the Universe. Capable of destroying entire solar systems in minutes, it must be stopped.

You have been chosen to represent the Federation forces. The new Thunderfox – an ultra-sleek and incredibly manoeuvrable space fighter – has been given to you in a last ditch attempt to destroy this evil threat to mankind.

All you have to do is locate the crystals and destroy them to stop the war machine from being finished. They are situated inside the transporter and are guarded by the crystal guardian. Obviously if you think about it.

Your way into the transporter is restricted by two anti-gravity stabilisers located at the far right of the ship. You must bomb each five times before it is destroyed – not an easy task even for an avid games player.

It is very easy to run out of

bombs while you're trying to knock out the stabilisers so an option to reload is built into the game.

When you have used all your bombs, fly to the far left hand of the transporter and land on your death-rain where your supply will be replenished.

When you have destroyed both stabilisers, fly to the left of the transporter and land on the pad. You will then be transported to the bowens of the ship and enter the three-dimensional laser room.

If you come into contact with any of the lasers or the walls you will be instantly disintegrated.

Remember to watch the level indicator at the top of the screen. The intense radiation generated by the lasers will destroy your Thunderfox if you take too long getting through.

Once you manage to get past the lasers you enter the energy crystal room where the guardian is waiting for you.

The Diabolite crystal is located in his head and you must shoot it 10 times to blow it up. This is hindered by the middle wall that moves up and down in front.

The playfield uses a split screen and in the bottom quarter is the long range scanner – which indicates how close the Phalon war machine is to the transporter.

This distance is constantly closing, so time is of the essence – don't mess around shooting enemy



vessels that you can just ignore. Also at the bottom of the screen is a status line showing your score, lives remaining, weapon in use and the current level.

The main action takes place at the top of the screen.

An extra ship is awarded for every 5,000 points scored, and your total score is calculated depending on a number of factors, such as destroying the guardian head and blowing up ground installations.

The game is joystick controlled, allowing you four directions of movement – up, down, left and right. If you are travelling flat out when you push forward or backwards you will accelerate or decelerate relative to the movement.

However, when your craft is moving at its slowest speed, when you pull in the opposite direction it will flip over and reverse its travel.

The fire button is used to activate the on-board lasers

but it also switches from lasers and bombs when you hold it down and move in the opposite direction.

The graphics are nice with lovely scrolling. The sound effects are well implemented and there is a catchy main tune.

When your fighter launches from its hangar you get a superb side on view of it – an original feature. Also, when your craft is hit by enemy fire it doesn't explode straight away. It glimmers to the surface of the transporter – another nice idea.

The game is quite difficult to get to grips with, but after the initial hiccup it got me hooked. I would recommend Thunderfox to lovers of shoot-'em-ups.

Neil Fawcett

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

Software

SCENE

Winter frolics...

Program: *Winter Olympics '98*
Price: £9.95 (suggested £14.95)
Developer: Tyresoft, Unit 3,
Addison Industrial Estate,
Merton, Tyne and Wear
NE21 4QB
Tel: 091-474 0011

COMING hot on the heels of the recent *Winter Olympics* is this new sports simulation from Tyresoft.

Although this style of game is now a little old hat, and similar ones were on the scene at least 12 months ago – notably *Winter Games* by Ego – this fresh product from Tyresoft has a lot going for it.

It kicks off with a lively rendition of the signature tune from the BBC Ski Sunday program, then offers up to six players the chance to participate in any or all of five different events – the downhill race, ski jump, bobsled, slalom and bobsled.

Each player can represent any country from 12 given, although this has little bearing on the game. The selection process is followed by a picture of the Olympic flame in full blaze and then it's on to the simulation itself.



The Downhill

All the events rely on judicious and timely joystick wiggling to control the participant's movements and, sometimes, speed.

In the downhill race you view your skier from behind as he prepares to hurt himself down the slope. The objective is to manoeuvre him in and out of trees and

sandy obstacles and deposit him safely across the finish line.

It's not easy and, since you only get the one attempt, mistakes such as crashing yourself on a slick spruce are costly – not to mention probably fatal.

Next comes the ski jump. If you swear thought you could do better than Eddie the Eagle, now's your chance.

Your man shuffles out from a hut and positions himself at the top of the long and menacing ramp. Your view is from behind him. Then it's all systems go as he launches himself down the jump.

When he reaches take-off point the picture changes to give a side-on view of the



The Ski Jump

competitor as he flies through the air.

Unless you manipulate your joystick correctly, chances are the poor chap's legs and skis will go every which way and he'll make an ungainly landing, usually last first.

Unlike Eddie, the jumper doesn't get up and smile when he goes base over top but instead beats the ground with his fists.

My skier must have had hands like steel because the time I'd finished because this is not one of the easier events to complete successfully, even though you do get three attempts at it.

The bobsled is somewhat boring and easy to complete. It involves making two laps of a course on sleds, the course consisting of a couple of flat tracks – one just a little complete



The slalom

with motorboat – a short uphill climb, followed by a pretty bridge and then a short downhill run.

The view during this is from the side. However, during each lap you have two opportunities to snag a lead with your rifle and hit five static targets – 30 targets and 30 bullets in all. Here the view is from behind the competitor.

The slalom is particularly difficult. Your view is from the side but moving downhill from right to left. You are supposed to weave



The slalom

past the appropriate poles but I found it only too simple to crash into the side barriers.

Finally comes the two-man bobsled event. The sled is first pushed from left to right to the top of the run when the picture changes to give you a view looking down the run.

This is rather like Polo Position on ice with the run swirling towards you and

the backdrop scenery whirling across from side to side as you go round bends.

A small display to the left of the main scene shows an overhead view of the course.

The sled has a natural tendency to veer up the banks as it hurtles round bends and it is your job to see that it doesn't overturn. The ride seemed to go as forever but this event turned out to be the easiest in my experience.

The game's main strength lies in the very picturesque graphics – lots of lovely Alpine scenery here for you to enjoy, and some good animation, too. Sound effects and music are also used to the benefit of the game's atmosphere.

While the gameplay may not be as anything new or novel, and perhaps lacks lasting interest, there's no doubt that Tyresoft has done a good job on this one and you certainly get your money's worth of thrills and spills.

Bob Chappell

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

Software

SCENE

Two player destruction

Product: Zyxte
Price: £2.95
Developer: Zenith Games,
25 Gordon Road, New-
castle upon Tyne NE2 3LL
Tel: 091-291 4607

AFTER taking a look at the pre-release version of Zyxte in the March 1988 issue of *Amiga User 1* was delighted when the finished version arrived. Believe me, it was well worth the wait.

The game revolves around the fate of two rebels, Klesar and Cassiana. You control them in their bid to escape death row and execution - and before you think of me anything, not the one in *Alcatraz*.

To do this you have to undertake an almost suicidal mission to the Green System.

Once there you have to win 18 strange worlds and do battle with waves after waves of alien hordes.

If you survive you will be awarded a teleport crystal which allows you access to other planets in the system.

Eventually you will reach the ultimate levels and the ultimate challenge - the Zyxte itself.

As well as needing the crystals for access to the other planets you are also governed by how many tokens you have collected.

After completing the initial level it is possible to advance up to level 12 in any order you want without a token, but after that you will need three tokens to get to the restricted areas. These are awarded after the completion of a level.

If you survive and retrieve the Zyxte, the death rings - placed around your necks by your captors - will be returned.

To help you on the mission you have been given the Orbit weapon with its

lowest power level.

As the mission progresses you can increase the destructive force of the Orbit by picking up debris of the same shape that appears on screen after you have blasted an alien vessel.

Many different instruments of destruction can be collected including the Rail Gun, the S-Miss, the Wall and the Pulse.

Extra lives are awarded in the same way - simply fly over the space man when he appears.

The game has an original shooting system. You have built-in auto-fire which allows you to select any of the weapons you have collected by pressing fire to stop through them.

In later stages you can have them all going at once - it was a real pleasure watching aliens explode all over the screen under a hail of laser fire.

Your weapons are displayed in two status screens that sandwich the main playfield - one for each player.

Another status line near the bottom of the screen shows lives remaining, score and which weapon you are using.

You can have both players



You will need your arm of weapons

on screen at the same time, and luckily you can't shoot each other.

The play area uses a number of graphics modes with a carefully thought out use of colour and superb scrolling. The alien landscapes for the different planets have been beautifully designed.

Similar games are often criticised about the design and animation of the hero and aliens, but Zyxte doesn't suffer from any of these faults.

The animation and design of your player is excellent.

His arm jerks back as he fires his weapons and he swings and tucks his legs as he thrusts upwards or backwards.

Every alien wave that attacks you is animated in its own way. Some roost and others pulse as they zoom across the screen.

The game caters for everything you would ever want. The high score table has a dual entry mode - two players with two joysticks can enter their names at the same time.

All game options are controlled using the joystick - all you need to do is simply highlight the icon you want on the main title screen and away you go.

One of my favourite features is the music. Several pieces are used throughout, but the main tune is so catchy I found myself whistling it all day.

A fine finishing touch to a wonderful shoot-'em-up.

Neil Pawlett



The Green System - one of 18 worlds

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

Software

SCENE

Double trouble...

Program: Double Pack I and II
Price: £7.99 (suggested), £10.99 (RMS)
Supplier: And Axi Software,
11-12 Fenner Street, Manchester M14 3JQ
Tel: 061-624 6341

DOUBLE Pack I contains two games, Mad Jax and Planet Attack. In the first you control a car driving through horizontally scrolling scenery and your objective is to travel as far as possible.

But to stop you are a number of unmovable road hogs, which can either be shot or avoided.



Mad Jax - road journey

Various items along the roadway can be picked up by driving over them. These include fuel, weapons and a couple of objects which appeared to have no discernible effect on anything.

One of the weapons as offered is a rearward shooting cannon. Although I scored what appeared to be direct hits on vehicles behind me many times, not one of them blew up. Most upsetting.

There are two sections of road, desert and city. In the former there are the road hogs, while in the latter there are additional hazards in the form of moving road barriers.

To survive the city section you must have collected enough fuel during your drive through the desert.

I found the graphics all

right but movement was perhaps a little on the slow side. The gameplay isn't varied or interesting enough to hold the imagination for long.

The two sections - although getting progressively more difficult - are rather short and, as far as I could see, repeated ad infinitum.

Planet Attack is the better game of the two. Earth is under attack from Titanian forces which have established a base on Mars and are being kept in our time zone by the installation of Time Scales.

It's your job to destroy these by attacking them from the ship Star Eagle, but you seem to have about as much chance of succeeding as Stockport County has winning the FA Cup.

Graphics are an improvement on Mad Jax. The background scrolls by on six different levels and gives a possible illusion of dimension in depth.

Forward progress of your ship is at a pre-set pace and movements available are



Planet Attack - not Mars of the Titans

up, down and sideways. Your relative position is indicated by your shadow on the ground.

Armaments available are forward shooting lasers to defend against attacking Titanian Auto Destroyers, Space Cruisers and missiles.

The Star Eagle also has bombs which you can use to destroy ground installations, Titanian settlements, radar sites and the all important Time Scales. Bombing a fuel dump

increases your own fuel level, but if you do run out you can eject to safety. The game then continues as before, with you now controlling your ejection seat.

This amazing device also appears to be equipped with laser cannon and bombs and needs refuelling in the same way as your spaceship did.

After a short run - around 35 seconds - the landscape scrolls back to the launch pad and you must land your craft to gain bonus points. Re-launch for more of the same, but with additional hazards to contend with.

Double Pack II includes the games Space Wars and Dreadnaught.

Space Wars really is looking a little long in the tooth. You control a spaceship at the bottom of the screen and have to fight off successive waves of alien or restorers.

If you collide with one your shield loses effectiveness and the latter cannot be shot, but must be dodged.

This concept can still work if there is something in it to take it out of the ordinary and bring it alive. I don't think Space Wars made that jump. The graphics are at



Software

SCENE

but only average, response is a little sluggish and detection of a missile hit on the aliens seemed suspect at times.

The game's simplicity may appeal to younger children, perhaps just starting out on careers in Universe-saving, but more experienced players will probably lose interest after a short while.

The other game *Dreadnought*, is a sort of sub-

aquatic *Dropzone*. You control a submarine, blasting enemy subs and negotiating traps and underwater hazards.

You can move deeper into the water or towards the surface, hitting the sea bed, or indeed surface waves, costs you a life.

Horizontal speed can be deftly controlled and I found that I was more successful when rotating the urge to belt round at a rate

of beats blasting everything.

A slower pace made for more controlled accuracy and more reaction time if the enemy ships suddenly turned in front of you – as they had a habit of doing in the later stages.

Although not possessing the frenetic, frenetic action of same-quality graphics of *Dropzone*, *Dreadnought* is not a ball budget game in its own right.

Niels Reynolds

Pack 1	
Sound	3
Graphics	3
Playability	3
Value for money	3
Overall	3

Pack 2	
Sound	4
Graphics	3
Playability	3
Value for money	4
Overall	3

Kicking into touch...

Program: *Super Soccer*
Price: £29.95 (recommended),
£14.99 (low)
Developer: Lynxsoft Ltd 3,
Addison Industrial Estate,
Raydon, York and West
YO21 4EL
Tel: 081-434 4177

WHEN all matches are off due to adverse weather conditions and Subbuteo sets have long since been stowed to all four corners of the loft, soccer fans might well be tempted to try a football game on their own.

Super Soccer gives you the opportunity to play a match against a team controlled by your computer or by another player.

Team colours can be cycled, although both teams end up looking much the same and even the goalkeepers wear the same colours as their team.

