

ATARI ST USER

The
top-selling
Atari ST
magazine

Volume 2
Number 5
July 1987
£1.50

His maSTer's voice

Replay, ProSound and
Digidrum reviewed



EVALUATIONS

Devpac assembler and
Cambridge Lisp tested

DATABASES

Superbase v Trimbase
How to write your own

REVIEWS

Arkanoid, Bureaucracy,
Metro Cross and Xevious

BUSINESS

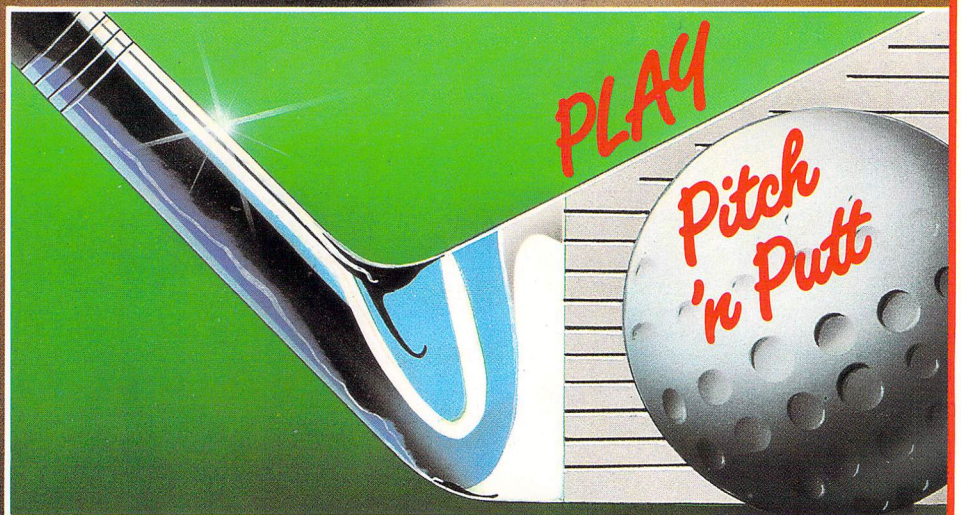
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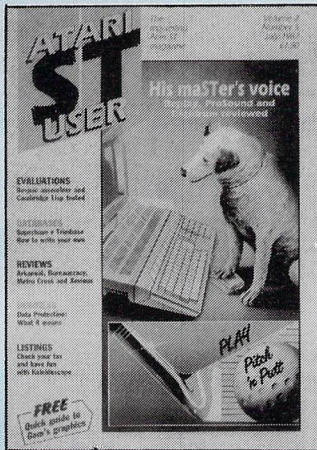
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Check your tax
and have fun
with Kaleidoscope

FREE

Quick guide to
Gem's graphics





Vol. 2 No. 5 July 1987

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Published by:
Database Publications Ltd,
Europa House, 68 Chester Road,
Hazel Grove, Stockport SK7 5NY.

Subscription rates for
12 issues, post free:

£18 UK & Eire (sterling)
£23 Europe
£38 Overseas (airmail)

Writing for Atari ST User: Articles and programs relating to the Atari ST are welcome. Articles should preferably be typed or computer-printed, using double spacing. Unsolicited manuscripts, discs etc. should be accompanied by a self addressed stamped envelope, otherwise their return cannot be guaranteed. Unless agreed otherwise, material is accepted on an all rights basis.

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News trade distribution: Europress Sales and Distribution Limited, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

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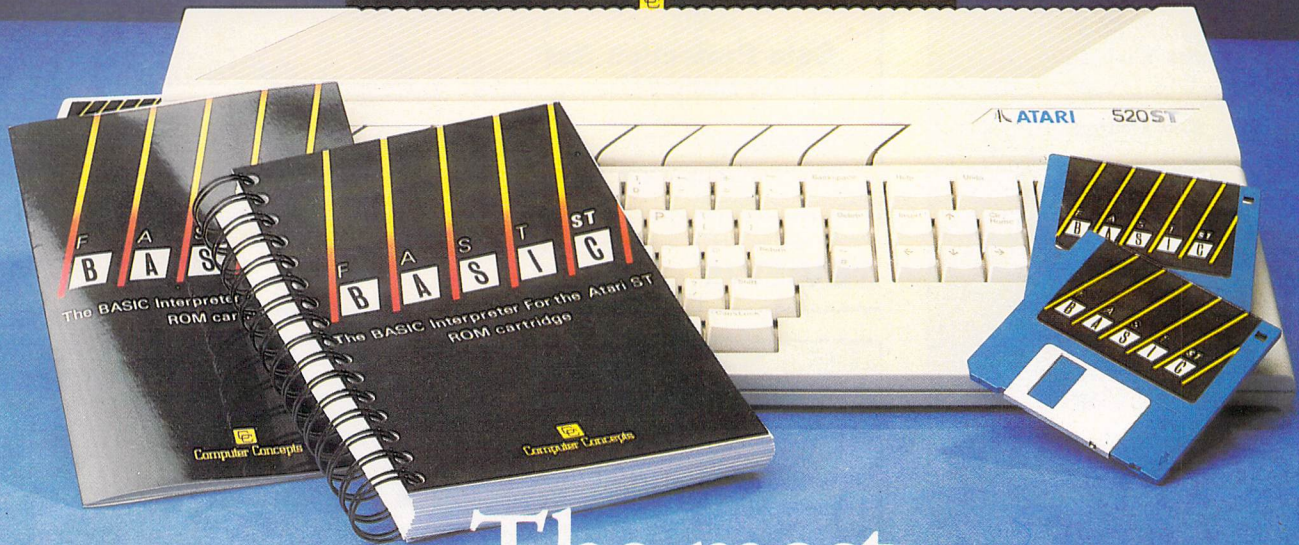
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Drive for cartridge software

CARTRIDGE software is being actively encouraged by Atari – for the ST as well as the new games machine.

At present very few utilities are available in this form for the ST; Atari hopes this will change.

Technical director, Les Player said: "What we are trying to do is to get as wide a range of cartridge-based titles as possible for the ST. The wider the base, the more production costs come down".

He said this would be of particular interest to ST users without disc drives – giving rise to rumours that the company is keen to continue to push the ST as a games machine at the lower end as well as the serious section of the market.

Player said that it was part of Atari's whole policy towards software and its developers.

"We are concentrating a lot on software at the moment. There will be a great deal released on the Atari label soon.

"We are taking the best software to distribute ourselves and producing specifications for outside developers of the sort of programs we want to see.

"We are getting quite a good response to this. The point is that we can sit back and see how the market is going. It is then easy to indentify the gaps and invite developers to work in those areas", he said.

Atari extends its outlets

ATARI has drawn up its battle lines to take on the Commodore A500 Amiga in the High Street.

The ST is going on sale at 50 of W H Smiths largest stores and two major new distributors have been signed up.

"We are the first multiple to get behind the product", said W H Smiths' merchandising controller John Rowland.

"The ST is aimed directly at our enthusiast computer customer – its power, performance and price opens up a new chapter in personal computing".

Smiths is offering the 520STFM for £399

along with an extensive range of games software to play on it – including Hacker II, Q Ball, Star Glider and Metrocross.

Atari has also brought its nationwide distributor strength up to 10 with the addition of Zappo in the Midlands and Creative Sparks in Hampshire.

Both new additions are understood to be taking on the entire Atari range from the games console to the forthcoming PC clone.

The arrangement will give Atari access to a further 500 plus dealer outlets in the Midlands and along the South Coast.

ATARI has described as "pure speculation" a story that it is forming a special group to work on PC development.

The company is committed to bringing out a PC in the autumn, but Jack Tramiel has already described this as "no big deal" – and talk of the range being expanded has caused some amusement at Atari UK.

Managing Director Bob Cleadow was reported to be actively recruiting experienced individuals to work on future IBM clones.

But a spokesman told Atari ST User "This is completely untrue".

Transputer micro on the cards?

ATARI has admitted it is working with transputers in the development of new products.

The announcement ends months of speculation that the "delegating processor" could feature highly in Atari's next range of new hardware.

Favourite for the job is the Inmos transputer chip, the new processor designed for building parallel systems.

Technical boss Les Player told *Atari ST User*: "Atari is looking at the transputer as part of its interest in all advanced technology".

He would not comment further, however, on suggestions that Atari would have a transputer-based machine in the market place next year.

But the idea is supported by a project nearing completion at Metacomco – the British software house which improved ST Basic.

Metacomco is to produce a compiler for OCCAM, the choice language for the Inmos chip.

"This version provides an economical route for developers to gain hands on experience of this important language and concurrent systems in general", said Andrew Spencer from Metacomco.

He said the compiler, which will provide an interface to transputer add-on boards for the ST, such as the K-Max from Kuma, would be available in the autumn.

THE PERILS OF DIY . . .

A SUBSCRIBER to a local Atari ST club magazine in the North West is currently wishing he wasn't.

For the man from Backup has his 520ST lying in bits in his front room – and he doesn't know how to put it back together.

The trouble started when the club publication carried an article on how to upgrade a 520ST to a 1 megabyte model.

Appreciating the fact that opening an Atari machine voids the guarantee, the magazine carried a disclaimer warning readers that should they proceed it was at their own risk.

Well at least one did. This unfortunate followed the instructions carefully word for word until, surrounded by components, he came to the

final instruction. It read: "Finally do the same for pin 15 of the remaining eight chips connecting them to pin 22 Of Ury bank 1 ..."

Ury bank 1? At this point it became totally incomprehensible.

This was when the do-it-yourself computer enthusiast from Backup got into a complete panic.

He couldn't proceed because there was obviously a misprint, nor could he go back to square one because he lacked the knowledge to put his machine back together again.

In desperation he set out to locate the author of the article. The only problem – as he was to discover when he finally tracked down his phone number – was that he had just left for a skiing holiday in Switzerland.