You can choose which country you want to represent, but this seems to have no bearing on the game and is not referenced elsewhere – for example, the scoreboard merely files the sides as home and away.

Your view of the action is from the side with the pitch set against a backdrop of static spectators and

ground-level advertisements.

The two teams – quite large figures – troop out, a whistle sounds and play begins. As players advance towards either goal – only a part of the pitch is visible at any time – the screen scrolls rather jerkily.

The player currently under control from each team is highlighted by a pair of brackets surrounding his head. Players and ball move slowly, particularly when two players are close to each other – essential when one player is trying to gain possession of the ball.

It is sometimes difficult to see who is who and quite what is going on.

The goalies can be controlled to a limited extent, but only when the ball is nearby. At the press of the fire button, the appropriate one will immediately execute an unballistic dive.

The goalkeepers are likely to find themselves on the free transfer list before long – on several occasions they faced their goal when a goal kick was being taken.

I don't know if the invisible referee was off buying a packet of peanuts whenever it happened, but

the teams have an unhelpful habit of taking a goal kick when opponents are still in the goal area.

There is a good sporty opening title, but apart from that and the pleasing whistles, sound effects are lacking.

The roar of the crowd is nothing more than a constant hiss which rises and falls in volume in relation to the action and the ball looks unrealistically when it bounces.

No, much as I love football, I really couldn't take to this game. It plays a little too slowly for my liking and didn't generate enough

feeling of a real match. If it's a football simulation you want – I see this word because a graphical representation is not the same – you would be better off getting *Addictive Games' Ancient Football Manager* – it's still the best soccer simulation.

But if you actually want to see 22 men running around a pitch you might give this one a try.

Bob Chappell

Sound	5
Graphics	4
Playability	3
Value for money	4
Overall	4



THE LATEST AND



ARCHON - ROM - \$14.99 1 player
A battle between the forces of light and darkness. You can't take a square; you have to fight for it.



BALLBLAZER - ROM - \$14.99 1 player
Can you shoot the Poppers through the moving goalposts while getting your Robot to hit one or two players?



RESCUE ON FRACTALUS - ROM - \$14.99 1 player
You have to rescue your friends from Fractalus - but the evil eggs aren't going to make it easy.



TWILIGHT WORLD, CASSETTE, \$14.99 1 player
Search your way through eleven dungeons and dungeons, with auto-maze paths and hints.

Atari have always had the greatest arcade games in the galaxy, now they're adding even more winners to the collection. From the high speed skills of handling a WWT biplane, to the brain-aching Archon battle of wits. Whether

you're landing the punches with Fight Night or using the awesome power of Thunderfox to blast the enemy, Atari give you the best combination of graphics speed and skill this side of Alpha Centauri.

ALL GAMES SHOWN ARE COMPATIBLE WITH: ATARI XE GAMES SYSTEM, ATARI

D THE GREATEST.



BLUE MAX - ROM - £14.99 (includes manual)
The skills of WWI dogfighting and bombing raids.

FIGHT NIGHT™

by Acornsoft



FIGHT NIGHT - ROM - £14.99 (includes manual)
Control and train your own team beating stronger than yours first to the championships. One or two players.



THUNDERFOX CASSETTE - £4.99 (includes manual)
The fabulous war machine is complete. Can you beat the horrendous odds in your Thunderfox?



COMPILATION CASSETTE - £4.99 (includes manual)
Five classic favourites on one cassette! Containing our Raiders, Missile Command, Tanks, Top Attack.

Then there is Atari's compilation cassette of all time favourites, which at only £4.99 makes it, you guessed it, the best value on Earth!

Pick the latest and the greatest from your Atari Dealer or fill in the coupon to order by mail.

FOR 65XE, 130XE, AND 800XL COMPUTERS.

Please use clearly legible handwriting.

Name Address

Tel/Fax Postcode

Daytime Night

Mobile Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Other

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Atari £14.99

Postcode

Postcode

Postcode

Postcode

Postcode

Postcode

Postcode

ATARI

THE FIDOLON

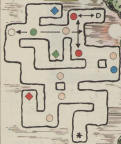
by BRYAN STEVENS



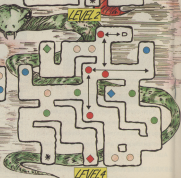
LEVEL 1



LEVEL 2



LEVEL 3

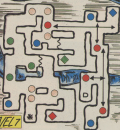


LEVEL 4



LEVEL 5

LEVEL 6

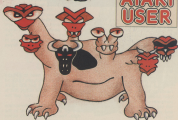


LEVEL 7

ATARI
USER

LEGEND

- * SPURT
- DRAGON
- ⊙ STALACTITE
- ↑ DIRECTION OF RED FREDBALL
- ~ FORCE FIELD
- ◇ JEWEL
- FREDBALL



WE welcome letters from readers giving their help with games on the Atari that they would like to pass on to other readers. The address to write to is:

Hints and Tips
Atari User
Europe House
Addington Park
Addington
Mossfield SK10 6PP

The Exorcist

THIS month's map on page 32 shows you the levels of Activision's entertaining game *The Exorcist*, so to complement it here are some useful tips:

- On the lower levels the Jewel Guardians are not very dangerous, but they can still drain your energy. So when you approach one, to make it up, shoot your fireballs at it quickly while moving backwards.
- If you do manage to get lost, press P to pause the game and then refer to the map.
- Shooting a blue fireball at a creature will freeze it, but a green one

first five levels you can bypass all the creatures in levels six and seven. That is if you don't get killed by a dragon, in which case you lose all the jewels.

- If you run out of time you will have to start again on level one. So if time is running out you have two options: Face any wall and shoot at it — the fireballs will rebound and kill you — or let a creature or dragon kill you.
- On level eight, collect as many Jewels as you can to give you a high energy level. Avoid all the red fireballs — you can't shoot them, as the roof is too low.
- Finally, when you meet the



One of the dragons you encounter in the game

will change it into something else. But beware, the monster it changes into may be more dangerous than the one you faced in the first place.

● When you're fighting something dangerous and your energy level gets too low don't be proud — just run away. Amass more energy by collecting fireballs and return for another go.

● When confronting a dragon, you can still collect the Jewels it spits at you by pressing the spacebar. (Unusual hint) If you need both hands to hold your joystick, take your shoes and socks off, put the computer on the floor and use your left big toe to press the spacebar and your right one to press the P key.

● If you collect all the jewels in the

dragon on level eight, don't panic.

Next month we'll introduce you to the demonic and strange monsters that inhabit the underground caves and tell you in detail how to kill them. — Bryan Stevens, Andover, Herts.

Universal Hero

FIRST of all you need to get the remote switch, which can be found in what looks like a car. Go to the large field where the floppy disc is and use the switch, then get the disc.

Next, get to the top of the surface and go as far as possible to the right. You will see a white object smoking out of the cliff. Use the tap

Your HINTS & TIPS

to stop the fountain. Now go all the way down the cliff and get the vial. Go to the dynamite, near the start and down to the right.

Get the plunger and go to the room with all the rods piled up. Use the plunger to clear the door.

Go through this door and use the plug and the floppy disc. When asked to identify yourself type SLARTBARTFAST and the force door will now open. Go through it to the pinapple.

Get the oil and go to the fountain room. Two screens on from this you will find a reel machine. Get the fuel and go to the spaceship, but make sure that you have the ID card.

Use the fuel and the ship will launch while you get ready for the next puzzle — Gary Guigley, Fingles, Dublin.

Spy Hunter

WHEN the spy car is first placed on the road from the weapons van it can travel on the rough ground to the right of the screen — this normally causes your car to explode later in the game.

To do this you must go forward at the slowest speed and pull right as far as the car will go.

The noise is pretty bad but it gets you out of some pretty tight spots on the expert level.

When the mad helicopter starts attacking the spy car, watch for the small square on the side of it to flash before you move away. Then, unless you hit a screen boundary, your car will not be destroyed.

When one of the enemy vehicles gets under the helicopter wait until the chopper tries to drop a bomb and fire at the car. Both of them will explode. — Andrew Patterson, Basingstoke, Herts.

WITH few new adventures being released for the 8-bit Atari just now, I suggest you rummage around in your sack and pull out a few of those golden oldies and revisit old acquaintances.

And what better way to start with than with an Infocom adventure — there is so much in them that they always repay a return visit. The classic Zork trilogy should be high up on your list, as should *Planetfall*, *Deadline* and *Widowmaker*.

For cassette owners, I would recommend Level 5's *Colossal Adventure* for a replay. This is the best version of the famous Crowther and Woods original *Colossal Cave* adventure that I know, and still gives me a real kick every time I go back to it.

One new adventure for 808 Atari machines has come to my attention, but due to the fact that my disc drive has been showing signs of old age, I have been unable to give it the Rouloc razor-sharp review treatment. The game is *DCI* — Operation Computer Interface — and is produced by a company called Teasoft.

The plot concerns one Professor Decker who has kidnapped a bunch of programmers attending a software conference. His plan is to hold them hostage while you go off and recover a folder which will prove that the professor's son was killed in a fighter test crash in 1980.

To keep the authorities at bay and the town clear while you accomplish your task, the professor has built an atomic bomb and has other aggressive tricks up his sleeve — so hat-measures for this guy!

DCI is a text-only adventure using a simple vocabulary. It costs only £3.99 on cassette and £2.99 on disc, so you can't really go wrong. Copies are available direct from Teasoft at Seawinds, Graft Road, Loochannon, Ross-shire IV54 8PA.

Lots of help has been supplied by readers in response to Dave Hall of Sheffield's plea for assistance with *Alternate Reality: The Dungeon*. Although Dave has since written to say that he is well on the way to solving all the snags of this adventure, I think it would help other readers to print some of the advice received from those adventurers who have taken the time and trouble to write in.

David Luge of Burton-Upon-Humber says that he has found it better to start off with a new character, as imported ones seem to get killed off too easily. He brought in a really good Level 11 character from the city but that too suffered the same early demise.

The progression of statistics is much better if you start off from scratch, says David, and by using

Back to the Golden Age of Adventures

good weapons found in special places, you can have a better character at Level 6 in the Dungeon than by importing a higher level one from the City.

David recommends that if you find a silver key on a corpse or elsewhere, you should take it to the prison in the palace dungeon area. There you can free Antismind's assistant who will give you a spell called Temporal Fugae which speeds you up in combat, makes you hit harder and lets you pick up dropped weapons.

The oracle doesn't appear to know what your abilities are, but simply lists the quests in order. There's nothing for it but to keep on throwing in gold and blessing. The first clue to the Gargoyle's riddle is SHIPWRECK and you can only cross the River Storm at midnight.

Susan Fairhurst of Ashton, near Wigan, adds to this by saying that the other words needed to answer the Gargoyle's riddles are ORACLE and BLOODSTONE. She wants to take care as there is something nasty on the other side of the river.

Susan and others also advise that you check that you have version 2.1, as version 2.0 has two FBI agents that prevent you from transferring a city

character to the dungeon.

Susan would like to know the solution to the three doors. She knows that going to the first three doors opens the one to the corridor and going to door two shuts it — but what does door three do? The answer is something to do with two other minor quests — but does anyone know what?

Peter Laurence of the month award has to go to Dave Fox of Kettering in Kent. He has sent in a number of

Fun to Page 38 ▶

by
Rouloc



4 From Page 18

rhyming dog for The Dungeon. For example:

A bear with fangs and fearsome gaze,
Whose hide will stop the keenest blades.

All forms of magic it withstands,
Yet thou might conquer with bare hands.

Good, eh? What it actually means is that to gain the Bloodstone you must kill the Basilisk using the mirrored shield and your bare hands.

In return for his magnificent poetic efforts, the bard Dave Fox would like to know what is the Axiom of Truth in Ultima IV. Can anyone help? And, in addition, Dave Hill of Sheffield will see one question unanswered - what is the name of the Geryon?

Finally, in response to requests from other readers including Chris Leighton of Sherwood in Nottingham and Andrew Barnes of Worthing, Sussex, I have given some hints for Guild of Thieves and The Price of Magic.

Until next month, exciting adventuring!

GUARD OF TREASURES

To cross the room of coloured squares starting on the black square, follow the colours of the rainbow backwards - violet, indigo, blue, green, yellow, orange and red - then move to the white square. You should have noticed that WORMNAM is the word Rainbow spelled backwards! To return across the room, reverse the order.

To enter the Bank of Karamia, you must place all the treasures in one of the night safes - the sign outside the bank will change, depending on how many treasures have so far been deposited.

The pick is used to get the chips of mineral from the rock face near the waterfall.



PRICE OF MAGIC

To recover the second book through the ceiling, push the secret panel in one of the rooms - 3 then 55 from the Blissy Corridor - in the oak paneled corridor then pull the lever. To read

the inscription on the ceiling, cast the Fly spell on yourself.

To deal with the glowing gateway, try giving any spell *Focus* - the gem-datum, for example.

**ATARI
USER**

MAIL ORDER OFFERS

**ATARI
USER**

MAIL ORDER OFFERS

EXCLUSIVE OFFER

**Power to
your fingertips!**

Atari have developed an exciting range of credit card size calculators and databanks - and we've negotiated two exclusive offers for readers of Atari User.

The **CCARD** ExecuCard is a five-function calculator with an eight-character display showing a column after every three digits. It's solar-powered only 1.5mm thick and comes with a protective cover.

The **DBANK** Data Bank stores 150 sets of data, each with seven alpha numeric characters and 12 numbers. There's a fast search facility, a secret mode protected by a user-defined password and an eight-digit calculator. Battery included.