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MP201 136 Col printer, 200 CPS, Epson compatible. NLQ 40 CPS	401.35	349.95
Citizen LSP-10 Epson compatible, NLQ, 120 CPS + ST Lead	316.75	199.95
MP 26 132 Column Daisywheel Printer, 26 CPS, Qume/Diablo Std	299.95	259.95
MP 26 158 Column Daisywheel Printer, 40 CPS, Qume/Diablo Std	435.85	379.95
Z-Time Battery Backed Clock 520ST-FM, Fits under Keyboard	49.95	38.95
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Alternate Reality	24.99	18.99	Karate Master	12.95	9.99	Shanghai	24.99	18.99
American Football	24.99	18.99	Kings Quest II	29.95	22.99	Shard of Spring	24.99	18.99
Arkanoid	14.95	11.49	Lands of Havoc	19.95	15.49	Shuttle II	24.95	18.99
Art Director	49.95	38.95	Lattice C	99.95	77.95	Silent Service	24.95	18.99
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Boulderdash Construction Set	24.95	18.99	Lisp (Metacomco)	149.95	119.95	Spiderman	19.95	15.49
Borrowed Time	24.99	18.99	Little Computer People	34.95	26.95	Spitfire 40	19.95	15.49
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Deja Vu	29.95	22.99	Modula 2 (Standard)	99.95	77.95	Superbase (Database)	99.95	77.95
Digi Drum	24.95	18.99	Mouse Trap	14.95	11.49	Suspended	29.95	22.99
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Fast Basic	89.90	69.95	Night Orc	14.95	11.49	Tee Up Golf	19.95	15.49
Film Director	59.95	46.95	Ninja	9.99	7.99	Tenth Frame	24.95	18.99
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Flight Simulator II	49.95	37.95	Pawn	24.95	18.99	Time Blast	9.95	7.95
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Amiga is losing sales battle

ATARI STs are currently outselling the rival Commodore Amiga machines by a ratio of at least five to one.

The latest shot in the top-of-the-range machine war between the companies comes from Bob Gleadow, Atari UK's managing director.

It follows an earlier report from a senior executive of an international software house with a corporate foot firmly in both camps that the ST is outgunning the Amiga by three to one.

Nigel Lovett-Turner of UK-based Precision Software has been closely monitoring the impact of both computers since his company entered the Atari market last march.

Before this the software house had made its name by selling 100,000 database packages and 450,000 word processing units for Commodore machines.

"We decided to come into the ST market because we realised it had great potential", Nigel Lovett-Turner told *Atari ST User*, "but we have been pleasantly surprised by how well the machines are actually doing".

The Precision director based his esti-

mate on a statistical analysis of unit sales of his company's Superbase Personal package which is available for both the ST and the Amiga.

Superbase Personal, a bestseller on both machines, is a powerful and "very visual" database which places no limits on the number of fields or on the size of record. It offers the facility to open up as many files as necessary to build up a relational report.

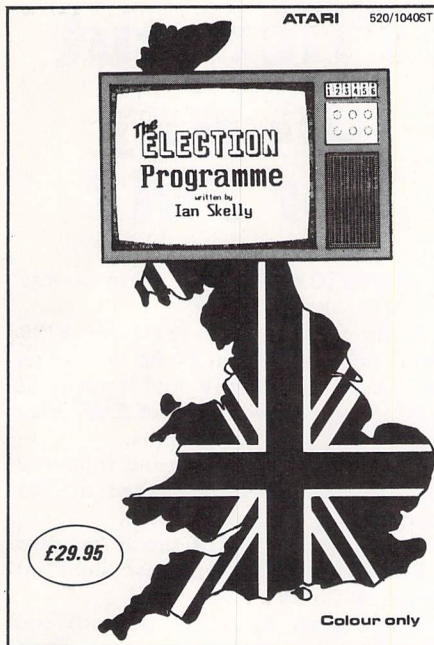
"I feel that the ratio of three to one in favour of the ST at present is accurate", said Nigel Lovett-Turner.

He also has good news for Atari in its battle with Commodore in other countries.

"They are catching them up in Germany which is traditionally Commodore's stronghold", he says. "In fact the only country where Atari is currently putting up a poor showing is Australia. There Commodore is outselling them by 20 to 1".

Asked for his comments on the three to one advantage figure for the ST over the Amiga, Bob Gleadow described it as misleading.

"Even five to one would be a very conservative estimate", he insisted.



ST at the polls

THE Atari St played a major roll in helping to predict the results of the General Election for nearly a million radio listeners in the North West.

BBC Radio Lancashire enlisted the help of The Election Programme, written by Software Express, in their morning show and the election night special.

Gerald Jackson, a producer at Radio Lancashire said: "The Election Programme made a nice change from the usual blackboard and chalk used in previous years. It also gave our presenter, Mike West, something interesting to do during the quiet bits".

The Election Programme is a dedicated database and contains election results since the turn of the century.

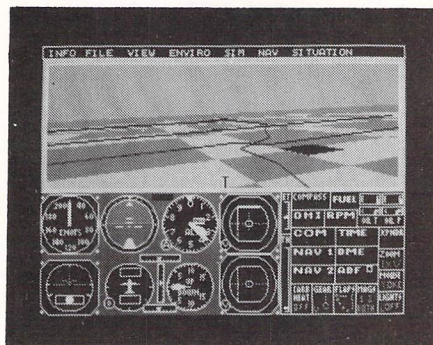
The program runs in full colour and makes extensive use of the mouse and Gem graphics to display the statistics pictorially using colour maps or graphs.

"Even though the election is over, the package is still of great value to schools and colleges, and anybody with an interest in history or information technology", said Keith Mason who is sales director for Software Express (021 328 3585).

The Election Programme comes on two discs with full documentation for £29.95.

Gem payroll

MICRODEAL has released *Payroll*, at £199, a full Gem-based payroll system for automating wages systems for weekly, fortnightly, four-weekly and monthly operations.



A NEW scenery disc for use with Flight Simulator II on the Atari ST has been released by SubLogic Corporation. It covers the east coast of the US from Washington to Key West, featuring rivers and roads, railroads, racetracks and transmitter towers and elevated bridges.

Highly detailed "sight-seeing" areas are now available, along with more generic scenery areas including radio navigation aids and refuelling facilities.

More than 130 airports are included - 12 of them military - on Scenery Disc 7, price \$24.95, from SubLogic (010 1 800 637 4983).

Earnings quadrupled

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

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

Worldwide sales of Atari products in the quarter were 45 per cent up on last year.

Cash registers rang up a total of \$65.1 million compared with \$44.8 million in 1986.

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

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



Lattice C updated

METACOMCO has released its latest version of the popular Lattice C compiler for the ST.

Version 3.04 comes after months of development to produce a compiler which allows compatibility and easy portability of software from other machine environments.

Lattice C Version 3.04 features much

faster program development using the new link/loader called Debug+.

This acts as a linker directly in memory and produces programs "blazingly fast", says Metacomco (0272 428781).

Lattice C Version 3.04 is available at £99.95. Users of the old version can upgrade for £30 on production of their registration card.

IN BRIEF

SAGESOFT has converted its popular Financial Controller for the ST.

This is the top Sagesoft integrated accounting package. Standard features include sales and purchase order processing, full stock control and integrated payroll.

Sagesoft (0628 72727) is putting out the package in two versions. The single user Fincon costs £299; the multi user Fcmult is £999.

A GEM-based application based on Roget's Thesaurus has been launched. It includes 150,000 words and phrases to help authors and speech writers to find the right word.

K-Roget from Kuma (07357 4335) operates as a desk accessory.

ATLAS Computer Supplies is backing up desktop publishing on the ST with a range of screen/printer fonts.

The library includes Times, Times Bold, Times Light, Horatio, Brush Script and Script all at £15.

Atlas (01-591 6687) is also offering software for laser printer and Linotron output.

3D on your ST

STEREOTEK glasses, "a visual aid to give a convincing 3D effect to computer graphics" is to be marketed by Electric Software.

Apart from being useful in enhancing games graphics, the glasses can bring a third dimension to educational software, presentation and demonstration material.

The glasses, from Antic in the US, use a liquid crystal shutter (LCS) which is based on the fast switching PI-CELL, a proprietary technology only recently developed.

LCS is a sandwich of glass and optical coatings with a "filling" of liquid crystals. When those crystals are activated, the LCS acts as a very fast light switch which selects one of two slightly different images for each of the viewer's eyes.

The glasses plug into the cartridge ports on the ST via an interface unit, and come complete with four feet of connecting cable.

In a related field, and also imported from the US is CAD 3D2 aimed at allowing 3D images to be created and viewed from different perspectives.

Electric (0954 61258) says it is an open architecture system allowing access to other programs.

Price cut on way for FM?

A SIGNIFICANT price cut is on the cards for the 520STFM.

Rumours are rife that the £399 machine could be cut by up to £100 as increased popularity and improved production methods present Atari with the leeway to make the cuts.

A special promotion earlier this year already effectively presented a £184 discount off a special bundle.

This had the 520STM, the SF 354 disc drive, a mono monitor, mouse and First Word all for £449.95.

The official Atari line is "wait and see" but the recent deal with W H Smiths to sell STs is likely to increase volume and make the price cut decision even easier.

New Basic under test

A NEW version of ST Basic developed by Metacomco is being tested by Atari UK and may be available fairly soon.

The company's test centre in the US has given the new Metacomco Basic a thorough going over and has passed it to the UK head office for final checks.

Problems over fine tuning of the language are now being smoothed out.

Metacomco originally intended the new version to be part of the Mega ST launch. They still hope it can be accepted in time for the first shipment.

Under consideration is a plan to offer the updated version free to present users who buy a new manual.

Hi-res mirage

SAHARASOFT'S multi-tasking, network-supporting operating system, Mirage, has been developed for the ST.

It will run on all STs with a high resolution monochrome monitor.

Sahara (01-735 3806) says up to 26 fonts are available at the same time, with subscript and superscript on each.

Mirage, which is supplied on rom with support software and documentation, costs £99. Support packages include Assembly Language Programming System at £49, Basic and Pascal at £99 and Fortran-77 and Lattice C at £129.

Coming next month!

Atari ST User
presents a ...

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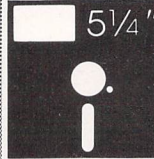
5 1/4 Micro Media Brand Discs

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SS/DD	6.99	13.10	18.70	29.50	55.80
DS/40T	8.50	16.00	22.75	35.90	67.60
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DS/40T	14.35	33.10	60.70	141.45	262.20
DS/80T	15.20	35.20	64.85	148.75	276.00

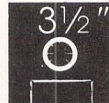
5 1/4 Unbranded Discs

	9.65	22.45	41.40	97.10	181.13
SS/DD					
DS/40T	10.95	25.00	45.55	105.25	193.20
DS/80T	11.85	26.73	49.55	116.45	216.20

3 1/2 Micro Media Brand

SS/DD	19.99	38.40	55.50	87.25	163.90
DS/DD	21.99	42.55	61.60	96.90	182.30

PRICES INCLUDE V.A.T.



3 1/2 Unbranded Discs

	10	30	50	100	150
SS/DD	14.95	42.95	61.50	111.65	164.50
DS/DD	16.70	48.30	78.20	147.20	212.20

SUMMER SALE · SUMMER SALE · SUMMER SALE · SUMMER SALE · SUMMER SALE

Monitor Swivel Bases



Pan tilt revolves around 360 degrees 12.5 degrees tilt up and down Adjustable by front mechanism.

	55 x 280 x 260mm for 12" Monitors	55 x 355 x 320mm for 14" Monitors
1	13.25	16.70
3+	12.60 ea	15.90 ea
6+	11.95 ea	15.05 ea

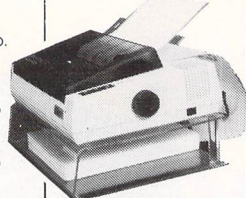
Adjustable Copy Holder

A4 adjustable desk clamping. Magnifying cursor line. Paper thickness adjustment. Paper height adjustable clip.

A4 Version	24.00
Desk Top Version	13.69
A3 Version	42.45

Printer Stand 5mm perspex

80 Column Version 400 x 310 x 100mm	22.80
132 Column Version 600 x 310 x 100mm	28.60



Mobile Printer Stand

Rugged steel frame. Height adjustable basket for output paper & base shelf for input paper. Self assembly - includes castors.

80 column	£50.00
132 column	£65.00

The Space Saver

Paper feed and refeed positioned one above the other. Dial controlled paper feed with adjustable deflectors ensures smooth flow and automatic refeeding.

	80 column 414x380x460mm	132 column 530x380x460mm
1	34.40	43.00
3+	32.10 ea	40.70 ea
6+	30.50 ea	38.65 ea

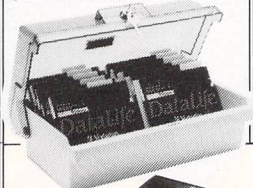
Printer Ribbons

	3	6	12
Atari XMM & SMM			
1029	10.70	20.70	39.35
Colours	14.40	28.80	57.60
Brother M1009			
Colours	8.10	15.50	28.95
HR15 MS Fabric	12.30	24.60	49.20
Canon PW1156/1080	10.70	20.70	39.35
Fabric	11.05	21.40	40.70
Centronics GLP			
Colours	7.95	15.20	28.30
Epson FX/MX/RX 80/85	8.10	15.50	28.95
Colours	12.30	24.60	49.20
LX/GX 80	12.30	24.60	49.20
Colours	7.25	13.80	25.55
MX/FX 105	13.20	26.40	52.80
LQ 800	6.90	13.10	24.15
Colours	12.60	25.20	50.40
Juki 6100 MS	8.80	16.90	31.75
5510	10.00	19.30	36.60
Colours	7.25	13.80	25.55
Kaga KP810/910	7.25	13.80	25.55
Colours	13.20	26.40	52.80
M/Tally MT80 MS	7.95	15.20	28.30
NEC PC8023	13.20	26.40	52.80
Colours	10.70	20.70	39.35
Panasonic KXP110/1080	11.75	22.75	43.45
Colours	15.30	30.60	61.20
Selkoshia GP80	10.70	20.70	39.35
GP100	19.35	38.70	77.40
Shinwa CP80 MS	7.25	13.80	25.55
Star NL10	7.40	14.15	26.20
Colours available - Red/Brown/Blue/Green & Yellow	10.70	20.70	39.35
Star NL10	18.60	36.60	71.10

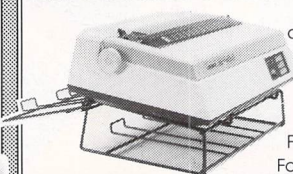
If the ribbon you require is not listed please let us quote
 The above is a small selection of the 250 different ribbons we stock. We shall be pleased to find your ribbon, however old or obscure.

MD 120

1	12.55	5 1/4" x 120
3+	11.90 each	
6+	11.35 each	



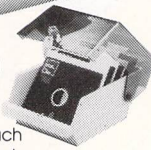
Wire Printer Stand



stacks print-out in document tray automatically. Suitable for most standard printers. Made of safety coated steel wire.
 For 80 column £14.80
 For 132 column £16.60

MD 50

1	7.80	5 1/4" x 50
3+	7.40 each	
6+	7.10 each	



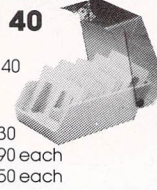
MD 100

1	10.80	5 1/4" x 100
3+	10.30 each	
6+	9.80 each	



MM 40

1	8.30	3 1/2" x 40
3+	7.90 each	
6+	7.50 each	



MM 80

1	10.95	3 1/2" x 80
3+	10.40 each	
6+	9.90 each	



Computer Labels

Size	Weight 1000s gm	per box	Price per box 1 box	3 boxes +
70 x 36	4.80	13.20		
89 x 36	4.90	13.50		
89 x 49	6.80	18.30		
102 x 36	5.20	14.40		

Please state no. of labels across the sheet (1, 2 or 3)

Computer paper

Size	Weight 1000s gm	per box	Price per box 1 box	3 boxes +
11x9 1/2	60	2	16.50	46.80
	80	2	20.40	56.10
Exact A4	70	2	27.60	73.50
11 1/2 x 9 1/4	90	1	17.40	43.80

A4 Fixed tractor paper available

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Educational and HMG orders accepted. For official orders/invoice/credit orders there is a minimum order value of £15.00 excluding V.A.T. Any order under £15.00 will be subject to £3.00 handling charge.

Personal callers welcome
 Weekdays 8.30am - 5.30pm
 Saturdays 10.00am - 4.00pm

DESKTOP PUBLISHING WITH PUBLISHING PARTNER™ ON THE ATARI ST



1 WHAT IS DESKTOP PUBLISHING?

Desktop Publishing is a method by which documents can be produced using a computer, software and a printer. These documents are near professional appearance and cost only a fraction of the price which you might otherwise pay to a designer, artwork studio and printer. Because the 'middle men' are eliminated from the production process, desktop publishing allows the user to retain total control over his or her documents, making last minute updates without panic and without incurring extra charges for 'rush' work.

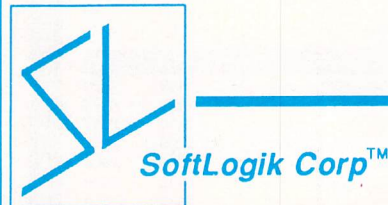
2 WHAT CAN I USE IT FOR?

As we all make use of the printed word in one way or another in our daily lives, the applications for Desktop Publishing are all around us. If you belong to a club or society or if you run your own business, the possibilities are endless! Our list of example applications will give you some other ideas.

- | | | |
|--------------------|-----------------------|------------------------|
| Advertisements | Distribution Leaflets | O/head Transparencies |
| Application Forms | Fayre Programmes | Personal Cards |
| Brochures | Invitation Cards | Personal Letterheads |
| Business Contracts | Invoices | Presentations |
| Charts & Tables | Labels | Price Lists |
| Club Certificates | Menus | Special Offer Leaflets |
| Club Newsletters | Office Forms | Technical Sheets |
| Dance Tickets | Order Forms | Work Estimates |

3 PUBLISHING PARTNER

Publishing Partner, from SoftLogik Corp™, includes all of the features which you would expect in a good Desktop Publishing package. It combines word processing, page layout and graphics facilities all in one program, allowing you to create 'stunning' documents on your Atari ST. First you can do a rough page design and start adding blocks of copy. See how it fits. See how it looks. See how it flows onto the next page. Make some changes. Try a different type style, or a different size, or some borders, some shapes, or even some pictures. Because Publishing Partner incorporates WYSIWYG (What You See Is What You Get), you'll see instantly if your new idea works or not. The computer's screen will show you just how the page will look when it prints - no more guesswork. You can adjust fonts, character sizes and even character spacing, anytime and anywhere on the page. Watch an ordinary letter transform into a professional looking piece right before your eyes, as you experiment with mixing graphics and text. And, when you want to see a 'hard copy' of your masterpiece, just send it to any one of the printers which the program supports (the list is growing all the time).



SoftLogik Corp™ was set up in the USA by Shawn Fogle and Deron Kazmaier to produce quality desktop publishing software with uncompromising power and features. Publishing Partner was developed after 1½ years of research, working with typesetters and printers and the results achieved are outstanding.

4 SIMPLE, POWERFUL, AFFORDABLE

Printing and publishing is a fairly complex business which takes years of training and experience to master. You wouldn't think so with Publishing Partner, which takes full advantage of the ST's user friendly GEM environment. It is so user friendly and easy to understand, most people find they can produce their first document without even opening the fully comprehensive 159 page manual which accompanies the program. Using the mouse to manipulate the self explanatory pull down menus and windows, you can be up and running in no time, creating a variety of documents quickly and easily. In addition, the flexibility of Publishing Partner allows you to choose between mouse or keyboard operation, whichever suits your personal preference. Although simple to use, Publishing Partner is by no means a simple program. Quite the contrary. Behind the user friendliness of GEM, lies a most complex and powerful publishing tool. The combination of Publishing Partner and Atari's powerful low-cost ST computers has brought an affordable alternative to the desktop publishing systems currently available from Atari's competitors.

5 THOUSANDS OF TYPE STYLES

This is no exaggeration. Unlike most other desktop publishing software packages, which offer you 2 or 3 different fonts, Publishing Partner gives you true flexibility of over 4,000 type styles per font. Publishing Partner offers you 14 variations of each font:

- | | | |
|------------|----------|----------------|
| BACKSLANT | MIRROR | STRIKE THROUGH |
| BOLD | OUTLINE | TALL |
| DOUBLE U/L | REVERSED | UNDERLINE |
| ITALICS | SHADOW | UPSIDE DOWN |
| LIGHT | | WIDE |

And you can 'mix and match' any number and combination of styles to your own requirements. The total number of possible permutations is over 4,000. And that's not all, each style can be used in any one of 216 sizes in one point increments from 1 point to 216 points! All this is achievable on an unexpanded 520ST with just 512K RAM! Other competing packages require 1024K RAM just to get the larger sizes above 72 point and still can't match all of the variations available.

Publishing Partner is a trade mark of SoftLogik Corp™.