**FREE
WITH
SUBSCRIPTION**

**SAVE
UP TO
£7!**

Product	RSP	Special reader offer	YOU SAVE	Price with subscription
Atari ExecuCard	£3.99	£4.99	£1	FREE
Atari Data Bank	£14.99	£16.99	£2	£12.99

Turn to page 61 to take advantage of this superb offer

OVER
£600
IN PRIZES

NOW WE ARE THREE

This month Atari User is three years old and much has happened in the last 12 months. The quality of software continues to improve as games players expect more and more from their computers. Indeed Atari itself has looked in addition to its range with the Atari XE Games System.

So to celebrate the success of the Atari as a games machine we are offering you the opportunity of winning:



1st PRIZE

The Atari XE Games System consisting of keyboard, 8500E console, light gun, joystick and built-in Missile Command. You will also receive copies of

the classic Flight Simulator II and Bug Hunt, which shows the potential of the light gun. Value: £718.00

"A sophisticated games playing console with an amazing range of software and the possibility of upgrading to a full computer at a later stage."

André Willey, Atari User, February 1988



2nd PRIZE

From Tynesoft comes the new (simulated) 88. This exciting new release combines five games with first-rate graphics and excellent gameplay. There are 76 levels to be won. Value: £14.00 each

"One of the best Alpine scenery for you to enjoy, and some great

animation too. Sound effects and music are also used to the benefit of the game's atmosphere."

Bob Chappell, Atari User, May 1988



3rd PRIZE

Triplet of Miss Force and Phantom - two more games of quality from Tynesoft. Value: £5.00 each

Miss Force: "The award graphics and superb-sounding soundtrack each with... with numerous levels featuring the very best of the Atari's music capabilities."

Neil Fenwick, Atari User, January 1988

Phantom: "Character animation is superb both for speed and your player character. Phantom is original and well worth buying for the sheer pleasure of playing it."

Neil Fenwick, Atari User, July 1987

WHAT YOU HAVE TO DO

Simply answer the following four questions, complete the entry form and send it to arrive no later than May 25, 1988.

QUESTIONS

1. Which event did Steve Nordin enter in the 1988 Winter Olympics?
2. In which year did Terrell and Dean win their last Gold Olympic medal?
3. How many Quarterfinals were there by the end of the first?
4. Which film is famous for the phrase: "May the Force be with you?"

ENTRY FORM

ANSWERS:

1.
2.
3.
4.

Name: _____

Address: _____

Postcode: _____

I would like to receive 4 free/assorted versions of my prize.
(! Please delete the format you do not require)

Return to: Third Birthday Competition, Atari User, Europa House, Axtelton Park, Axtelton, Mansfield (N15) 4BP.

This Toolkit is a MUST!

**ATARI
USER**
exclusive!

Programming becomes so much easier when you've got the right tools for the job. With this Atari User package you can add TEN new commands to Atari Basic to dramatically improve your performance. PLUS your Atari will generate meaningful error messages instead of cryptic numbers.

Toolkit automatically boots in from cassette or disc and makes use of a normally unused area of memory.

This package of stunning utilities - specially commissioned by Atari User - is an absolute must. It comes complete with comprehensive on-screen instructions telling you how to get the most from each of the programs.

CLICK

Takes that annoying annoying keyboard effect on or off simply.

DEL

Removes a single or block of unwanted Basic lines quickly.

TOOLKIT COMMANDS

REN

Instantly renames your Basic programs in any line increment.

DIR

Displays a directory of any drive without having to enter Dos.

DEC

Converts numbers between decimal, hexadecimal and binary.

GRT

Calculates and presents the useful Atari User checksums instantly.

CHANGE

Alters the name of a variable at every occurrence in a program.

STRIP

Removes all REMs and reduces the size of the program.

LISTING

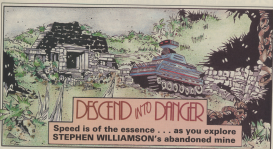
Prints and includes the Atari special characters on an Epson printer.

LMAR

Gives the name of all used variables and a list of all their occurrences.

£5.95 tape
£7.95 disc

TO ORDER PLEASE USE THE FORM ON PAGE 61



DESCEND INTO DANGER

Speed is of the essence . . . as you explore
STEPHEN WILLIAMSON's abandoned mine

HERE'S a very addictive game set in an abandoned mine which you explore in your UEV - Underground Exploration Vehicle. You descend from the top of each level - mine it all from the top of each level - mine it all from the top of each level - mine it all from the top of each level - avoiding radioactive stalactites, avoiding radioactive stalactites, avoiding radioactive stalactites, avoiding radioactive stalactites, and evil ghosts on the prowl for victims.

A joystick plugged into port one controls the UEV's movements and the fire button accelerates it in case of trouble. You start the game with nine lives - and you'll need them - with extra ones being given as you reach levels four, six and eight. Touching walls, ghosts or various obstacles take you of one life.

Once you've completed a level you are awarded a bonus which is calculated according to the time it took you - the quicker you do it the more you score.

Each successive level gets harder and some require a lot of thought before you can complete them. After you have finished press Start to begin again.

The layout for levels one to four can be found between lines 500 and 1080, with levels five to seven between 1580 and 1940. These routines use re-defined characters which make it very easy to customize your own version of the game.

If you delete line 480 you can have infinite lives, while changing line 420 to read:

```
440 000000
```

will remove all collision detection for your UEV and allow you to travel through walls and see the whole game from start to finish.



Level one of the game

```

100 000 000000000000
101 000 00 000000000000
102 000 000000000000
103 000 000000000000
104 000 000000000000
105 000 000000000000
106 000 000000000000
107 000 000000000000
108 000 000000000000
109 000 000000000000
110 000 000000000000
111 000 000000000000
112 000 000000000000
113 000 000000000000
114 000 000000000000
115 000 000000000000
116 000 000000000000
117 000 000000000000
118 000 000000000000
119 000 000000000000
120 000 000000000000
121 000 000000000000
122 000 000000000000
123 000 000000000000
124 000 000000000000
125 000 000000000000
126 000 000000000000
127 000 000000000000
128 000 000000000000
129 000 000000000000
130 000 000000000000
131 000 000000000000
132 000 000000000000
133 000 000000000000
134 000 000000000000
135 000 000000000000
136 000 000000000000
137 000 000000000000
138 000 000000000000
139 000 000000000000
140 000 000000000000
141 000 000000000000
142 000 000000000000
143 000 000000000000
144 000 000000000000
145 000 000000000000
146 000 000000000000
147 000 000000000000
148 000 000000000000
149 000 000000000000
150 000 000000000000
151 000 000000000000
152 000 000000000000
153 000 000000000000
154 000 000000000000
155 000 000000000000
156 000 000000000000
157 000 000000000000
158 000 000000000000
159 000 000000000000
160 000 000000000000
161 000 000000000000
162 000 000000000000
163 000 000000000000
164 000 000000000000
165 000 000000000000
166 000 000000000000
167 000 000000000000
168 000 000000000000
169 000 000000000000
170 000 000000000000
171 000 000000000000
172 000 000000000000
173 000 000000000000
174 000 000000000000
175 000 000000000000
176 000 000000000000
177 000 000000000000
178 000 000000000000
179 000 000000000000
180 000 000000000000
181 000 000000000000
182 000 000000000000
183 000 000000000000
184 000 000000000000
185 000 000000000000
186 000 000000000000
187 000 000000000000
188 000 000000000000
189 000 000000000000
190 000 000000000000
191 000 000000000000
192 000 000000000000
193 000 000000000000
194 000 000000000000
195 000 000000000000
196 000 000000000000
197 000 000000000000
198 000 000000000000
199 000 000000000000
200 000 000000000000

```

Turn to Page 41 to



The leading North West
Specialist ATARI Dealer



**LABROKE
COMPUTING
INTERNATIONAL**

33 Ormskirk Road
Preston, Lancs.
Tel: (0772) 21474 (1 line)
(0772) 20796 (6 lines)
Fullboard 27236 6pm to 8pm



This Company has given years of full support to ATARI users Countrywide from their retail shop premises at Ormskirk Road, Preston. Now from their NEW Mail Order Depot they can offer the same Excellent service to all Mail Order Customers. All Software and Hardware is fully tested prior to selling. This ensures Customers receive working items or that returned goods, and all the attendant frustration are a thing of the past. All Hardware is supported by our own ON SITE engineers, therefore quick turn round on all repairs is Guaranteed. All prices quoted are fully VAT Inc. and there are no hidden extras, what you see is what you get. Delivery included in price. Please ring for latest prices, new releases, etc.

1200K Computer £118.00
Disk Drive Phone
2572 Recorder £32.00



	3 1/2" Disk	5 1/4" Disk
	DAD	DAD
	£7.99	£3.99
Per Disk	£18.00	£5.50
10 Disks		
10 Disks/Plastic		
Library case	£17.50	£7.50
100 Disks	£152.00	£60.00
500 Disks	£662.00	£260.00

All Disks are covered by an
unconditional lifetime guarantee.

TO ORDER: Simply send, or phone your order, stating Full Name, Address, Visa or Access Nos, Cheque or Money order. Make payable to Ladbroke Computing International, 33 Ormskirk Road, Preston, Lancs. FY11 3ZP.



Our ATARI trained engineers will repair all Hardware in minimum time at competitive rates. Please ring for a quotation. All repairs carry a 90 day warranty.

PRINTERS

Dot Matrix	
Star 1210	£320.00
Star 1215	£350.00
National Panasonic	£190.00
MP105	£120.00
MP105	£120.00
L388 Tractor Feed	£18.00
L388 Sheetfeeder	£88.00
L3880 24pin Ctr	£220.00

All Printers, Disk Drives etc supplied with cables etc. NO HIDDEN EXTRAS

DUST COVERS

Computers	£3.99
Monitors	£4.99
Disk Drives	£2.99
Printers	£7.99



We have a complete range of Software in stock and fully tested.

IF IT'S AVAILABLE we have it
Send SAE for full catalogue.

Any Software problems? Quotes?
give us a ring we usually have the answer

All Dedicated books and maps in stock
FOR MORE INFO CALL ON THE
ABOVE NUMBERS OR SEND SAE
AND STATE FULL REQUIREMENTS

See us on stand G14 at the World
User Show, London 22nd-24th April



HOW DEBBIE MET A STRANGER!

'Desire' is like an intimate conversation on your PC screen! Just phone in and join in for hours of enjoyment. There's no enrolment fee — just one phone call via your modem puts you through to a new world of handy services and fun things to do. Take a look at the menu ...

Charge Rate 50p Inc. VAT peak & 45p Inc. VAT per min. off peak.

CHATTER BOX The interactive message board. Say what you want to say — stir up a hornets' nest, start up a friendship! See the immediate response!

MAILBOX A handy way to leave messages with friends.

DESIRE CLASSIFIEDS The perfect place to sell your old computers, or find a top computer job!

GRAFFITI CORNER Whatever you want to say, here's where to say it!

DESIRE DESIRE'S PROBLEM PAGE Personal, emotional or sexual problems answered.

DESIRE
LONDON E14 9TW

PHONE NOW

0 8 9 8 5 5 5 5 5 5



ATTENTION ALL 1050 DISK DRIVE OWNERS

The 1050 I.S. Plate.

The ULTIMATE drive enhancement
from Innovated Software.

DETAILS

Plug in, high quality, ready fitted PCB with
full fitting instructions.

Now with full floppy compatibility.

Improved drive speeds - up to THREE normal loading speed.

Reduction of drive WEAR and TEAR
while tracks can be stored in the PLATE's 12K of RAM.

Supports Double, Quad and Single densities.

Some 1050 is no longer required to obtain 10 speed.

Will run all available disk operating systems, (DOS), including:

SPARCOS, HAPPY TRAMP SPEED 808

AND OTHER HIGH SPEED SYSTEMS.

The PLATE drive can also emulate other
drives via its memory on board RAM including:

8085 DOUBLES, STANDARD 8085, ARCHIVER,

HAPPY, LACES AND WARP DRIVE.

80-SPEED reading and writing with special 100 gives
an increase in speed by a factor of 3000.

Many special commands have been added to the SID table.

SOFTWARE DETAILS

Supplied with double sided menu disc
and a special 10-SPEED menu.

Build in diagnostic menu, sector copies
and special loading menu.

MANUAL

A comprehensive 30 page manual is supplied with
complete fitting instructions
and detailed information regarding software drive access;
to allow you to access the full potential of the PLATE.

All registered owners will be supplied with any software
updates, etc. for the price of a disk and return postage.

Also supplied with...

GREMLIN GRABBER III

The most comprehensive, 80-SPEED backup
utility disc on the market, complete with manual.

This complete package

NOW ONLY £89.95 on Post Packing and 11 months warranty.

A saving of £24.95 on previous advertised price!

Available only from:



53 Rugby Road,
Worthing,
West Sussex,
BN11 5NR
Tel: 0925 730804 (4lines.)



TRANSDISK IV

Commercial tapes CAN be
transferred to disk!



READ ON!

Are you tired of waiting for cassette games to load? Would you like to transfer them to disk for faster, more reliable and convenient loading? You may have heard or read that this is not possible. Well, not only is it possible, but there is a program, Transdisk IV, that will do it all automatically, you require no knowledge of cassette protection/interguard. To put it simply, Transdisk IV will read ANY tape-cassette, (single, multi-stage, non standard format, etc. - non-protected), remove the protection, then place it on disk for you. Plus, to load and run the new disk version of a cassette program requires just one keypress from a convenient, custom menu disk.

The cost of this, the most powerful tape-to-disk utility for the Atari is just £24.95 inclusive of first class delivery. Also comes complete with comprehensive instructions which were specially written with the cassette programmer and first time disk user in mind.

Requires: Atari 800A, or 130XE Computer with disk drive and cassette recorder.

Remember, that not only will you save money on upgrades to disk if they are available but many games are only available on cassette anyway so Transdisk IV has to be a worthwhile investment!

Send an SAE or phone for more details of this utility.

Make Cheques or P.O. payable to DIGICOMM and send your order to:

DIGICOMM
178 Southwell Common Boulevard, Milton Keynes, Bucks MK13 8BL
Tel: (0295) 983708.

Demonstrations arranged for orders by appointment.
*For your convenience from the original cassette only.



STACK COMPUTER PRODUCTS

CENTRONICS PRINTER INTERFACE
400, 800, XL, XE (Only 2 on Atari)



TYPE 7000

- ANY CENTRONICS PRINTER
- NO SOFTWARE NEEDED
- ALL CABLES SUPPLIED
- EASY TO USE - JUST PLUG IN AND GO
- TRANSPARENT & CONVERSION FEATURES INCLUDED
- FULL YEARS WARRANTY

£39.95

FREE 48 PAGE
CATALOGUE ON
REQUEST OR WITH
ORDER

MITROMORE LIMITED
28 Farnley Way, Redwood
Mansfield Notts NG18 4B
Tel: 051-521 0200



ATARI USER Classifieds

Has upgrading your computer given you hardware you no longer need? Or have changing interests left you with unwanted software? Then **THIS** is the place to advertise your surplus items. *Atari User* readers are always on the lookout for a bargain and this is the first place they look!

An added bonus!

Your advert will also be automatically displayed on MicroLink, the electronic mail service operated in association with Telecom Gold. This means it will be seen by thousands of computer enthusiasts who can send an instant response.

● Volume 1's 1, Nos. 5, 6, 9, 10 issues 'Atari User' wanted in any condition. Any reasonable price paid. Write: PO Box 8998, GR-100 10, Athens, Greece.

● Wanted V56 disc drive. Reasonable price. Tel: 021 582 3078.

● 1302X XC12 Data Recorder, joystick, games & mags £100. Details: Tel: Woodbridge 6395.

● 1027 printer. Mint with Atariwriter disc (85). Tel: 8227 464328.

● New 8 bit chips cheap. Original w/w Atariwriter, Datasoft Compiler, Microsoft Basic 3, Neumann Doc + Demo, tape to disc, many more £8

each. Music construction set, Silent Service + more CD. Tel: 8608 8144. Micro-Link MA240417. Prestel 811111438.

● Wanted 1027 printer, working order or for spares. Tel: 061 797 2882.

● 80801, 1050 disc drive, 1027 printer, 1018 recorder and joystick plus some original software, job lot £215 o.n.o. Tel: 88284 78330 evenings.

● Atari 800XL (Revision C Bezel), 1018 recorder, 10-games, joystick, books, magazines £138 o.n.o. Tel: Malvern (08948) 5938.

● Data Recorder and C140 worth of games for sale £75 o.n.o. Tel: 681 746 0813 ask for Robert.

Classified advertisements will be accepted under the following conditions:

- This service is **EXCLUSIVELY** for the use of private readers. No trade ads will be allowed.
- To avoid encouraging software piracy, all ads will be carefully vetted before they are accepted.
- Ads can only be accepted on this form for a photograph of 10.
- There is no maximum to the number of words you include in your ad. If there is insufficient room on the form, continue on a separate sheet of paper.
- The cost is 20p per word, with a minimum of 10 words.
- We **GUARANTEE** your ad will appear in the next available issue of *Atari User*.

● W52990 modem £70 posted. De-De Atari CD. Page 6 on disc, 20-31 £15. Tel: 0245 288038.

● 80801 and cover, 8000L (not working), Atari 490, 1050, 818 disc drives, 1010 recorder, £200 of software, assembler editor and utility pack, M.L. book £260. Peter Barry, 81 Willowbank Road, Bitterhead, Merseside, L42 7JX.

● Atari 1028 printer as new with box and disc including 10 print £90. Tel: Coventry 713404.

● Computereyes, Digilog, software and manual £95. Speech Digilog and recogniser includes software, phone, mic and manual £45. Touch Tablet, Atari

Artist, Colour Space, Fun with Art, Technician's Hour Dexam only £25. Tel: 01 542 8026.

● Atari 1028 printer for sale, as new £70. Tel: 01 724 9432.

● 80801, 1050 drive, XC2 cassette, joystick, software (atari games), mags etc. £260. Tel: 0268 760043 may split for right offer.

● Atari 1027, letter quality printer for sale, virtually new, still with box, manual etc only £58. Tel: Farnham 02521 712075 ask for Steve.

● Wanted disc drive for Atari 800X write to Alan Morley, 4 Norfolk Square, Great Yarmouth, NR30 10E.

Fill in now for the next issue

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10 words £100
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15 words £150
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20 words £200
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25 words £250
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30 words £300

I certify that any software offered for sale is original and not a copy

Signed: _____

Name: _____

Address: _____

Circle number to fill in

SOFTWARE *Solutions*

Your programming problems solved by **ANDRÉ WILLEY**

THIS month the first letter comes from Bryan Kannerley who is based at Rhyl in Wales. He has a few questions about some puzzling aspects of the Atari floppy disc system.

I am currently writing a disc sector editor and while doing so I have uncovered a few unusual phenomena. Firstly, on reading the directory of *Alternate Reality - The City (disc 1, side 1)*, two structures appear to be displayed in a random order.

Investigation reveals that on reading the directory sectors 080 to 084 the same thing occurs. How can these sectors hold one set of data on one pass and a completely different set on the next?

Also, while writing the DLI routines I made extensive use of the Dos 2.2 routines on my 1300C, and in doing so I discovered a seemingly pointless function: if a working DLI is disabled by setting bit 7 of location \$4296 to zero using POKE \$4296,0 before accessing a DLI: ramdisc file, the DLI miraculously springs back into life again. Is this essential to the vendor's operation, or is it just a bug?

I would like to include in my program the capability to detect, examine and create bad sectors - but to do so I need to know what one is. What makes them different to ordinary sectors and how are they created?

As far as the DLI part of your question goes, the answer is probably a slip up on the part of the authors of Dos 2.2. When the ramdisc is accessed various portions of ram and rom are switched in and out of the memory map, and the operating system must always be re-orientated before attempting to do such bank selection operations.

This involves turning off both the Vertical Blank and Display List Interrupts (VBI and DLI) by setting location \$4296 to zero. Normally the

original contents would be stored temporarily on the stack, but in this case that doesn't seem to happen and the value 182 is restored after the Dos call - re-activating any DLIs as well as the required VBI system.

The other part of your letter requires a greater understanding of the way in which an Atari disc drive works.

Although we tend to think of disc sectors as being numbered sequentially from 1 to 720, the disc drive actually sees them rather differently. It deals with the disc as 40 separate tracks, with each containing 18 sectors of data (or 20 if you're using an enhanced density disc).

Each sector within a track is assigned a number between 1 and 18 so when you ask to read a given disc sector, the number you specify must first be converted into track and sector references - and only when the disc drive's read/write head is positioned over the correct track can the sector offset value be used to read in the correct data.

For example, if you try to access sector 18 the drive looks on track 0 for the sector numbered 18. Similarly, sector 18 would actually be at track 1 (sector 1) and so on up to sector 720 which is really track 40 (sector 18).

Some manufacturers use a special timing hole punched into all 5.25in discs to work out where each sector occurs within a track. Atari, however, opted for a software approach and each sector has a short block of header data which provides the sector reference number and some error prevention checksum data.

What you have come across is a method of copy protection used by some disc manufacturers. As you have observed, the first directory entry is located at sector number 381, which is in fact the first sector of track 20. Whenever you ask for a directory (from sector 381) the drive head moves straight to track 20 and starts

reading each sector in turn until it finds one with a header value of one.

As soon as it finds the correct header it knows that it must read the next 120 bytes of data directly to your micro. Finally, all the data bytes are added together and compared with the original checksum digit found in the header, and only if the two numbers match will the transfer be considered complete.

The drive expects there to be 18 individual sectors, each with a unique number, but it is theoretically possible to have more than one sector with the same reference number - it being just luck which one the drive arrives at first. Some discs even contain 18 sectors, all with the same number - giving 18 possible sets of data for one official sector number.

There are obviously some devious ways of contriving to read a specific sector out of the 18 present, but there is no point going into detail because there is absolutely no way in which you can create a disc like this with a normal drive. Software manufacturers use some very special pieces of equipment to make such discs, and the program won't run unless the custom format is present.

The same applies to so-called bad sectors, which are often physically damaged or given incorrect checksum digits - thus returning a disc read error even when there may be 128 bytes of good data present. Once again, you can't create these with a normal drive - indeed Atari has provided you with an awful lot of circuitry to prevent the possibility of any bad data being recorded on a disc.

Of course, you are a reasonable Atari owner, and wouldn't be interested in actually copying such things anyway, would you? That would be both illegal and immoral, and is the

Turn to Page 48 if

◀ From Page 48

reason why such weird and uncooperative data formats were created in the first place. Here endeth today's lecture!

SuperScript puzzle

On how to a letter from the Netherlands, from Th.P.J. Bleske:

☞ Last August I bought the SuperScript word processor which I had seen advertised in Atari User, and which I am generally very happy with. However, a few days ago I was re-reading your March 1988 issue containing the SuperScript review in which the reviewer mentions a bug with the Return character (13) versus the normal Atari code of 195. As I had already encountered the problem of printing a text file to disc I was glad to get an answer to this problem, so I decided to follow the reviewer's advice and alter the 13 on my word disc default file, and in the Epson file on the master disc.

I booted up SuperScript and loaded the Epson printer driver and changed the Return number 13 to 195. Then I used the Document Replace option to write the printer driver back to my disc and quit the program early. The following day I tried to boot SuperScript and I could only get the READY prompt or the Self-Test menu. Upon checking the disc I found that the first three files, the ones with spaces in the directory, had been deleted. I then used the Restore option from my modified Disc 2.3, and now the default file seems to contain some 800 sectors - but the disc still doesn't boot.

I hope that you can offer me a solution as to how to get SuperScript working again, or print a warning in your magazine for other readers so it won't happen to anyone else. ☞

As you have by now realised, it's always a mistake to write anything to a master disc unless you've first made a backup of it. Since SuperScript is heavily copy-protected, it's best to assume that you just don't write anything to it at all.

What you should have done is to write your new defaults file on to your work disc, and not used the original version on the master disc at all. As you have discovered, your master is now corrupted and you should send it back for a replacement (although you will probably have to pay the media cost - somewhere around £3 to £5 sounds reasonable).

The first three boot files on the disc were originally hidden from view by altering their respective directory entries, so when you tried to write a new file on to the disc the first blank entry was assumed to be empty and re-used, thus corrupting the hidden DOS.SYS file.

I reckon that such techniques should not be used on business programs, and you should not only be allowed to but be positively encouraged to take backups of your master discs. After all, you've paid out your £95 and the program is now useless through no real fault of your own. I hope you get it sorted out soon, and perhaps software houses will ensure that future versions of such programs will be released in non-protected forms, as they already are on the ST.

What you should have done is to write your new defaults file on to your work disc, and not used the original version on the master disc at all. As you have discovered, your master is now corrupted and you should send it back for a replacement (although you will probably have to pay the media cost - somewhere around £3 to £5 sounds reasonable).

Guide to local dealers

SOFTWARE EXPRESS

EUROPE'S LARGEST
ATARI MAIL ORDER
COMPANY
(021) 328 3585



OPENING SOON

OUR NEW ATARI STORE AT

9, EXETER STREET PLYMOUTH

PHONE (0752) 265276

NOW IN STOCK
The New Atari
ROM Cartridges
XL & XE
(See other
side for details)

NEW ATARI ROM CARTRIDGES AVAILABLE
Tech and Path
Mystic on Phoenix
Star Wars
Action
Ball Blasts
Lyle Rymes
Huge Mugs
Auto Position
And many others
Phone for prices



ALSO AT 514/516 ALUM ROCK ROAD BIRMINGHAM B8 3HX (021) 328 3585
212/213 BROAD STREET BIRMINGHAM B15 2JP (021) 643 9100

Guide to local dealers

CARDIFF



EAGLE COMPUTERS

South Wales' Largest Atari Dealer

Atari DEP, full range of software
Plus Laser Printing in Postscript and
Hawk Scanning facilities

48 Charles Street, Cardiff CF1 4EP
Telephone: 0222 390266

LEICESTERSHIRE

B. BYTES COMPUTER SYSTEMS of Hinckley

110a, Market Road, Hinckley LE11 1AA

All 8/8 computers from 8/5 to 8/8 systems with a low starter price which includes:
8 Store 1 Megabyte hard disk, 200 5 1/4" floppy, 640k RAM, 1000k printer, mouse
Atari file, 800k RAM, 200 5 1/4" floppy, 640k RAM, 1000k printer, mouse

Flexibly and expand, allow us to get the most out of your machine and 8/8 system software means you

can still add software to it and have to pay for it

8/8 software is available for the most money

to 8/8 of software to all other machines

Encourages 4 hard disk systems, floppy and disk

Plus software prices, 8/8 software, 8/8 software

8/8 software, 8/8 software, 8/8 software

11 Southfield Road, Hinckley, Leicestershire, LE12 1UA, Tel: 0452 83277
At Home: 0452 133, 1337, 1338, 1339



GLASGOW

GLASGOW COMPUTER CENTRE ATARI AUTHORISED DEALER AND SERVICE CENTRE

RAM UPGRADES

For Atari 800 ST/ST/PM, Please phone for prices/availability

3.5" DISKETTES

Branded SONY disks, single sided £17.90

(with two free storage cases)

Branded SONY disks, double sided £18.00

Above prices are inc. of VAT & P/P

Analogue to Digital Converter £130.00

New ... Card Computers present the first industrial standard
AD converter for the ST

Test Specifications

4 channels

100 resolution

80 nano seconds conversion rate

1000 baud

Price 100 (single board)

Complete size 1.6x1.6x1.6 inches

100 1.25 High Temperature

Applications

Temperature, Humidity, Temperature

Measurement, Data Acquisition

Speed Pressure, etc.