6 WORD PROCESSING

Publishing Partner contains the power and features that you would expect to find on a dedicated word processing package. In addition it includes facilities which a professional typesetting machine would offer. For example the program can cope with 216 different type sizes, with over 4,000 style variations of each one. The following are some of the facilities you will find within the capabilities of Publishing Partner:

- * Adjust margins for any column
- * Change block to uppercase or lowercase
- * Change margin indents
- * Character spacing from -128 to +127
- * Copy text to and from the buffer
- * GEM based
- * Import and export files
- * Insert and delete pages
- * Justifies right/left/centred as you type
- * Justifies to the character/word
- * Kerning from -128 to +127
- * Line spacing/leading in ½ points from -64 to +57
- * Link columns together
- * Macros
- * Manual Hyphenation
- * Merge files together
- * Optional grid & ruler display
- * Over 4,000 type style variations of each font
- * Page numbering
- * Pica, Inches or Centimetre measuring system
- * Print to paper vertically or horizontally
- * Read & merge any ASCII file
- * Search and replace
- * Tabs for charts/tables
- * Unlimited headers & footers
- * User definable page size
- * User variable superscript/subscript characters

7 PAGE LAYOUT

Whatever you require, custom logos, unique borders, unusual letterheads etc. Publishing Partner is your solution. After all, it was specially designed by professionals who realize that there's more to your computer than just typing letters.

- * Accurate to 3 decimal places
- * Adjust character size from 1 to 216 points
- * Auto text flow between columns
- * Change columns on finished page
- * Display 15%-1500% of original size
- * Display actual size
- * Display multiple pages/rulers/text routing
- * Layout multiple columns
- * Print to disk
- * Set auto text routing
- * Snap to guides
- * Superimpose text on tint or tint on text

SEEING IS BELIEVING

We have already told you how powerful Publishing Partner is and how easy it is to use. However, the recipients of your finished work will only be able to gauge the package by the end results of your work. The true test of any Desktop Publishing software is in the output it produces and it is here that Publishing Partner excels. With its graphics capabilities and the thousands of type styles it produces, there is no end to the design possibilities which you can create. And, with drivers for a variety of printers, including Postscript at no extra charge, you can be sure that you will be able to output in the quality your work deserves. The output quality is truly remarkable. But don't just take our word for it. Before you go any further with your enquiries into Desktop Publishing, return the coupon below for samples of Publishing Partner's output on a variety of printers. We will also send you details and prices of each printer as well as further information on Publishing Partner and the Atari range of ST computers. We don't expect you to take our word for it. We want you to see for yourself how Publishing Partner outshines the competition. So, complete and return the coupon today. Remember, SEEING IS BELIEVING!

8 GRAPHICS

Not only can you load any Degas, N-Vision, Neochrome or digitized pictures into your Publishing Partner files, you can also enlarge or reduce them for an exact fit. Or, you can copy just a section of a picture and then paste it into your document as many times as you want. You can still go back and resize it at any time or crop it to delete unwanted areas.

- * 3 types of line ends, square/rounded/pointed
- * 7 types of line which are all editable.
- * 7 weight lines ranging from ½pt to 6pt
- * 40 fill patterns each with a border option making a total of 80 fill options
- * Ability to produce separations for 2 colours
- * Copy graphics to and from clipboard
- * Cut, paste, copy or crop graphics
- * Import graphics from third party graphic programs such as Degas, Neochrome, N-Vision or any art program that produces compatible ASCII files
- * Select colours to use and print with
- * Toolbox features include: Circles, ellipses, boxes, rounded corner boxes, horizontal/vertical lines, diagonal lines, polygons and free hand drawing

9 OUTSTANDING OUTPUT

Publishing Partner is a unique program with a large variety of printer drivers for both laser and dot matrix printers. Dot matrix is supported in both 80 column and 132 column mode, so you could even produce a tabloid width newspaper (11½" wide) on a wide body printer. Drivers are also available for the new technology 24 pin dot matrix printers which can give a fine resolution of 360x360 compared with laser printers at 300x300. The current drivers (included FREE with the program) are as follows with new ones being written on a weekly basis:

- | | |
|---|-------------------------|
| 9 PIN DOT MATRIX | (Various Res) |
| * Atari SMM804 | * Mannesman Spirit-80 |
| * Blue Chip M120/10 | * NEC 8023 |
| * Cal Abco Legend 880 | * Panasonic KXP |
| * C Itoh Prowriter | * Star Gemini & SG |
| 9 PIN DOT MATRIX | (240x216 Res) |
| * Citizen MSP | * Mannesman Tally MT |
| * Epson RX/FX/EX | * Star NX/SD |
| 18 PIN DOT MATRIX | (240x288 Res) |
| * Okidata Microline 292 | * Okidata Microline 293 |
| 24 PIN DOT MATRIX | (360x180 Res) |
| * C Itoh C-715 | * Epson SQ |
| * Epson LQ | * Toshiba P321 |
| 24 PIN DOT MATRIX | (360x360 Res) |
| * NEC P6/P7 | * NEC XL new series |
| LASER PRINTERS | (300x300 Res) |
| * Centronics PP-8 in Epson or H.P. Laserjet mode 1½Mb RAM | |
| * Any other H.P. Laserjet compatible with 1½Mb RAM | |
| * QMS PS800 or Apple LaserWriter - Postscript | |
| * Any other Postscript compatible printer | |

OFFICIAL UK VERSION

The official UK version of Publishing Partner has a pound (£) sign as a standard part of its character set. Other versions have also been imported unofficially from the USA and have a dollar (\$) sign instead of a £ sign. These versions will not be supported by the UK distributors or their dealers. The UK version also contains clip art, different fonts and a full range of printer drivers. Ensure that you buy the official UK version, not an unofficial import with incorrect characters.

£139.00

(+VAT=£159.85)

Publishing Partner is available from Atari ST Dealers throughout the UK. If your local dealer does not have Publishing Partner in stock, it can be obtained by mail order (Postage & Packaging free) from:

SILICA SHOP Ltd, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
Tel: 01-309 1111

INFORMATION REQUEST FORM

To: Silica Shop Ltd, Dept ATSTR 0787, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

Please send me further details on: **DESKTOP PUBLISHING**

Mr/Mrs/Ms:..... Initials:..... Surname:.....

Address:

Postcode:

I am interested in the Atari ST
I already own an Atari ST **DTP**



START Systems

Hardware

ATARI Mega ST Coming soon, watch this space	£
ATARI 1040 STF + Built in Modulator	£549.95
ATARI 1040 STF + SM125 Mono Monitor	£599.95
ATARI 1040 STF + Built in Modulator + SM125 Monitor	£644.95
ATARI 1040 STF + PHILIPS CM8533 Colour Monitor	£779.95
ATARI 1040 STF + PHILIPS CM8833 Colour Monitor	£789.95
ATARI 520 STFM	£349.95
ATARI 520 STFM + SM125 Mono Monitor	£449.95
ATARI 520 STFM + PHILIPS CM8533 Colour Monitor	£629.95
ATARI 520 STFM + PHILIPS CM8833 Colour Monitor	£639.95
SUPRA 20Mb Hard Disk + Software	£599.95
TRIANGLE ST 20Mb Turbo Hard Disk	£619.95
TRIANGLE Single 1Mb Disk Drive	£134.95
TRIANGLE Twin 1Mb Disk Drives	£229.95
CUMANA Single 1Mb Disk Drive	£134.95
CUMANA Twin 1Mb Disk Drives	£229.95
ATARI SM 125 Mono Monitor (High Res)	£129.95
PHILIPS CM8533 Colour Monitor (Medium Res) + ST Lead	£289.95
PHILIPS CM8833 Colour Monitor (Medium Res) + ST Lead	£299.95
PHILIPS CM8852 Colour Monitor (Medium Res) + ST Lead	£329.95
PHILIPS CM8873 Colour Monitor (High Res) + ST Lead	£619.95
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CANON/STAR/EPSON Dot Matrix Printers	Ring Now
NEC P6 & P5 24 Pin Printer + ST Lead	Ring Now
MP 165 Dot Matrix Printer + ST Lead	£219.95
AMSTRAD DMP 2000 Printer + ST Lead	£154.95
ATARI SMM804 Printer + Spare Ribbon + ST Lead	£179.95
SAM Realtime Digitizer	£249.95
TRIANGLE Graphic Tablet	£299.95
TRIANGLE Puck (Mouse) for above	£62.75
Minor Miracles WS2000 Modem + ST Lead	£119.95
Minor Miracles WS4000 Modem + ST Lead	£169.95
Microdeal Battery Clock Card	£29.95
Clock Card fitted when you buy your ST from us	£22.95

Business Software

HB Signum	£189.95
Haba Writer 3	£62.95
Haba Dex	£27.95
Haba View	£45.95
Haba Merge	£29.95
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Boffin	£79.95
SuperBase	£69.95
TRIMbase	£69.95
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K-Word 2	£49.95
K-Spread 2	£59.95
K-Graph 2	£39.95
K-Comm 2	£39.95
Fastcom	£37.95
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Cashlink ST Accounts	£249.95
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MCC Macro Assemble	£37.95
MCC Cambridge Lisp	£114.95
MCC Pascal Compiler	£64.95
MCC BCPL Compiler	£74.95
Pro Pascal Compiler	£114.95
Pro Fortran 77	£114.95
ST Devpac (Assembler)	£39.95
Personal Pascal	£59.95
K-Seka (Assembler)	£39.95

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Degas Elite	£54.95
Cad-3D	£39.95
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Film Director	£49.95
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As the leading company in the field of A.G.E. and digitized pictures, START SYSTEMS are proud to announce that we are now stocking the first true realtime digitizer for the ATARI ST.

S.A.M. (Silicon Animation Machine) £249.95
Sample Demo Disk £5.00

This amazing piece of hardware was recently demonstrated at the ATARI show on the ATARI Stand by SILICON SOLUTIONS. It can store & play back 11 frames in 512K, 27 in 1040K from either a video camera or home video source and each frame or sequence can then be stored on disk in either Neo or Degas format.

***** 10 Day Money Back Guarantee *****
 We think that S.A.M. digitizer is so good that we are offering a 10 day money-back guarantee

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 All Enquiries Tel: (0304) 363566

All prices include VAT & Datapost/Postal Charges
 All prices were correct at the time of going to press.