Control, Testing, Control, etc.

Industrial use with 8/8 software

Control, monitoring, control, test

pressure monitoring

GLASGOW COMPUTER CENTRE
122 WEST NILE STREET, GLASGOW G1 1JZ
TEL 041 332 8246
PROGRESS THROUGH TECHNOLOGY

BUCKINGHAMSHIRE

FIDGET COMPUTERWARE

30% off all Atari 8 bit products

Wide range of all Atari and Atari ST
Software, Books, Joysticks, Dust Covers,
Blank Discs, and much much more.

Phone 0494 33144
for details

Write or phone for free catalogue
and details of free membership of
Fidget Discount Software Club.

Dept. PCW 150 Desborough Road,
High Wycombe, Bucks HP11 2QA
Telephone: 0494 33144

BUCKINGHAMSHIRE

QUALITY DUST COVERS

ST or ST/PM £4.95

Monitor £4.95

XL/XE £5.75

ST Monitor Cable £9.95

Other covers & cables available - state machine type

Atari Paddles £9.95

Mouse Mats £4.95

Keep your mouse tidy -
Mouse House (attracts to mouse foot)
£3.99

VCS Cartridges from £3.99
800XL/130 PSU £18.95

Large range of 16 & 8 bit software & peripherals
available. Please email a.s.c. for full list - please
quote 401



Carton Muzzies Limited

204 WHITE PIT LANE

GLAZEBROOK, WOODS

101 WIDE WINGFIELD

BUCKINGHAMSHIRE

WORKING HOURS: 100 (0900) 3124



5 LINERS

PERCEPTION

from George Postler

TEST your reaction speed to a given situation by playing this fun-to-use program. Pressing Start begins the game and the micro displays two numbers on the screen for a short time. If you recognize them as being the same, press the fire button on your joystick, which should be plugged into port 2.

If you are quick enough and the numbers are still the same the computer will award you one point but if you are wrong your attempt left will be reduced by one. After five goes the game will end and your final total will be displayed.

PROGRAM BREAKDOWN

- 1 Sets up a Graphics Mode 24x16 screen and tests for Start to be pressed
- 2 Generates and prints the two random numbers and tests for the trigger to be pressed
- 3 Speeds up the game, prints the score and your number of attempts
- 4 Tests whether X is the same as Y, subtracts attempts and returns to line two
- 5 Adds one point and returns to line two

Recently our readers have been sending us Five Liners that have been getting more clever and imaginative by the day. They're finding lots of ways to cram more and more code into the tight space available. So here are a couple of tips to help you enter the long lines.

Firstly, enter POKE 83,0 to remove the left-hand screen margin. This allows you to enter four lines of

Basic on the screen. You should also leave out all unnecessary spaces.

Whenever possible use the abbreviated form of the commands. Some common ones are:

```

GRAPHICS GR
FOR F
NEXT N
SOUND SD
GOTO G
DATA D
    
```

ENHANCED ON-SCREEN EDITOR

from Karl Fitzhugh

HOW often have you been sitting at a Graphics 0 title screen when you've had to strain your eyes to want the characters to the left of the cursor in order to work out coordinates for a POSITION statement?

Or how many times have you had to dig out your trusty manual to look up the internal code for a character when you needed to POKE it directly to the screen?

This Five Liner solves both of these problems. It sets up a machine code routine residing in Page 8 — locations 1538 to 1713 — that decodes during the vertical blank period — VBI — so make sure that your program doesn't use this area of memory. An extra line of text is added at the top of a Graphics 0 screen which shows the current row and column of the cursor, as well as the internal character set code for the character currently under the cursor.

Once you have typed it in, save a copy before running it as any mistakes in the DATA statements could cause the computer to crash. After

the program is run you can type NEW to delete the Basic from memory and call the routine by typing N—USR1576.

If you press Reset or execute a Graphics 0 command you'll have to call it again but don't call it from any other mode or you will just get garbage on the screen.

```

1 REM 8,25,27,30,32,34,35,37,39,40,
20,22,24,26,28,31,33,35,37,39,41,43,45,
30,32,34,37,39,41,43,45,47,49,51,53,55,57,59,
100,110
2 REM 147,149,151,153,155,157,159,161,163,
165,167,169,171,173,175,177,179,181,183,185,
187,189,191,193,195,197,199,201,203,205,207,209,
211,213,215,217,219,221,223,225,227,229,231,233,235,237,239,241,243,245,247,249,251,253,255,257,259,261,263,265,267,269,271,273,275,277,279,281,283,285,287,289,291,293,295,297,299,301,303,305,307,309,311,313,315,317,319,321,323,325,327,329,331,333,335,337,339,341,343,345,347,349,351,353,355,357,359,361,363,365,367,369,371,373,375,377,379,381,383,385,387,389,391,393,395,397,399,401,403,405,407,409,411,413,415,417,419,421,423,425,427,429,431,433,435,437,439,441,443,445,447,449,451,453,455,457,459,461,463,465,467,469,471,473,475,477,479,481,483,485,487,489,491,493,495,497,499,501,503,505,507,509,511,513,515,517,519,521,523,525,527,529,531,533,535,537,539,541,543,545,547,549,551,553,555,557,559,561,563,565,567,569,571,573,575,577,579,581,583,585,587,589,591,593,595,597,599,601,603,605,607,609,611,613,615,617,619,621,623,625,627,629,631,633,635,637,639,641,643,645,647,649,651,653,655,657,659,661,663,665,667,669,671,673,675,677,679,681,683,685,687,689,691,693,695,697,699,701,703,705,707,709,711,713,715,717,719,721,723,725,727,729,731,733,735,737,739,741,743,745,747,749,751,753,755,757,759,761,763,765,767,769,771,773,775,777,779,781,783,785,787,789,791,793,795,797,799,801,803,805,807,809,811,813,815,817,819,821,823,825,827,829,831,833,835,837,839,841,843,845,847,849,851,853,855,857,859,861,863,865,867,869,871,873,875,877,879,881,883,885,887,889,891,893,895,897,899,901,903,905,907,909,911,913,915,917,919,921,923,925,927,929,931,933,935,937,939,941,943,945,947,949,951,953,955,957,959,961,963,965,967,969,971,973,975,977,979,981,983,985,987,989,991,993,995,997,999,1000
    
```



```

1 USR 1576
2 REM 100
3 PRINT S
4 TLO 10
5 TNS 100
    
```

PROGRAM VARIABLES

- X, Y The two random numbers
P Number of attempts made
S Score
R Controls the speed of the game



```

1 TPI 100
2 AUI 100
3 VVA 100
4 JAS 100
5 GOK 100
    
```

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

We pay £25 for each one published.

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

Win £25

are relevant. And remember if you want your material returning please enclose a suitably stamped envelope.

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

Atari User, European House, Adlington Park, Adlington, Macclesfield SK10 4NP.



BOUNCE DEMO

from Keith and Joel Goodwin

THIS program proves that you can achieve smooth five line scrolling without having to use complex assembly language. Instead it simply manipulates the Display List to do the trick elegantly as well.

When you first run it, the message, ATARI USER MAGAZINE will bounce up and down the screen very smoothly with none of the jerkiness that usually occurs with on-screen character animation. After a short while it slows down and it stops at the bottom of the display. Then it starts all over again.

PROGRAM BREAKDOWN

- 1 Sets up the display list, disables the screen and sets up the variables.
- 2 Finishes the display list and prints a message.
- 3 Re-enables the screen and fades in the message with sound effects.
- 4 Scrolls the message down, lowers the height of the next bounce and checks whether the message has stopped bouncing at the bottom.
- 5 Makes the sound of the message hitting the bottom, scrolls the message up and makes the sound of hitting the top of the screen.

```

3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000

```

```

3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000

```

```

3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000

```

```

3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000
3 0000 0000 0000 0000 0000 0000 0000 0000

```



1 4P4 (F)
3 6L4 (D)
3 443 (F)
4 4LT (F)
6 LPJ (D)

VARIABLES

- G, I Low and high bytes of the display list
- D Location of the display list
- L, H Low and high byte pointers to the screen memory
- P Holds the height of the current bounce
- G, B FOR...NEXT loop counters

LACE

from Damon Burroughs

HERE'S a super little program that will show you just how easy it is to create colourful graphics on your Atari. The finished three-colour picture is drawn in eight parts - mirrored in the special colour.

When the program has finished it holds the pattern for a short while and then starts it again. Also included is a short sound effect which can be heard as the screen is drawn.

PROGRAM BREAKDOWN

- 10 Sets up sound, colour and graphics mode and then draws the first stage of the computer face.
- 20 Draws the second stage, changes the colours for the next two and then draws stage three.
- 30 Draws the fourth stage, changes the colour for the next four and then draws stage five.
- 40 Draws stages six and seven.
- 50 Draws stage eight, switches off the sound, holds the face design for a few seconds and then loops back to line 10 to re-draw the pattern.

```

10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000

```

```

10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000

```

```

10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000

```

```

10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000

```

```

10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000
10 0000 0000 0000 0000 0000 0000 0000 0000

```



10 60D (D)
20 74B (C)
30 7UJ (I)
40 G4P (C)
50 8FY (B)

Now you see it, now you don't

LEN GOLDING continues his look
at animation using Atari Basic

As we saw last month, it's quite easy to make a keyboard character move around the screen by just printing a blank space over it, then re-printing it somewhere else.

This is fine so long as the background is blank, but suppose the character has to move across a terrain map or other scenery? If you print a blank space every time the character moves, it will leave behind it a trail of missing background.

The theory behind overcoming the problem is straightforward: We first look to see where our moving character is about to land, find what's currently printed there and store this information in a safe place.

Next we print our character, which

will then erase the background at that position. When the time comes to move it, we re-print the original background data, which erases the moving character and restores the background — all in one go.

Although it sounds fairly simple, it's a very complicated thing for a computer to do. Consider the statement:

```
MOVE 10,20,3
```

In ordinary English, it means: Move the cursor to a position 10 columns in from the left and 20 rows down. Read the character currently occupying that spot and store its code number in a variable called C.

If, for example, the letter A is cur-

```
10 REM Prepare to re-directional control
20 REM control movement over a background
30 REM control keyboard necessary for LOCATE
40 REM to use
50 REM LOCATE 10,20:PRINT "A";GOTO 100 REM use
60 REM and move screen
70 REM LOCATE 10,20:PRINT "A";GOTO 100 REM initial horizontal
80 REM and vertical coordinates for ball.
90 REM LOCATE 10,20:PRINT "A";GOTO 100 REM fill the screen with
100 REM a background of letters
110 REM LOCATE 10,20:PRINT "A";GOTO 100 REM print the
120 REM ball at the initial position
130 REM use less shift keys
140 REM LOCATE 10,20:PRINT "A";GOTO 100 REM use horizontal as
150 REM a vertical coordinate.
160 REM LOCATE 10,20:PRINT "A";GOTO 100 REM press
170 REM ball by entering background part of
180 REM LOCATE 10,20:PRINT "A";GOTO 100 REM background
190 REM a character at which the ball will land
200 REM
210 REM POSITION 10,20:PRINT "A";GOTO 100 REM
220 REM ball.
230 REM POSITION 10,20:PRINT "A";GOTO 100 REM level of and if to
240 REM position, ready for next cycle
250 REM GOTO 100
260 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
270 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
280 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
290 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
300 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
310 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
320 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
330 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
340 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
350 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
360 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
370 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
380 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
390 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
400 REM LOCATE 10,20:PRINT "A";GOTO 100 REM
```

```
100 IF LEFT THEN GOTO 200-GOTO 200-100
110 GOTO 100
120 IF DOWN THEN GOTO 200-GOTO 200+100
130 GOTO 100
140 IF UP THEN GOTO 200-GOTO 200-100
150 GOTO 100
160 IF RIGHT THEN GOTO 200-GOTO 200+100
170 GOTO 100
180 IF LEFT THEN GOTO 200-GOTO 200-100
190 GOTO 100
200 IF DOWN THEN GOTO 200-GOTO 200+100
210 GOTO 100
220 IF UP THEN GOTO 200-GOTO 200-100
230 GOTO 100
240 IF RIGHT THEN GOTO 200-GOTO 200+100
250 GOTO 100
260 IF LEFT THEN GOTO 200-GOTO 200-100
270 GOTO 100
280 IF DOWN THEN GOTO 200-GOTO 200+100
290 GOTO 100
300 IF UP THEN GOTO 200-GOTO 200-100
310 GOTO 100
320 IF RIGHT THEN GOTO 200-GOTO 200+100
330 GOTO 100
340 IF LEFT THEN GOTO 200-GOTO 200-100
350 GOTO 100
360 IF DOWN THEN GOTO 200-GOTO 200+100
370 GOTO 100
380 IF UP THEN GOTO 200-GOTO 200-100
390 GOTO 100
400 IF RIGHT THEN GOTO 200-GOTO 200+100
410 GOTO 100
```

Program 6: Example of joystick control

rently sitting at coordinates 10,10 the value stored in *Q* will be 80 — the Ascii code for *A*.

As always, you can change either or both coordinates to any value within the corresponding screen boundary, and variable *Q* can have any legal name you choose.