BOTS

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Tel: 0227 266289 or 363754

Personal visits welcome - Demonstrations by appointment only

B.I.T.S. - Business Information & Technical Services - has extensive "hands on" experience of the ATARI ST range and its supporting software. Although the retail aspect is important - we offer a genuine price-match policy on software over £25, and will haggle over bundled software + hardware deals to suit your requirements - our main thrust for the future is in support of ST, Mega ST and PC applications, particularly the following:

DESKTOP PUBLISHING GRAPHICS & DESIGN
 IMAGE CAPTURE BUSINESS APPLICATIONS

We are keen to recruit additional freelance specialists in these areas. So if you feel you have particular skills using specific items of Atari ST software (not games!) let us know. We are in the process of setting up a training, demonstration and software support facility and would like to hear from interested individuals and parties NOW. Also contact us if you are interested in details of the latest ST products in these and other fields - this register of users' interests will then be supported both by our mailings and those by producers of the relevant software and hardware so we can provide YOU with a complete information and product service. (including Public Domain software sources). Training, maintenance and repair facilities - please ask. All prices £rrp but price match promise on all in-stock items

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SYSTEMS

Mega ST 2 + SM125 Mono System + Software	£999	£869
Mega ST 4 + SM125 Mono System + Software	£1299	£1130
Mega ST D.T.P. Systems, Colour, Atari PC (Aug/Sept)	£ phone	
1040ST-F + SM125 mono system + software	£699	£609
1040ST-F + SC1224 colour system + software	£899	£782
520ST-FM + SM125 mono system + software	£499	£435
520ST-FM + (1/2 meg upgrade to 1 meg RAM)	£599	£521
520ST-M + 125 + SF354 + Software	£450	£391

KEYBOARDS

1040ST-F keyboard unit + mouse + software	£599	£521
With UHF modulator ADD . . .	£50	£44
520ST-FM keyboard unit + mouse + software	£399	£348
520ST-FM+ (1/2 meg upgrade to 1 meg RAM)	£499	£435
520ST-M Keyboard unit + software	£260	£226
520ST-M+ (1/2 meg upgrade to 1 meg RAM)	£360	£313

DISK UNITS

SF354 half megabyte drive	£149	£130
SF314 megabyte drive	£199	£174
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Checking up on the taxman

Barry Wood's program ensures that you don't pay out more than you have to

TAX Calculator is a short utility enabling you to calculate and check your tax liability.

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

Your tax code is issued by the local tax office and is in the form 242L. The actual number can be almost anything but is usually 242 for single people or married women and 383 for married men or others who are claiming a married man's allowance (for instance a single parent).

The letter following the number is usually L, H or T. None of these letters affects the way in which tax is calculated. However, certain other letters may affect the calculation and are outside the scope of this program.

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

The way that this program calculates your income tax is to start with your tax code. A code of 242 means that you may

earn up to £2425 a year before you need to pay any tax. This is just under £46.50 a week. A married man with a tax code of 383 can earn £3835 a year or just under £74 a week, without incurring tax liability.

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

If your total taxable earning in any one tax year is less than £17,900 you will be taxed at the rate of 27 per cent. If you exceed that figure, you will have to pay tax at 40 per cent on all taxable pay earned between £17,900 and £20,400.

The rate then increases to 45 per cent for the next £5,000 spread. There are other bands up to 60 per cent and the program caters for these.

National Insurance is calculated differently. In this case there is a base line and a ceiling. Any earnings below the line, currently at £39, attract no contributions up to the maximum amount payable of £26.55 a week irrespective of the amount earned.

For all points in between, the amount due depends on the gross pay for that week. From the base line to £64.99 the figure is 5 per cent and from £65.00 to £99.99 is 7 per cent and from £100.00 to the ceiling is paid at 9 per cent.

Unlike income tax calculations, ▷

⇧ Desk File Edit List Run Special

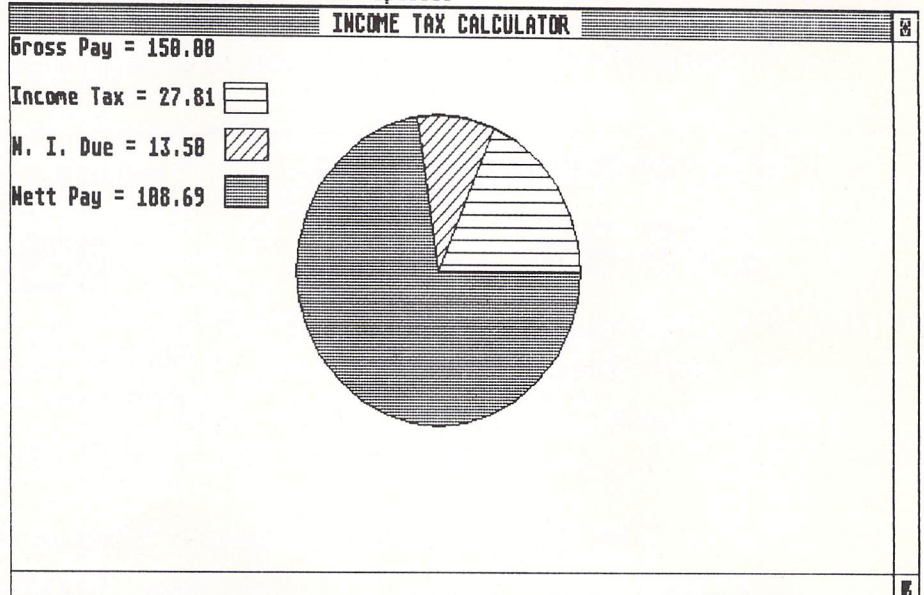


Figure 1: The tax and NI due on gross pay of £150

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COMPUTING IN ACTION

Changes for monthly pay

To enable the program to work for monthly paid readers these changes should be incorporated into the program: Line 320 should be changed to:

```
320 Input "Enter Tax Month ";taxweek
```

The variable *taxweek* can be left as it is to keep the number of changes to a minimum. However, you can change the word *week* in line 330 to *month* and in line 440 replace the number 52 with 12. Lines 480 to 520 should be replaced by the following new lines:

```
480 IF paydue<169 THEN nifrac=0
490 IF paydue>=169 AND paydue<282 TH
EN nifrac=0.05
500 IF paydue>=282 AND paydue<434 TH
EN nifrac=0.07
510 IF paydue>=434 AND paydue<1279 T
HEN nifrac=0.09
520 IF paydue>=1279 THEN nidue=115.1
1:RETURN
```

amounts earned during the year have no effect. If you earn £20 one week and £100 the next, you will pay no NI contribution for the first week and £9 for the second.

Unless your payroll has been calculated by a computer, there may be a discrepancy in the amount shown for National Insurance contributions.

The reason for this is that the tables used in manual calculations use £1.00 increments and the amount due is averaged over the increment. For computer calculations, the percentage is worked out using the actual wages due.

To illustrate this, if we calculate the amount of contributions payable on £100 we arrive at a figure of £9 - 9 per cent of £100.

Using the tables, a wage of £100 attracts a contribution of £9.04 but then so

does a wage of £100.99 which if worked out by computer would result in £9.09 being the amount due.

There may also be a slight discrepancy in the tax deducted. This should be no more than a few pence and is caused by the difference between using direct percentage (as this program does), and the tax tables.

Once the tax and NI has been calculated, net pay is found by subtracting these two amounts from your gross pay. We now have all the figures necessary to feed the display routine.

The display as written runs in high resolution mode but by altering the first two parameters in the PIE statement, the resultant display can be made to fit into a medium or low resolution screen.

```
10 REM Income Tax Calculator
20 REM by Ken Hughes
30 REM (c) Atari ST User
40 PROCset_window
50 PROCinput_details
60 PROCTax_calc
70 PROCni_calc
80 PROCpie_chart
90 q$=""
100 WHILE q$=""
110 q$=INKEYS
120 WEND
130 PROCreset_window
140 SHOWMOUSE
150 END
160 DEFPROCset_window
170 LOCAL x,y,w,h
180 title$=" INCOME TAX CALCULATOR "
+CHRS(0)
190 SETWINDTITLE OUTHANDLE,{@title$}
%
200 GETWINDFULL OUTHANDLE,x,y,w,h
210 SETWINDCOORDS OUTHANDLE,x,y,w,h
220 GETWINDWORK OUTHANDLE,x,y,w,h
230 TXTRECT x,y,w,h:GRAFRECT x,y,w,h
240 TXTSIZE 13
250 HIDEMOUSE
260 ENDPROC
270 DEFPROCinput_details
280 CLS
290 INPUT "Please Enter Tax Code (Nu
mbers Only) ",taxcode
300 INPUT "Now Enter Pay Earned To D
ate ",paytdate
310 INPUT "And Now Tax Paid To Date
",taxtdate
320 INPUT "Enter Tax Week ",taxweek
```

```
330 INPUT "Finally, Enter Pay Due Th
is Week ",paydue
340 ENDPROC
350 DEFPROCTax_calc
360 taxrate=0.27
370 IF paytdate+paydue>17900 THEN t
axrate=0.4
380 IF paytdate+paydue>20400 THEN t
axrate=0.45
390 IF paytdate+paydue>25400 THEN t
axrate=0.5
400 IF paytdate+paydue>33300 THEN t
axrate=0.55
410 IF paytdate+paydue>41200 THEN t
axrate=0.6
420 taxfree=(taxcode*10)+9
430 paytot=paytdate+paydue
440 taxdue=INT((paytot-((taxfree/52)
*taxweek))*taxrate
450 taxtopay=(INT((taxdue-taxtdate)
*100))/100
460 ENDPROC
470 DEFPROCni_calc
480 IF paydue <39 THEN nifrac=0
490 IF paydue >=39 AND paydue <65 TH
EN nifrac=0.05
500 IF paydue >=65 AND paydue <100 T
HEN nifrac=0.07
510 IF paydue >=100 AND paydue <295
THEN nifrac=0.09
520 IF paydue >=295 THEN nidue=25.65
:RETURN
530 nidue=paydue*nifrac
540 ENDPROC
550 DEFPROCpie_chart
560 CLS
570 FILLCOL 1
```

```
580 FILLSTYLE 2,2
590 FILLPERIM 1
600 PIE 300,150,100,0,3600
610 FILLSTYLE 3,5
620 taxp1=(taxtopay/paydue)*100
630 taxpie=3600*(taxp1/100)
640 PIE 300,150,100,0,taxpie
650 FILLSTYLE 3,15
660 nip1=(nidue/paydue)*100
670 nipie=3600*(nip1/100)
680 PIE 300,150,100,taxpie,nipie+tax
pie
690 PRINT "Gross Pay = ";FORMAT$(pay
due,"zzzzD.DD")
700 PRINT
710 PRINT "Income Tax = ";FORMAT$(ta
xtopay,"zzzzD.DD")
720 PRINT
730 FILLSTYLE 3,5
740 BAR 150,30,180,50
750 PRINT "N. I. Due = ";FORMAT$(nid
ue,"zzzzD.DD")
760 PRINT
770 FILLSTYLE 3,15
780 BAR 150,60,180,80
790 PRINT "Nett Pay = ";FORMAT$(payd
ue-taxtopay-nidue,"zzzzD.DD")
800 FILLSTYLE 2,2
810 BAR 150,90,180,110
820 ENDPROC
830 DEFPROCreset_window
840 LOCAL x,y,w,h
850 GETWINDPREV OUTHANDLE,x,y,w,h
860 SETWINDCOORDS OUTHANDLE,x,y,w,h
870 GETWINDWORK OUTHANDLE,x,y,w,h
880 ENDPROC
```

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Blast from the past

Program: Arkanoid
Price: £14.95
Supplier: Imagine, 6 Central Street, Manchester, M2 5NS.
Tel: 061-832 6633

WHAT a pleasure to splash in the warm waters of nostalgia. Remember those long-past days when there were such cult games as Space Invaders, Paddle Tennis, Wavy Navy, Galaxian, PacMan and Breakout?