Here's how it works in practice, using the ball — April 30 — as our moving character. We'll let the ball's current position be *R1,V1* and its new position *R2,V2*. Also, for convenience, let's pretend the values for *R2* and *V2* are updated by an imaginary subroutine at line 1000. Our program might look like this:

```

10 GRAPHICS 0
20 40:10:V0:0
30 4:10:0:
40 0000:1000
50 POSITION 0:1,0:0:0:0:0:0:0:0:0:0
60 LOCATE 10,10:0
70 POSITION 10,10:R0:V0:0:0:0:0:0:0:0
80 0:10:10:0:0
90 0:10:10

```

We start the program by telling the computer what graphics mode we're using. It's essential to do this, or the LOCATE command won't work. Next we specify the ball's starting position *R2,V2*, then jump into the middle of the main loop at line 60.

This line reads the background character at our ball's initial position and stores it in *Q*. Line 70 prints the ball, and line 80 sets *R1* and *V1* to the ball's current coordinates. Line 90 then sets the game loop running. Line 40 executes our joystick subroutine, and returns with the ball's new coordinates in *R2,V2*.

Line 50 erases the ball by restoring the original background data — the character whose Ascii code is held in *Q*. Line 60 clears the background character which is currently sitting at the ball's new destination — *R2,V2* — and stores its Ascii number in *Q*, replacing the previous value. Line 70 prints the ball at *R2,V2*, and this is where we start over.

The whole process will repeat until we stop the program by pressing Break or Reset, or switching power off.

Program 1 is a fully working demonstration that's similar to last month's Program IV, but we've reorganized things to give you a bit more practice with subroutines. Notice that the joystick control system — lines 150 to 340 — is new material. The first subroutine (150 to 260) calls other subroutines (270 to 340) as necessary, before

returning to the main line code at line 110.

Because lines 150 to 340 are now a self-contained mini-program, you can incorporate the routine easily into your own games.

The screen background — a pattern of capital letters — is also drawn by a subroutine, this time at line 350. You can easily change it to draw any pattern or background you choose — a haunted house or dragon floor plan, for example — using control characters. The utility program we gave you in Part II — the March 1988 issue of

Turn to Page 62 ▶

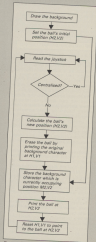


Figure 1. Flow chart describing Program 1.

4 From Page 17

Atari User — takes the drudgery out of this.

Another use for LOCATE is to detect when your moving character has hit a target of some kind. Try adding these lines to Program 1:

```
111 01 4*1 100 1000 500
100 0040 1,150,10,1
110 100 4*1 10 10,000* 4
110 1000 8,8,8,8
100 8*100
```

Now you'll get a short beep whenever the moving ball lands on a letter H. If you want the ball to produce a more exciting result, just change the code at line 100. Aren't retrospectives wonderful?

If you want your moving character to destroy only certain symbols in the background picture without disturbing the rest, that's easy too. Try changing line 100 to read:

```
100 1000 1,1,1,4,10 4*1 100 4*10
```

If the ball now lands on a letter M, the value stored in Q will be changed from 77 — the ASCII code for M — to 32 — the code for a blank space. So next time the ball moves it will leave a blank space behind it. You'll find, therefore, that the ball edges out every M but doesn't disturb anything else.

We're fast approaching the stage where we can write real arcade games, and our programs are consequently becoming increasingly complex. Computers can follow the most tortuous listings without difficulty, but human programmers tend to get lost in the maze. So now's a good time to introduce a system of diagrams which makes it much simpler to keep track of things.

Look at Figure 1 on the previous page. It shows the operation of Program 1 in simplified pictorial form. Notice how the diagram corresponds to BASIC in the listing, and to checking the program's operation against our written explanation. The pictorial flow chart is much easier to follow and saves an awful lot of writing.

Professional programmers use a whole range of symbols in their flow charts, but we can get a long way with just two, rectangles for operations and diamonds for decisions. Diamonds always have two outputs, corresponding to yes and no, while rectangles

have only one, corresponding to done.

BASIC is one of the few languages that doesn't demand an accurate flow chart before you start programming — it's very tolerant of variations in construction and layout. As your programs become more complicated, however, you'll find that time spent on designing it — by flow chart or other methods — will save many hours of trial and error and the end result will be tidier, shorter and probably faster.

Now let's turn to a topic that will help you to produce more realistic games — the use of colour. Deep inside your Atari is a group of memory addresses called colour registers. Whenever the computer draws a screen they tell it which colours to use and what to use them for. You can change the contents of the registers, and consequently the colours displayed by using SETCOLOR.

For convenience — and to avoid misspelling — this command can be abbreviated to SC. — BASIC will write it out in full when the program is LISTed: its format looks like this:

```
SETCOLOR 1,1,1
```

The first figure after SETCOLOR identifies which register we want to alter. In Graphics 0 we can use only registers 1, 2 and 4 but these enable us to change text brightness, background colour and border colour respectively.

The second figure specifies the colour — or hue — to be used and can have any value from 0 to 15. Figure 1 shows the hues available using Atari's own words, but you may disagree with the descriptions. In any case there's no absolute standard — many TVs and computers will inevitably produce different results.

The third and final figure is a SETCOLOR command controls the colour's brightness, and it can be any even number from 0 to 14. Changing this level has a marked effect on the perceived colour. For example:

```
SETCOLOR 1,10,8
```

will turn the background a dark green, whereas:

```
SETCOLOR 1,11,14
```

will turn it bright yellow, even though the hue number is the same — 12 — in both cases.

Program 1 lets you use a joystick to

experiment with colour registers 1, 2 and 4. Press the trigger to stop from one register to the next, move the stick up or down to change the hue value, and move it left or right to change the brightness level. If things get out of hand, pressing Reset will automatically restore the screen to its normal condition.

All our programming so far has been done in Graphics Mode 0, which is comparatively limited in its use of colour.

Text is always printed in the same hue as its background, but at a different brightness level. You can make it very dark, very bright or invisible, but that's about the limit to special effects.

For genuine multi-colour displays

we must enter a new dimension:

```
10 GRAPHICS 1
20 READ #V,TEST
```

When you run this something very peculiar occurs: The screen first goes black then splits into two parts - a large black area, and a smaller blue one at the bottom - with the normal **READY** message printed in the blue area as it would be on a Graphics 0 screen.

The word **TEST** appears in large letters at the top of the black area, but instead of being printed exactly as in line 20, all the letters are in upper case and each is a different colour.

Change line 10 to **GRAPHICS 2** and something similar happens, but this time the coloured letters are twice as large.

If you've followed this series from the first part you now know enough to write your first action game, and that's the best way to practice what you've learned.

Turn to Page 86 in

0	Black
1	Red
2	Red-Orange
3	Dark Orange
4	Red
5	Dark Lavender
6	Cobalt Blue
7	Ultramarine Blue
8	Medium Blue
9	Dark Blue
10	Blue-Gray
11	Olive Green
12	Medium Green
13	Dark Green
14	Orange-Green
15	Orange

Figure 10: Colour values - second parameter in a **GRAPHICS** statement

```
10 REM Program 11: Experiment with
11 colour registers in Graphics 2
20 READ #V,LC,CM,CC,CC2,CC3,CC4,CC5,CC6,CC7,CC8,CC9,CC10
30 FOR I=0 TO 15:GOTO 40:PRINT I;:NEXT I
40 GOTO 40:PRINT I;:NEXT I
50 GOTO 40:PRINT I;:NEXT I
60 GOTO 40:PRINT I;:NEXT I
70 GOTO 40:PRINT I;:NEXT I
80 GOTO 40:PRINT I;:NEXT I
90 GOTO 40:PRINT I;:NEXT I
100 GOTO 40:PRINT I;:NEXT I
110 GOTO 40:PRINT I;:NEXT I
120 GOTO 40:PRINT I;:NEXT I
130 GOTO 40:PRINT I;:NEXT I
140 GOTO 40:PRINT I;:NEXT I
150 GOTO 40:PRINT I;:NEXT I
160 GOTO 40:PRINT I;:NEXT I
170 GOTO 40:PRINT I;:NEXT I
180 GOTO 40:PRINT I;:NEXT I
190 GOTO 40:PRINT I;:NEXT I
200 GOTO 40:PRINT I;:NEXT I
210 GOTO 40:PRINT I;:NEXT I
220 GOTO 40:PRINT I;:NEXT I
230 GOTO 40:PRINT I;:NEXT I
240 GOTO 40:PRINT I;:NEXT I
250 GOTO 40:PRINT I;:NEXT I
260 GOTO 40:PRINT I;:NEXT I
270 GOTO 40:PRINT I;:NEXT I
280 GOTO 40:PRINT I;:NEXT I
290 GOTO 40:PRINT I;:NEXT I
300 GOTO 40:PRINT I;:NEXT I
310 GOTO 40:PRINT I;:NEXT I
320 GOTO 40:PRINT I;:NEXT I
330 GOTO 40:PRINT I;:NEXT I
340 GOTO 40:PRINT I;:NEXT I
350 GOTO 40:PRINT I;:NEXT I
360 GOTO 40:PRINT I;:NEXT I
370 GOTO 40:PRINT I;:NEXT I
380 GOTO 40:PRINT I;:NEXT I
390 GOTO 40:PRINT I;:NEXT I
400 GOTO 40:PRINT I;:NEXT I
410 GOTO 40:PRINT I;:NEXT I
420 GOTO 40:PRINT I;:NEXT I
430 GOTO 40:PRINT I;:NEXT I
440 GOTO 40:PRINT I;:NEXT I
450 GOTO 40:PRINT I;:NEXT I
460 GOTO 40:PRINT I;:NEXT I
470 GOTO 40:PRINT I;:NEXT I
480 GOTO 40:PRINT I;:NEXT I
490 GOTO 40:PRINT I;:NEXT I
500 GOTO 40:PRINT I;:NEXT I
510 GOTO 40:PRINT I;:NEXT I
520 GOTO 40:PRINT I;:NEXT I
530 GOTO 40:PRINT I;:NEXT I
540 GOTO 40:PRINT I;:NEXT I
550 GOTO 40:PRINT I;:NEXT I
560 GOTO 40:PRINT I;:NEXT I
570 GOTO 40:PRINT I;:NEXT I
580 GOTO 40:PRINT I;:NEXT I
590 GOTO 40:PRINT I;:NEXT I
600 GOTO 40:PRINT I;:NEXT I
610 GOTO 40:PRINT I;:NEXT I
620 GOTO 40:PRINT I;:NEXT I
630 GOTO 40:PRINT I;:NEXT I
640 GOTO 40:PRINT I;:NEXT I
650 GOTO 40:PRINT I;:NEXT I
660 GOTO 40:PRINT I;:NEXT I
670 GOTO 40:PRINT I;:NEXT I
680 GOTO 40:PRINT I;:NEXT I
690 GOTO 40:PRINT I;:NEXT I
700 GOTO 40:PRINT I;:NEXT I
710 GOTO 40:PRINT I;:NEXT I
720 GOTO 40:PRINT I;:NEXT I
730 GOTO 40:PRINT I;:NEXT I
740 GOTO 40:PRINT I;:NEXT I
750 GOTO 40:PRINT I;:NEXT I
760 GOTO 40:PRINT I;:NEXT I
770 GOTO 40:PRINT I;:NEXT I
780 GOTO 40:PRINT I;:NEXT I
790 GOTO 40:PRINT I;:NEXT I
800 GOTO 40:PRINT I;:NEXT I
810 GOTO 40:PRINT I;:NEXT I
820 GOTO 40:PRINT I;:NEXT I
830 GOTO 40:PRINT I;:NEXT I
840 GOTO 40:PRINT I;:NEXT I
850 GOTO 40:PRINT I;:NEXT I
860 GOTO 40:PRINT I;:NEXT I
870 GOTO 40:PRINT I;:NEXT I
880 GOTO 40:PRINT I;:NEXT I
890 GOTO 40:PRINT I;:NEXT I
900 GOTO 40:PRINT I;:NEXT I
910 GOTO 40:PRINT I;:NEXT I
920 GOTO 40:PRINT I;:NEXT I
930 GOTO 40:PRINT I;:NEXT I
940 GOTO 40:PRINT I;:NEXT I
950 GOTO 40:PRINT I;:NEXT I
960 GOTO 40:PRINT I;:NEXT I
970 GOTO 40:PRINT I;:NEXT I
980 GOTO 40:PRINT I;:NEXT I
990 GOTO 40:PRINT I;:NEXT I
1000 GOTO 40:PRINT I;:NEXT I
```

Program 11: Colour demonstration

DEEPER INTO THE DUNGEON

I THINK that I may be in a position to help Mr G. V. Howarth solve his problem with *Alternate Reality: The Dungeon* that he mentions in the News and Tips section of the March 1988 issue of Atari User.

Firstly, the item which he needs to use to pass through death doors is the portal access card.

This will be given to him by *Artemis* in exchange for the staff pieces from the entrance on level one, King Dragon on level two and the Dragon on level three - it requires the bloodstone before it will give up its piece.

Secondly, the River Stone may be accessed at any time after midnight and before the first hour, provided that the boatman is paid with copper.

Thirdly, Morgan's data should not be given up to the clothes boxes on level two. By wearing the Duke lost hit points are restored.

The clothes horse will settle for a sweater or a cloak provided you have nothing better, otherwise it will take your finer items of clothing - especially if it's magical.

Finally, does anyone know the name of the gargoyle on level three? - Mike Ward, Watley, West Midlands.

Crashing worksheets

AFTER reading the review of the Swift Spreadsheet from *Acadepic* in the March 1988 issue of Atari User I thought it'd point out a problem that I am having with it.