Times when you played and played the same game, only stopping when dawn began to break?

They may have been simple and crude but they had a magical quality to hook old-time games players.

Now one of those games is about to make a comeback. Up pops Arkanoid, Imagine's first venture into the ST game world. No matter which way you slice the accompanying blurb, Arkanoid is actually our long-lost friend, Breakout.

This is no tepid serving of yesterday's leftovers. Imagine have taken the Taito arcade game and produced one of the most compulsive and addictive games yet seen on the ST.

The game concept couldn't be simpler. At the top of the screen are several rows of coloured bricks; at the bottom is a small, pulsating, flat-topped bat.

You use it to deflect a bouncing ball so that it hits and breaks down the wall above. You lose a life each time the ball passes the bat and reaches the bottom of the screen. You progress to the next level only when all the bricks are destroyed.

Child's play, eh? But wait. Hidden among the bricks are variously coloured and lettered capsules which float down when dislodged. As well as deflecting the ball back up the screen, your craft can collect these capsules. The problem is, there are now at least two things to watch - the bouncing ball and descending capsules.

Each capsule is a different colour and has a large label. Each has a different effect and generally speaking, catching a capsule negates the effect of any previously caught capsule.

An E capsule expands your bat making it easier to hit the ball. An S causes the ball to move slowly, while a P gives you an extra life. A C capsule allows you to catch the ball and fire it at the bricks.

A D splits the ball into three, tripling your chances of smashing the bricks while a B breaks a section of the side wall giving an alternative escape route to the next level.

The L capsule equips you with double lasers which you can use to blast the bricks and aliens. Oh, didn't I mention the aliens?

They are released at intervals through

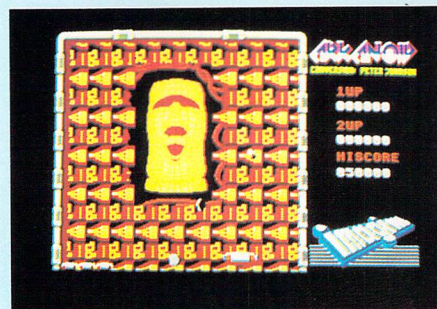
slots at the top of the screen. While they can't hurt, they get in the way. If a ball hits one, the alien will explode and the ball can fly in any direction.

Points are scored for knocking out a brick, (some bricks need more than one thump before they'll go), collecting capsules and bumping off aliens. An extra life is awarded when you reach 20,000 points and every 50,000 afterwards.

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

Arkanoid can be played by one or two players. The bat is controlled by the mouse and is very responsive. It would have been nice to have had a keyboard or joystick option but the mouse is perfectly satisfactory.

The graphics are very colourful and lively, each screen having different backdrops, brick configurations and aliens. There are two attractive title



screens but no demo mode. Sound effects and music are above average.

Arkanoid is one of those games you simply can't stop playing.

Bob Chappell

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

The Rockford File

Program: Boulderdash Construction Kit
Price: £24.95
Supplier: Databyte, Suite 31A Grove Terrace, Highgate Road, London NW5 1PL.
Tel: 01-482 1755

ROCKFORD'S back in the ultimate challenge to Boulderdash fans. If you can complete this collection of 16 caves then you can build your own.

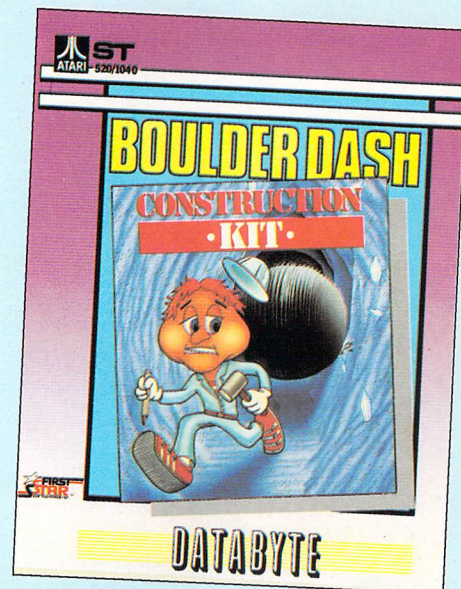
Boulder pushing, diamond collecting, amoeba smashing, award winning Rockford first made his appearance in Boulderdash, has starred in three sequels, and is as addictive as ever.

Once again our hero runs the gauntlet of caves packed with boulders, fireflies, deadly butterflies and growing amoebas to collect diamonds.

In some caves you must collect more than 50 diamonds before the three minute time limit expires, in others just one. Be certain - it's not easy.

On entering a cave you're thrown straight into the action. Most of the screen is constructed from dirt that you can easily dig through leaving a hole. This may not sound important but choose routes carefully so that boulders drop where wanted and not on your head. Keep away from fireflies and butterflies or channel them to destroy an amoeba. One wrong move costs a life.

The result is a fascinating arcade game in which you can fall foul of the blue slime, be chomped by a fly, crushed by a boulder



der or trapped by a growing wall. In addition you can now build your own caves or edit and alter the existing ones with the easy-to-use construction set.

If you're already a fan of Rockford add this to your collection. If you've yet to meet the Boulderdash challenge don't waste time - you won't be disappointed.

Tony Hetherington

Sound	4
Graphics.....	6
Playability	10
Value for Money	8
Overall	9

Superb simulation

Program: *Balance of Power*

Price: £29.95

Supplier: Mindscape c/o Mirrorsoft, Maxwell House, 74 Worship Stret, London EC2A 2EN.

Tel: 01-377 4837

SO I said to the General Secretary of the USSR, "Pull out Russian troops out from Afghanistan or face the consequences". He refused point-blank.

As President of the USA, I had two options – to back down and face a massive loss of international prestige, or risk a full-scale nuclear war.

Balance of Power, a superb new strategy game from Mindscape, places such life-or-death decisions in your hands.

The aim of the game (though perhaps that is not the best term for such a program) is to gain geopolitical prestige while at the same time weakening your opponent.

At the end of an eight year game

period (and provided nuclear war has not destroyed the world) the side with the most prestige points wins.

The game can be played by two players or with the ST controlling one player, each side taking on the role of President of the USA or General Secretary of the USSR.

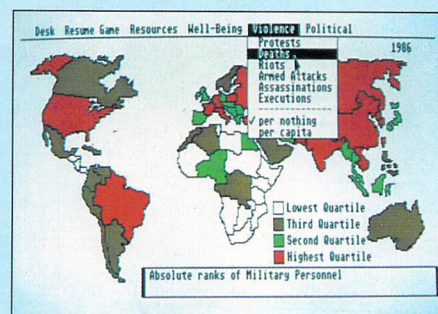
The way to gain geopolitical prestige (or international popularity) is by a series of strategic decisions.

The aim is to court countries with the most military power while insuring that your enemies remain weak.

Most of the screen is taken up with a detailed map of the world which is used as an access and the principal means of displaying information.

Along the top are a number of pull-down menus (triggered by the mouse pointer). The chief one is the Make Policies menu.

It is this option that actually drives the game. Almost all the other menus used, sometimes in conjunction with the map,



obtain entry to the information held by the program.

There are several ways of winning popularity. You can be nice to a government that likes you or attempt to overthrow one that doesn't.

Many countries are ripe for rebellion. You can opt for a defence using monetary aid or intervene directly. Or you may wish to provide money or military support for the rebels.

There are some constraints: Your budget, the number and location of troops, and the reaction of the opposing superpower to your actions.

You can choose to pump in economic aid or set about destabilising the country using the CIA or KGB. Further options allow you to sign a treaty with a nation or lean on the country by applying diplomatic pressure.

All these actions are accomplished by using the Make Policies menu. When you've completed your programme your turn is over. The ST then figures out its side's reactions to your policies and may launch a series of challenges.

Next it analyses the news and determines the developments in each country.

Finally, it makes the moves for its own side, advances the calendar by a year and play returns to you. This complicated process takes less than a minute.

In the case of a two-player game, while the calculations are all handled by the computer, players have to make their own decisions about moves and challenges.

There are four levels of gameplay: Beginner, Intermediate, Expert and Nightmare. Beginner and Intermediate levels are for training purposes only.

Expert and Nightmare levels contain the full elements of Balance of Power, building upon the easier levels and adding various other complexities and nuances of global interaction.

Once above beginner level, the many diplomatic relationships and other factors (including the reliability of your advisers) vary from game to game, making each new session unpredictable.

Much of the information is presented by shading and colouring every country on the world map, the relevant key being displayed in the bottom right-hand corner.

The countries menu provides data on

Pub game special

Program: *Shuffleboard*

Price: £19.95

Supplier: Diamond Games, c/o Robtek, Unit 4, Isleworth Business Complex, St. John's Road, Isleworth, Middlesex TW7 6NL.

Tel: 01-847 4457

SHUFFLEBOARD and Pool get the ST treatment in a doublepack of pub games that features some stunning graphics. Pool fans can now chalk up for a game without queuing but only a two-player option is provided and ST takes a back seat.

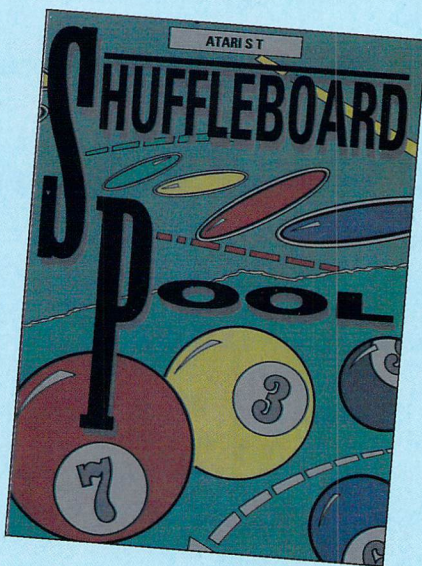
A view from above the table fills the screen with the plain and striped balls racked and ready for play. It's up to you to decide how to score the games and punish any fouls.

The ST provides slick graphics and options to change the order of the balls in the rack, load and save games and change the table colour.

The animation is extremely smooth but the game desperately needs a computer opponent like the one waiting to challenge you to a game of Shuffleboard.

Shuffleboard offers you five different versions of the game in which you must glide weights down a polished alley and into scored regions. Only the weights nearest the gutter at the far end score so the game is a battle of strategy and skill as you jostle for the best position.

The screen display not only shows a plan view of the alley but also a separate



3D view of what you would see. The computer opponents play a hard game so the challenge doesn't stop if you run out of players.

I found the Shuffleboard surprisingly addictive which almost made up for the disappointing Pool.

Tony Hetherington

Sound	4
Graphics	8
Playability	7
Value for Money	6
Overall	6

all the states in the two superpowers' spheres of influence, major events of the past year including revolutions, coups and so on.

It also includes prestige value, states of insurgency, any likely coups d'etat, and potential Finlandisation (pragmatically compelled by circumstances to become friendly).

The separate USA and USSR menus give information on the policies and relationships of the two powers. This includes data on diplomatic relationships, military aid, interventions for governments and rebels, economic aid, treaties and so on.

The events menu does not use the map but presents its information in the form of headlines. The events are grouped under USSR and USA Actions and Other Data.

Actions tend to be the major incidents, and Other Data covers the more mundane items: Minor country news and last year's USA and USSR news.

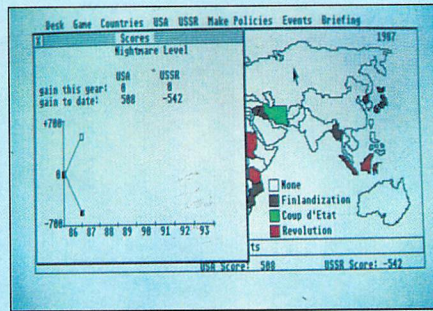
Each group of information can be scanned by clicking on the Next or Previous buttons.

The events menu contains a very important element of the game. When accessing this menu, you are given the chance to question many of the events.

For example, you might wish to question a highly provocative act. Such questioning immediately generates a crisis.

The opposing side will respond, either by sticking to their guns or by backing down. If they stay put, then the ball is back in your court – you must further challenge or back down.

When playing against the computer, it may well activate this phase on its own



behalf when at the beginning of its turn.

In other words, you are the plaintiff when using the Events menu but the computer becomes the plaintiff when your turn for the year is over.

Once into a crisis, you have a number of advisers offering information on how they see the event.

Trouble is, they are not always right. The longer one of the two sides takes to back away from the confrontation, the more prestige points the retreator loses.

The danger is that each successive phase moves the two countries closer to war. Unless one relents, the situation escalates and deteriorates through a number of phases including challenge, diplomatic crisis and DEFCON.

DEFCON is the DEFense CONdition of a superpower. DEFCON five is peace – minimum readiness. While DEFCON three is maximum alert. At DEFCON two, an accidental nuclear war is all too likely, and DEFCON one spells the end – all out nuclear war is declared and both sides have lost.

The final information menu, Briefing,

with its three options of closeup, background and history, provides a staggering amount of data on the 62 nations represented in the game.

There are enough graphs, barcharts and statistics to keep you studying until this time next year.

Other options under the Game menu, give the current tally of prestige points, allow the taking back of the last move and signify end of turn. When you quit a game, the current state will be saved and can be later restored.

Balance of Power is handsomely and robustly packaged and includes an 87 page manual. Its clarity and presentation is the very model of excellence.

There is so much detail, depth and sophistication to author Chris Crawford's program. The game's use of modelling and artificial intelligence techniques, the massive database, the superb world map and the design of the player's interface are magnificent.

I echo the publishers statement that, "This game will entertain, educate, challenge and perhaps frighten you in ways that no computer program has done before".

Balance of Power is the creme de la creme of strategy games. It is a marvellous achievement and a marvellous experience to play. Don't pass it by.

Bob Chappell

Sound	n/a
Graphics.....	9
Playability	10
Value for money.....	10
Overall	10

Running for Gold

Program: Metrocross

Price: £24.95

Supplier: US Gold, Units 2/3, Holford Way, Holford, Birmingham B6 7AX.

Tel: 021-356 3388

REMEMBER all the sports fads of the 60s and 70s? The one that stands out in my mind is the skateboard – the much touted successor to roller skates.

Rinks opened all over the country with the promise of skateboarding achieving Olympic status. Where can you find the skateboard today? Only in this new Metrocross game from US Gold.

The object of the game seems quite simple: Hop, skip, jump and skateboard across screens of chequerboard floor riddled with potholes, obstacles and green no-go areas that zap your energy.

You set off on foot dodging rolling coke cans, jumping over hurdles, avoiding pits that swallow you whole and land mines that explode before leaping on to your

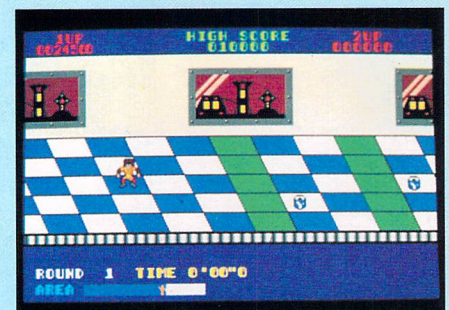
skateboard. And all this in a race against the clock.

Probe Software, responsible for this conversion, have done the ST proud by programming some of the finest horizontally scrolling graphics yet seen. Not only is the regular action smooth and fluid, but superb double speed action can be achieved by kicking green cans on the way.

After three hours play, I almost managed to reach the end of the fifth level, but not before I'd been burnt alive, attacked by rampaging rats, and crashed into innumerable hurdles.

I found that the only successful way of shaking off the rats was to leap into a hole in the floor causing a loss of time.

I was convinced after level two that the main obstacle to beating the game was the relentless time factor. Complex floor designs, ever increasing hazards, and a touch of over confidence leads you to conclude that level five would do better with two or three extra seconds to



allow you to win.

No matter how I tried I just could not make it! Good use of spot sound effects with a pleasant background tune make the gameplay absorbing.

I love the way the little fellow pants and gasps on finally reaching the end of each level. I know just how he feels. Meanwhile, back to the game and that seemingly impossible level five...

Victor Laszlo

Sound	8
Graphics.....	9
Playability	9
Value for Money.....	8
Overall	9

Puzzling arcade adventure

Program: Crafton & Xunk
Price: £24.95
Supplier: Ere Informatique/Infogrames,
Mitre House, Abbey Road, Enfield, Mid-
dlesex, EN1 2RQ
Tel: 01-364 0123

I HAVE always admired the software that Ultimate Play The Game produced for the Spectrum. The graphics and animation in Alien 8 and Knight Lore were really something special. There's never been anything to match their style on other machines – until now.

Crafton & Xunk from the French company Ere Informatique has produced a game that captures the style of those old Ultimate products. The result is an arcade adventure with some of the most detailed and varied graphics and superb animation yet seen on the ST.

The plot is difficult to describe because the packaging and instructions were almost entirely in French. Dull packaging and unsuitable instructions don't do the software justice and are unlikely to attract the impulse buyer.

Although mon 'O' level Francaise est more than un peu rusty, I gathered that the aim of the game is to collect eight pieces of a code by exploring a labyrinth of rooms and collecting and utilising various objects.

The Crafton of the title is a fully clothed android even though he did bear more than a passing resemblance to Andy Pandy. His constant companion is Xunk, a strange, yellow little creature, clearly described as an ET head whose short neck ends in a foot.

He/she/it is actually a podocephale – I seem to recall my French mistress once calling me that.

You control Crafton with the mouse and keyboard, joystick and keyboard or keyboard only. An options screen can be called, up at the beginning of each game.

Crafton can move in four directions and as the rooms are laid out in diamond fashion these movements are north-east, north-west, south-east and south-west.

He can also jump, pick up or drop an object and retrace his steps. Don't worry about Xunk – he will hop about until you leave the room when he will zip to Crafton's side like an obedient sheep dog.

The action is three-dimensional and your view is above and diagonally across each room. Every multi-coloured room is filled with furniture and objects and the detail is stunning.

Most of the items can be moved, jumped on and generally manhandled (watch Crafton bounce on the beds till they break) and many have lives of their own.

Every room is also inhabited by weird and superbly animated creatures.



Whenever one of these creatures touches Crafton his energy is cut.

The balance is shown by a percentage figure at the bottom of the screen. He can even jump on the creatures and ride them, though it is bad for his health. When all his energy has gone it's curtains for Crafton.

At the bottom of the screen are eight slots, one for each piece of code captured. Towards the left of the screen, an open chest shows items Crafton may have picked up, but only one item can be carried at a time.

The rooms usually have more than one exit, but some doors are sealed and can only be opened by special means – part of the fun is finding out how. Lifts and transporters are available – once you

have discovered how to operate them.

There are laboratories and restaurants, dormitories and passages, all with finely detailed contents.

Each room is a puzzle and most contain clever and delightful surprises.

In some, gates crash down, blocking Crafton. There are mats that can send him spinning into the air and, some knock him senseless.

Sound and colour are used to good effect but what makes this game so outstanding are the puzzles, the stunning detail and animation.

A demo mode, giving you a quick tour of a few of the rooms, automatically starts up if you just wait at the beginning of the game. Another aspect I liked was that Crafton starts in a different room each time his energy runs out.

So, black marks for packaging and instructions but top marks for style, detail, colour, content and animation. A dazzling game and one to make your eyes bulge like the orbs on a podocephale.

Bob Chappell

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

Slow conversion

Program: Xevious
Price: £24.95
Supplier: U S GOLD, Unit 2/3 Holford Way,
Holford, Birmingham B6 7AX.
Tel: 021-356 3388

ONE of the best Atari arcade games of the last five years, Xevious, has arrived on the Atari ST, courtesy of U S Gold. This conversion does not strictly conform to the original screen layout of the arcade version. Only half the screen area is actually used for gameplay, but that apart, the gameplay is pretty similar.

Piloting a Solvalu super spacecraft, you cruise over the vertically scrolling landscape, bombing Xevious ground installations and zapping air targets while dodging flying mirrors. The ultimate target is the Andor Genesis Mother Ship!