When you are saving and loading worksheets they appear to save accurately and load every cell properly. However, problems occur when the worksheet is then worked on further - the pro-

gram is prone to crashing with odd garbled messages appearing.

This bug does not occur all the time, but is quite common and very frustrating.

The spreadsheet is ostensibly powerful and easy to use, and offers good value for money when you compare it to the more expensive *MultiCalc* and *SymCalc*.

I have written to *Acadepic* but received no reply and I have talked over the phone to *Metamorphosis Development* - the designers of the spreadsheet - who were helpful but unable to cure my problem. - W. Charles, Winc. Was, Swanses.

■ Have any of our readers experienced this problem? If you know the cure, please write in.

Getting that hash

I AM very flattered that my letter was chosen for publication in the March 1988 issue of Atari User. I found your attached comment, however, didn't seem to square with my experience at the keyboard.

I have an 80386, linked to a 1080 disc drive chained to a Panasonic KX3-1081 printer via a graphics interface.

If I use the AtariMaster word processor I found, as you say, that the hash sign is printed out as a '#' but displayed on screen and again in preview mode as a hash.

Using *Mini Office II*, however, if I say hash - \$H#>J - the pound sign appears on the screen, even if the printer is switched off and disconnected from the micro. It is also output in both preview and print

mode. Finally, your reply to one of the letters in the March issue surprised me.

Although the SPANISH is not a commonly advertised printer for the 8 bit Atari, it will work correctly for text if a Centronics type interface is connected. - J.L. Robinson, Milton, Cumbria.

Keys still available

WHEN I read the mailbag section in the March 1988 issue of Atari User I noticed a letter from someone who is having the same problem as me - broken keys on their 1070 tape recorder.

I wrote to *Slice Shop* - enclosing a postal order for the required amount - but I was most upset when they wrote back to inform me that they had stopped selling replacement 1070 keys.

After a dozen or so phone calls I found someone who sells them - A. S. Widdon & Son, 116 Atterton Road, Green, CM2 3XD. The keys are £3.50 each and £7.50 postage and postage for up to four keys is included.

Could you please tell me if a tape version of *Monopoly*

WIN A TENNER!

EACH month we will award £10 prizes for the most interesting letters sent to us.

So now there's more reason than ever to contribute to our lively mailbag pages.

Get your pens out, start writing and you could be one of the winners. The address:

Mailbag Editor
Atari User
Europa House
Aldington Park
Aldington
Macclesfield SK10 4JP

is available and where I can get it? - Bryan Pitt, Barnsley, South Yorkshire.

■ We've checked with *Slice Shop* and it will sell the keys. They are £1.12 each and £1.50 postage and package must be included.

We don't think there is a tape version of *Monopoly*.

Mini Office II on SpartaDos

I HAVE a 1080 disc drive with a US doubler fitted and

Turn to Page 58 ▶

DOUBLE TROUBLE

I HAVE just typed in the *Acadepic* 3D *Plotter* program from the March 1988 issue of Atari User and I came across what seems a slight error in the listing: Line 800 has been duplicated and it re-appears on line 795. It should read:

```
THE RUST 311000,111100,1100
(0,111000)111,00
```

Once this has been altered

it runs correctly. Thanks for a superb program - it has brought many hours of fun.

Has any reader figured out how to stamp the 3D image to an *Etcher* or 1020 printer? - Mark Wilkie, Macclesby by the Sea.

■ Unfortunately, as the magazine was put together the listing was scrambled slightly.

We are sorry for any inconvenience caused.

I was wondering if it is possible to transfer my Mini Office II files to a Sparc10S format.

It would be nice to have the high speed local facility on such a super program. — Alexander Miller Brooks, Cheshire Holmes, Cheshire.

● Mini Office II works very well on nearly all disc operating systems including Sparc10S.

Cartridge connection

I USE an assembler/compiler cartridge quite a lot and find that I am having to continually plug it in or out to program in Basic.

I am concerned that the wear and tear on the edge connector will ultimately lead to unreliability.

Would it be possible to build a gadget which would mount a cartridge and sit semi-permanently outside the micro? It could then be brought in or out of action by use of a simple switch.

Also, a more computer system could be built to accommodate more than one cartridge and allow them to be switched in or out as required. — R.G. Bryer, Ashford, Surrey.

● The subject of this gadget

I WOULD like to thank you for the excellent article about SpiritSound that appeared in the March 1988 issue of Atari User.

Not only was the map very well presented, but the hints and tips were very useful in allowing me to complete this paper mini-

adventure for the first time.

Also in the game issue was the map of Mersnary: The Second City. Although I have never played this particular graphics adventure I am now thinking about getting it as the map makes it look like a very enjoyable game. The reviews section

is always a first favourite of mine and I was surprised when you started to use colour pictures again. The new layout looks superb as does all the magazines.

Thanks for a very interesting and informative read. — Sean Canning, Manchester.

has been looked at, before and only a simple circuit is needed to allow a number of cartridges to be mounted together on one cable.

The components would make this a rather expensive device, but if enough readers write to us to prove that demand is sufficient we'll reconsider it.

More gadgets on the way

IN RECENT issues of Atari User there haven't been any gadgets by your resident expert Ken Golding. Has he stopped building them? — Dave Manning, Reddish Stockport.

● Len has been having a rest recently, but he promises to build us some

more interesting and inventive gadgets soon.

Pascal alternative

I OWN an Atari 8000 and 1050 disc drive. Can you please tell me whether or not there is a software package that would enable me to use Troopers Pascal and, if so, how much it is and where I can buy it from? — J. W. Brzezinski, Spital Tongues, Newcastle-Upon-Tyne.

● Unfortunately, this particular program is not available for the 8 bit Atari. At one time Ryan Pascal was really obtainable, but it is now very difficult to get hold of.

You could try getting the Action cartridge-based language. Although it's not identical it does offer similar features to Pascal.

It is a sort of hybrid Basic/C and is available from several advertisers in Atari User.

Happy beginner

UNFORTUNATELY I was late in discovering Atari User, but I now have a regular order with my newspaper so I don't miss it.

I recently bought the book 'Have Fun' magazine

from May 1985 to November 1985 and was absolutely delighted with Albie Biley's articles for beginners.

I'm physically disabled and so started using a computer when I could no longer walk. Being a novice at computing, the series was a great help to me.

Please convey my thanks to Mike for explaining things so clearly. Also, thanks for a really terrific magazine. — Hilina Smith, Aberdeen.

XMM801 printer problem

I RECENTLY bought an Atari XMM801 printer and it was superb for word processing and filing Basic programs. However, a friend lent me the Print Shop by Broderbund and I have found it impossible to get it to print out.

I have tried all combinations of options to no avail, so could you please tell me what the XMM801 is equivalent to? And is it possible for this program to work on my printer? — Karen Sagar, Stockport, Cheshire.

● Unfortunately, as with all Atari printers, the XMM801 is unique. Atari had for some reason designed printers that don't work with commercial software, and Print Shop will not work with your printer no matter what preferences you choose on the set-up menu.

Cartridge-only cable

IS there an effective way of transferring software like Atari BASIC to a printer without an expensive interface unit?

I successfully built and installed the Epson interface from the April 1987 Gadgets series in Atari User but the software seems to overwrite the driver routine that I installed. — P.G. Lord, Sutton Coldfield, West Midlands.

● Whenever your micro is switched off anything that is

in ram is lost. When you load most machine code software you must initiate a boot load by switching off your micro and holding down Datas when you switch on.

This means that the original driver software is lost so, as the article states, the cable will only work with commercial cartridge-based software and unfortunately not with disc-based software like Mini Office II.

Italic on tap

WHILE I was working with Atari Office II on my 800X I discovered that pressing the inverse video key causes any typing that you do after to be printed out in italic. Pressing this key again switches you back to normal print style. — A.J. Hazzard, Swindon, Wilts.

Dipping into the toolkit

AFTER reading the advert for the Atari User Toolkit I decided to send off for the disc version. I'm very pleased with it and I now use it every time I program or type in magazine listings. The reminder ability is very useful and the variable name change feature is an

excellent idea. I find the way that it switches itself out when you run a program is great, and it's so easy to install once it has been loaded — just press System Reset. — Philip Marsh, Mid-deringham, Cleveland.

The catch

I BOUGHT my children an Atari home computer for Christmas and a copy of the January 1985 issue of Atari User. I found it an excellent publication, but I didn't understand one of the instructions on a Five User program — an unusual character in line 3 of Catch.

Can you please help? — Peter Brown, Herpenden, Hertfordshire.

■ The character you are having problems with can be obtained by pressing the inverse character key and

Long wait for a drive

WHY an article about Atari stops producing the 1050 disc drive, especially since the new one isn't even available?

Each month I am allowed out of my straightjacket to read your masterpiece of a magazine, but with dismay I find no mention of the 1050, and no news of the release of the new drive ever appears

the pages. Please could you tell me what exactly is happening? — Martin Tiller, Oxford.

■ Atari has had some problems with the new drive, but claims it will be available soon. The classified section of Atari User contains many listings of offers, including 1050 disc drives.

then Control 4 R. A full list of these control characters was in the February issue of Atari User.

Epson drive

I OWN an 800X and 1050 tape deck. Recently I was offered an Epson 5.25 floppy disc drive and was told that it was double-sided with a

one megabyte storage capacity. Could you please tell me what interface I would need to get it working on my Atari? — D.J. Fogarty, Salisbury, Wiltshire.

■ Unfortunately this disc drive will not work easily on your Atari and an interface to make it work would probably cost more than a new Atari drive.

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 £1,500 (the Whisper), the dearest £2,800 (the Cheater). You will also need a separate telephone line, costing £101 to install, plus 140p a year (and a 100p surcharge over the first year) of a minimum of £2,100 (40 pence include VAT.)

Or you could do what more and more Atari users are doing — use your Atari to double as a Telex machine. And just use your ordinary telephone!

How do I turn my Atari into a Telex machine?

All you need is a modem and appropriate communications software (see the advertisements in this issue), a telephone, and a subscription to MicroLink. Telex is just one of a growing number of services available to Atari users on MicroLink. Telex MicroLink, you can also read the news as it happens, go tele-shopping, create your own closed user group, send telemessages and electronic mail right round the world, download free telesoftware programs directly into your Atari... 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 used to dramatically 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 sit at your computer at home (or even a pub!) — So now you can check whether there are any Telex messages waiting for you — anywhere, anytime. Here's that for your business efficiency!

How to join
See Page 40

Time and magik

The trilogy



Interactive fiction
from **Level 9**

Three of Level 9's most acclaimed adventures – *Lords of Time*, *Red Moon* and *The Price of Magic* – come together in one package. Each has been enhanced and enlarged with more text than ever before – 60,000 mind-expanding words creating magic and mystery round every corner. There's a powerful new parser, and most disc versions include stunning digitised pictures that help to dramatically heighten the atmosphere.

What the press have said:

LOARDS OF TIME: "Destined to become a classic" – *Computing with the Amstrad*.

RED MOON: *Best Graphical Adventure or Best Adventure of the Year – Zap 64, Crash, Amix, CS&G, CCI, and Amstrad Computer User.*

THE PRICE OF MAGIC: "Another superb adventure... their best yet" – *Commodore User, Also a Crash Smash.*



Lords of Time
Screenshot for Amstrad CPC



Red Moon in the classic style (top left) and with the new graphics (top right)



Screen shots from disc AT version

Spectrum (cassette) Plus 3 (disc)
Commodore 64 (cassette or disc)
Amstrad CPC (cassette or disc)
Amig 2600 (cassette or disc)
Amstrad PCW (disc)
Apple II (disc)

£14.95

Amig 57
Commodore Amiga
Macintosh
Amstrad PC, IBM PC
and compatibles

£19.95

MANDARIN
SOFTWARE

Europa House, Adlington Park,
Adlington, Manchester M20 4NP.

ENQUIRIES: 0625 878888 (DROVER HOTLINE) 0625 878900

Available from all good retailers or order direct by sending a cheque or postal order made payable to Mandarin, together with your name and address. Please include VISA, Access/Amex numbers. Please tell us how you paid your card number with your order.

One of the best known software houses producing games for the Atari is Tynesoft. Based in Maydon, Tyne & Wear, it is constantly bringing out quality new software to add to its already impressive range.

So it was with eager anticipation that I went to have a chat with David Croft, Tynesoft's head of software development.

The main topic of conversation was the development of its new sports simulation. Said Croft: "We were determined Winter Olympiad '88 would surpass all other sports simulations in terms of realism, playability and visual presentation". He said this was Tynesoft's most ambitious project to date, with versions being produced across as many computer formats as possible.

To make this possible all other in-house work was halted and programmers, graphic artists and freelance people alike got together to decide the game's format. The first step towards creating it was to spend lots of time watching videos of winter sports and deciding which events would appear. They eventually settled for the downhill, bob sleigh, ski jump, slalom and biathlon.

The actual programming fell on the heads of Brian Jabling (downhill), Chris Murray (bob sleigh), Mike Hedley (ski jump, slalom and biathlon) and Philip Scott was their graphics artist. It took the team three months to finish the program.

While all this was going on, managing director Colin Courtney was busy negotiating permission to use the BBC Television theme music from *Ski Sunday*. He also managed to get program presenter David Vine to write an introduction to the 1988 Winter Olympics to be included in the final packaging.

Tynesoft is very optimistic about the game's future. It has already sold the



The Tynesoft team with head of development David Croft (bottom right)

The Winter of content . . .

NEIL FAWCETT meets the programming team behind *Olympiad '88*

rights to Mindscope, an American company that will produce it under the name *Winter Sports*. So just how good is the game? You can find out by reading this full review by Bob Chappell on Page 28.

Now let's take a look at some of Tynesoft's more established games and their authors. Brian Jabling, who has now moved on to his own company, Zappell, wrote many of the company's successful games on the Atari. His first for Tynesoft -

another sports simulation - was *Winter Olympics*, which sold nearly 4,000 copies in its first month of sales.

Phantom was another of Tynesoft's success stories. Written originally for the BBC Micro, it was converted for the Atari by Brian with music by Ian Waugh - a widely recognised music expert. It's an excellent game with everything you need - good sound, stunning graphics and, above all, addictiveness.

One of the best programs to come out of the company is *Miss Force* by Chris Murray, a very talented writer with many games under his belt. He wrote this one as a freelance programmer but Tynesoft now has him under contract. *Miss Force* is a wonderful sideways scrolling shoot-'em-up with digitised speech which really has you wanting just one more go.

As well as producing very good software Tynesoft wraps its products in superb packaging. This is probably because it has facilities to do its own printing and make all the cassettes and disc trays.

The future is looking very rosy for Tynesoft with the release of *Winter Olympiad '88*, *Super Soccer* - also reviewed in this issue - and the *Microplay II* pack. These Gemdale tests definitely seem to show what they are about.



A scene from Phantom

*Two discs crammed
with the most popular
programs from your
favourite magazine!*

These two exciting compilations bring together some of the very best listings from the pages of *Atari User*.

Whether you like games or prefer more serious pursuits there's something here for you - and you can also learn a great deal from examining and modifying the Basic listings.

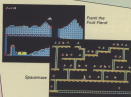
Ten of the Best Games

- Chopper Rescue** - Take command of a helicopter to rescue lost soldiers.
- Sea Balls** - Rescue Enderella by negotiating the dangerous obstacles.
- Spacebase** - Fly your spaceship through the deadly caverns below the lunar surface.
- Maze-munch** - Guide your munch mouse around the maze, avoiding its deadly intruders.
- Moneybags** - Grab up all the money, but beware of the angry spiker.
- Frank the Fruit Band** - Help Frank eat his favourite food in this platform game.
- Bank Bash** - Ditch your car and crash up all the ducks before the doors hit the farm.
- Frog Jump** - Direct the frog across the busy road in this classic arcade game.
- Downton Dicks** - Help the ducks build the new hospital, but watch out for mad farmers!
- PLUS** the latest Get It Right program to help you correctly type in listings in *Atari User*.

Remember what the game you liked best of all. Now, in **INCREDIBLE PLUS**, we've made it even better - with 100 exciting new screens to test your dexterity. Bounce up and down on the springy mousie to hit the money targets while avoiding the balloons, jet and jet wings.

Ten of the Best Utilities

- DisOrder** - Make sense of those Basic error numbers by sorting them into words.
- StackIt** - Modify those hidden vectors with this superb utility.
- DisView** - Take a look at all the useful information stored on your disc.
- Shape 10** - Make sense of your favourite pictures on your Epson or Apple II/II+ printer.
- ArtShow** - Load your MacPaint pictures and create your own fantastic artwork.
- AutoDirectory** - Gain instant access to disc directories without going to Dos.
- DisCoveries** - Simulate your Basic listings with this little AutoBasic program.
- FontPrinter** - Print out any resident character set in full on an Epson printer.
- GoalEditor** - Manipulate data with ease reflected in the customer or in memory.
- 80 Columns** - Generate a very impressive 80 column text display on your screen.
- PLUS** the latest Get It Right program to help you correctly type in listings in *Atari User*.



ONLY **£4.95** each

... or just **£1.95** each when you take out a new subscription to *Atari User* - or if you renew your existing subscription.

TO ORDER PLEASE USE THE FORM ON PAGE 61

Protect your Atari.



with this luxury dust cover for your Atari XE or XL. It's made of clear, water-resistant vinyl and bound with strong ribbon. **Only £3.95**

... and your Atari Users

A year's supply of Atari User can be kept in this handsome chocolate brown binder.



Only £4.95

Secure storage for your discs

The ideal storage solution for your 5.25in discs.

The luxury padded PVC boxes are strongly made to protect your valuable discs and can be packed flat when not in use.

Holds up to 60 5.25in discs



£4.95

Disc storage box

Holds up to 60 5.25" discs £4.95 5064

Dust cover

100XX £3.95 5051
100XL £3.95 5050

Add £2 for Storage for Atari/Orchestra

Atari User binder

Add £2 for Storage for Atari/Orchestra £4.95 5064

Send for Catalogue Publications, FREEPOST, Europe Route, Arlington Park, Arlington, Woodchester, Cheltenham GL50 2BP. We would be glad to send you a copy of our magazine. Please allow 28 days for delivery.

Order at any time of the day or night

Telephone orders taken 24 hours

For Orders: Order by Postal: Order by Personal:
 Visa/Amex: By 9A: By 4:00PM: E.M.S. Order:

Don't forget to give your name, address and credit card number

EMPLOYED ONLY? (Send Stamp here too)

ORDER FORM

Special prices if accompanied by subscription or renewal

Valid to 31/10/88

All prices include postage, packing and VAT. Overseas orders despatched by Airmail.

197 8 2

Annual subscriptions

	UK £18 7063	ROW £22 7065	EUROPEAN £22 7066
Europe (incl. Israel) £18 7064	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Continents with:			

FREE

with subscription, one set each only

Atari StarCard	5054 <input type="checkbox"/>
Starquake disc	5054 <input type="checkbox"/>
Starquake tape	5055 <input type="checkbox"/>

Back Issues

£1.50/£2, £1.50/Europe & Israel, £2.00/Oceania

January 1987	7059 <input type="checkbox"/>	September 1987	7077 <input type="checkbox"/>
February 1987	7059 <input type="checkbox"/>	October 1987	7078 <input type="checkbox"/>
March 1987	7012 <input type="checkbox"/>	November 1987	7079 <input type="checkbox"/>
April 1987	7012 <input type="checkbox"/>	December 1987	7080 <input type="checkbox"/>
May 1987	7012 <input type="checkbox"/>	January 1988	7081 <input type="checkbox"/>
June 1987	7012 <input type="checkbox"/>	February 1988	7082 <input type="checkbox"/>
July 1987	7012 <input type="checkbox"/>	March 1988	7083 <input type="checkbox"/>
August 1987	7012 <input type="checkbox"/>	April 1988	7084 <input type="checkbox"/>

Top of the Best (see page 80)

Golden disc	£11.95	£4.95	5012/5013	<input type="checkbox"/>
Ultimate disc	£11.95	£4.95	5014/5015	<input type="checkbox"/>

Guild of Thieves

Atari 5051/50 disc £10.95 £4.95 7076/7085

The Pawn

Atari 5051/50 disc £10.95 £4.95 7068/7069

Atari Data Bank (see page 80)

£10.95 £4.95 7077/7086

Atari ExecuCard (see page 80)

£4.95 7068

Starquake (see page 80)

Tape	£4.95	5055	<input type="checkbox"/>
Disc	£5.95	5054	<input type="checkbox"/>

Atari User Toolkit (see page 80)

Tape	£4.95	7057	<input type="checkbox"/>
Disc	£7.95	7058	<input type="checkbox"/>

Mini Office II (see page 8)

Disc 400/500/£22.95/£24 221-05 5050

Add £2 for Storage for StarCard for Orchestra

Send for Europe (see 100) add £2. Overseas add £2 per item unless otherwise indicated

----- TOTAL -----

Payment please include method (P)

Access to Internet/Local Area Network/Intranet

to: _____

Check/Order/Invoice made payable to Capstone Publications Ltd

Name: _____ Signed: _____

Address: _____

Post Code: _____

XL/XE MOUSE	LETTER 80
<p>AN XT MOUSE FOR YOUR \$1.00</p> <p>Includes Mouse, Art Package, Fast picture loader, Atari ASSISTANT translator, Atari ASSISTANT programs show the use of the mouse in your own software. Shipping with all operating information.</p> <p>At for £29.95 Post free</p>	<p>80-COLUMN WP ON SCREEN</p> <p>This full feature wordwrap processor supports Microsoft Atari keyboard adding PLUS working, text & justification. Address, date and ref. area also control search/matrix feature. Mouse/Joystick operation with pull-down menus.</p> <p>Disk only £24.95 Post free</p>
<p>COO service available for £1.50</p>	

GLOBAL COMPUTER SERVICES

100 Navigation Road, NORTHWICH, Cheshire CW9 1BB (0686) 760473

OPENING OFFER AT THE TAPE CENTRE

ATARI GAMES ALL AT £5.95		ATARI 8000 GAMES	
<p>Angewelt (with game)</p> <p>4 Discs in the box</p> <p>Warlords of the</p> <p>Streets (with 2</p> <p>discs) £10.00</p> <p>Warrior (with game)</p> <p>Master of the</p> <p>Universe (with 2</p> <p>discs) £10.00</p>	<p>Superman</p> <p>Robotnik</p> <p>Robotnik II</p> <p>Demolition of the</p> <p>Bank</p> <p>City</p> <p>Jet Star Wars</p> <p>Central Strike</p> <p>Planet</p> <p>Top Gun</p>	<p>All at £19.95</p> <p>Enduro</p> <p>Tronway</p> <p>Street Racers</p> <p>Street</p> <p>Star Wars</p> <p>Space Shuttle</p> <p>Logic</p> <p>Water Tank</p>	<p>All at £9.95</p> <p>Defender</p> <p>Blazing</p> <p>Warrior of the</p> <p>Planet</p> <p>Warrior</p> <p>Star Wars</p> <p>Star Wars</p> <p>Water Tank</p>

Please note Cheques/Postal Orders payable to The Tape Centre
 Overseas add £1.00
 Full price list please send S.A.S.

THE TAPE CENTRE
 28 Northwood Drive, Haverhill, Loughborough, Leics. LE12 6SL



<p>\$2.99</p> <p>SPEED ACE</p> 	<p>\$2.99</p> 
<p>5AVE REVIEWS ARE NO GOOD IF YOU CANNOT GET THE GAMES</p>	
<p>HERE'S HOW!</p>	<p>See the review in this issue</p>

PRIORITY ORDER FORM

Please rush by return of post:

Speed Ace 48K @ £2.99 inc P&P

Water XLX @ £2.99 inc P&P

Total _____

Name & Address _____

Make cheques - P.O. payable to **ZEFFELIN GAMES LTD.**
 Send to: Zeffelin Games Ltd, 28 Osborne Road, Jarrow, Newcastle NE2 3AJ England

ADVERTISERS' INDEX

Atari	26-27
Atari World	62
Atari Music Centre	68
B Bytes Computer Shop	47
Capric Marketing	47
Centis	18
Clips	42
Communication & Media	40
Compuart	60
C.S. Software	64
Databases Software	9
Digicom	42
Eight Business Services	47
Finger Computers	47
Magnum Computer Centre	47
Global Computer Services	62
Leicester Computers	62
Masterline Software	158
Masterline Distribution	42
Mindline	8
Miss Bates Software	12
Murphy	18
Page 8	42
Pulsar Software	62
Stirna Shop	7
Software	30
Software Express	48
Sortech	24
Superior Software	17
The Tape Centre	62
Tynesoft	68
Zappatin Games	62



FIG EARTH

Fig Earth is a fast and versatile language for the 8 bit Atari with a minimum of 48K RAM.

Fig Earth comes with some useful sample programs.

Fig Earth uses an 87 mouse with 10 software modifications.

Fig Earth is £14.95 inc VAT

Send a 1982 for a full price list of public domain software



Pulsar Software Ltd
 4 Church Street
 East Street, Haverhill, Leics LE12 6SL
 Tel: 0533 600 000

THE NEXT DIMENSION.




ATARI IN MANCHESTER

For the best selection of Software for your Atari Computer or Video Game Console visit



ATARI WORLD



15 Fennel Street, Manchester 4
 (Opposite Victoria Station/Milliken Car Park)

Tel: 061-634 4941. Open: Mon.-Fri. 10-6, Sat. 10-5.30

Next Order with pleasure. Please for catalogue

Cut the cost Cut the hassle Cut the coupon!

Compumart

A GREAT DEAL MADE AT THE BOTTOM OF THE COST

DEPARTMENT 410
JUBILEE DRIVE
LOUGHBOROUGH
LEICS LE11 0XS
TEL: 0509-810444
FAX: 0509-810236

Send Now for your **Free** copy of the Compumart ST Information Pack
and discover a full range of ST Accessories at Super Low Prices . . .

For immediate response, simply send the coupon to
Compumart, Freeport, Loughborough, Leics, LE11 0XS

Please tick the
A FREE Compumart ST Information Pack

Name

Address

Postcode

Date

EXPERIENCE THE REAL THING!

WIN A WINTER OLYMPIC HOLIDAY WORTH MORE THAN £2000

WINTER OLYMPIAD '88



WINTER OLYMPIAD '88

Winter Olympiad '88 is undoubtedly the best winter sports simulation to date. It features the classic winter olympic events: Ski Slalom, Giant Slalom, Two man bobs, Ski-Jump, Bobsalon and Speed Skating. These have been depicted in a way not seen on any home computer before. The result is a phenomenally realistic and spell-binding game.

Available on the following formats:

- CBM64, BBC/ELECTRON, ATARI £9.95
- SPECTRUM, AMSTRAD, C16/4 £7.95
- DISK - BBC £14.95
- MASTER COMPACT £14.95
- ATARI 8 BIT £14.95
- ST. £19.95 • AMIGA £19.95
- IBM £19.95



TYNESOFT

COMPUTER SOFTWARE