Graphically, the game has a very clean style, with good use of colour in both the landscapes and the sprites. Yet it totally lacks the excitement of the arcade original, mainly due to the condensed size of on screen playing area, and the speed of gameplay being much, too slow.

The problem with the program seems to be its inability to have too many fast-



moving objects on the screen at once, thereby missing the original appeal of the arcade version.

The probable solution would be to restrict the action to a four-colour background, but then it would not match the graphic style of the superb arcade game on which it is based.

This isn't the best shoot-'em up I've seen so try it before buying.

Victor Laszlo

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

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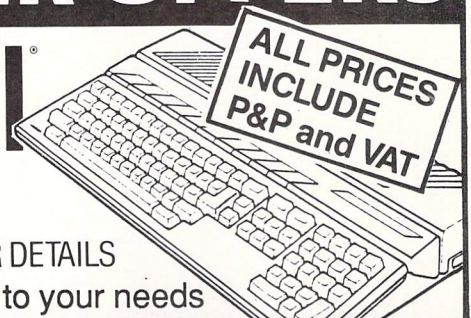
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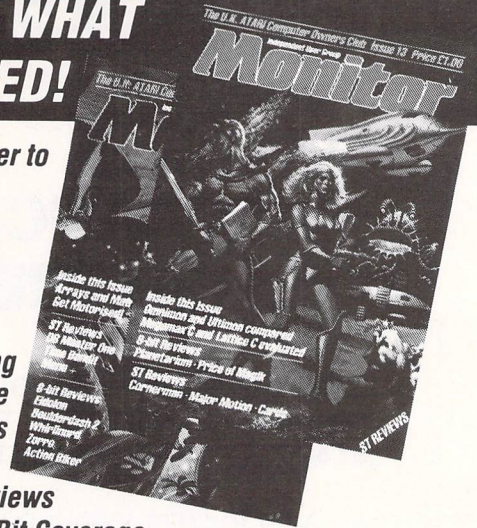
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Assembly lines

HISOFT is well known to many people as the producer of the Devpac series of assembler development packages for various computers. Over the past few years, the range has expanded to include a wide variety of machines, from the Amstrad CPC464 to the IBM PC.

The latest offering is Devpac ST – a single sided disc containing an Assembler-Editor (GenST), a machine code monitor (MonST), and a GST compatible linker (LinkST). A number of example programs are also included on the disc, in both Gem and Tos formats along with an extensive set of powerful macros which can be easily included in your own code.

GenST editor is a simple but powerful Gem based text editor which can be used to handle source files of up to 300k in memory on a standard 520 ST with Tos in rom. It works in either high or medium resolution, but unfortunately there is no support for low res. Anyone restricted to a domestic television set might find this a major inconvenience – and source of eye strain.

Facilities provided include full screen editing, search and replace and a comprehensive set of block movement commands. Because all these operations are performed directly in memory they are extremely fast. Most commands can be accessed either from the keyboard or from one of a number of on-screen menus. A full list of the few commands not available from these menus can easily be summoned at any time by pressing the Help key.

One notable omission is the ability to

Product: Devpac

Price: £49.95

Supplies: HiSoft, 180 High Street North,
Dunstable, Bedfordshire LU6 1AT.

Tel: 0525 718181

Stephen Hill tries a powerful development tool for the ST

run an external program, such as MonST, without leaving the editor completely. In practice this slows down the process of debugging programs considerably.

The assembler can be invoked at any time, either from the options menu or by pressing Alt+A. Listings can be sent either to screen, printer or disc. The default setting is for the assembled code to run directly from Desktop, but this can be easily changed to allow use of the linker, either via the supplied installation program or directly from within the assembler.

Moving on to the GenST assembler, the core of any package of this type has to be the facilities offered by the assembler itself. This one is packed with a comprehensive range of features including conditional assembly and macro expansions with up to nine parameters.

It also supports a wide variety of useful assembler directives, plus a bewildering number of other options. Probably the single most powerful function is the Include directive which enables you to assemble the contents of any source file on disc exactly as if it were present in your text. You can therefore effectively assemble some very large source files with this program.

You can also create libraries of your most useful routines and incorporate them into any program with just a single line from within the editor. In fact, as far as I can see, the only thing this assembler doesn't support fully is the DATA sections used by some high level languages to hold initialised data separate from the

assembled code.

In practice, this omission might cause you problems if you wanted to use GenST in conjunction with another high level language such as C. Otherwise, it is hard to find fault with this excellent piece of software.

I defy anyone to write a large program in assembly language without using some sort of debugging utility. Even a tiny error in the simplest of programs can crash the ST completely. It's therefore nice to see that Devpac ST comes complete with four different versions of the MonST machine code monitor.

Two of these can be called directly from the Gem desktop to debug programs running in either Tos or Gem. There are also two other, auto-resident versions which can be placed in an AUTO folder to load invisibly when booting up.

These remain dormant until the 68000 encounters the sort of processor error which would normally cause the ST to display those pretty little bombs on the screen – then crash. Instead, MonST is activated automatically and you can now see precisely what has gone wrong, and hopefully correct it.

This has to be one of the most useful ideas I've ever seen, and I hope the idea catches on with other manufacturers.

On loading MonST, four windows are displayed showing the state of all the various registers and memory. You are now asked for the name of a program to be debugged. This is then loaded directly above MonSt and the friendly message Address Error appears on-screen.

It is important not to panic at this point, as nothing has gone wrong. It appears that the most convenient way Hisoft could find to start executing the program, was to artificially generate an address error. This error, like all others which would▶

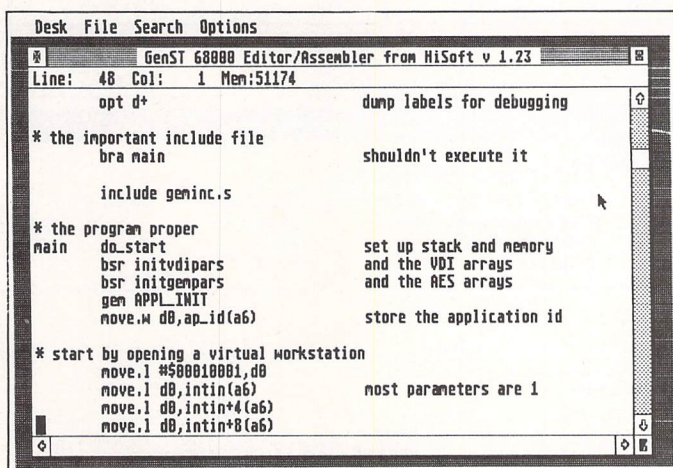


Figure I: Editing a file using GenST

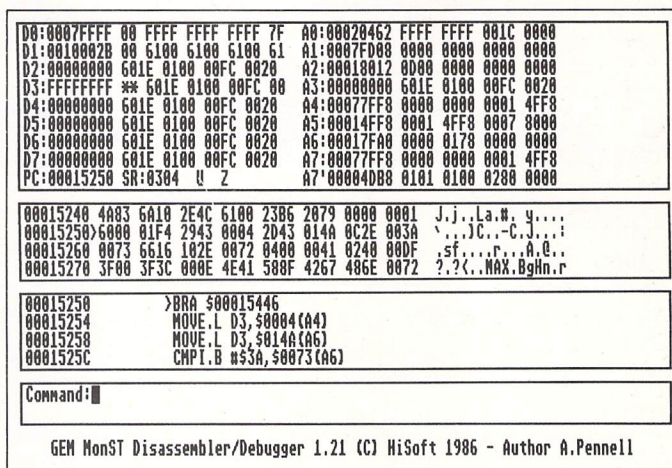


Figure II: Disassembling a file using MonST

◁ normally cause bombs, is automatically intercepted by MonST and control is returned to you.

MonST offers all the usual things you would expect from a machine code monitor, but very little else - I have summarised all these facilities in Figure II. Program control is provided by up to eight breakpoints at any one time. You can also single-step through any part of any program in either ram or rom.

One problem I did encounter with this was that MonST would happily let you single-step through the entire code executed by any call your program made to the operating system. Although its easy to get round this by using the Control+T command to interpret a system call, it would be nice if Hisoft could provide an option to do this automatically during the trace operation.

All the standard memory manipulation options are implemented, including full disassembly to screen or printer. Movement through memory is provided using either the cursor keys, Return, or -, with increments ranging from 1 to 48 bytes.

Unfortunately, there is no easy way to increment or decrement the memory pointer by exactly one instruction. As 68000 instructions are of variable length this makes it relatively difficult to scroll back and forth through a program in memory.

One of the nicest features of MonST is

that it stores all its displays in a separate area of screen memory. This enables you to debug graphical programs quickly and effortlessly, without destroying any of their current output on the screen.

The purpose of the Linker, LinkST, is to combine a number of pre-assembled parts of a program into a single coherent whole. Often these parts will have been generated by different programs entirely, such as C compilers and assemblers. Because of this there have to be standard ways for one part of a program to communicate with another which has been compiled separately.

Unfortunately for ST users, there are currently two systems in common use: The official one from Digital Research and another, incompatible format used by GST. At the present time, Devpac ST only supports the GST standard, but this situation may well change in the near future.

In practice, I have found no problems in incorporating my own assembly language subroutines into programs generated by Metacomco's C compiler. LinkST also happily linked all the example C programs on the Metacomco disk.

Devpac ST comes with a large A3 sized ring-bound manual and a useful little Motorola 68000 pocket guide: The documentation is excellent. It's certainly not intended for the complete beginner, but anybody with a little experience in assembly language will find it both read-

able and comprehensive.

Everything you need to know is described with almost loving care and there are plenty of worked examples to get you started. It's obvious that this manual was written by someone with a genuine enthusiasm for assembly language programming, and this enthusiasm is infectious.

In conclusion, Devpac ST is an exceptionally powerful assembly language development tool capable of generating extremely large assembly language programs. Professional programmers and dedicated machine code hackers will love it, but novices to assembly language programming may well find it overcomplicated and difficult to use.

Somebody who only needs an assembler to allow them to incorporate small assembly language routines into their own code would probably find a better deal elsewhere. For such people something like Fast Basic with its built-in assembler would be a much more logical choice. But for anyone wishing to write large programs in assembler and to utilise the amazing power of the ST to the full, this package is strongly recommended.

Rumour has it that Devpac ST was used to write Rainbird's Starglider. After using this package for a considerable length of time, I find this very easy to believe. It really is that powerful! □

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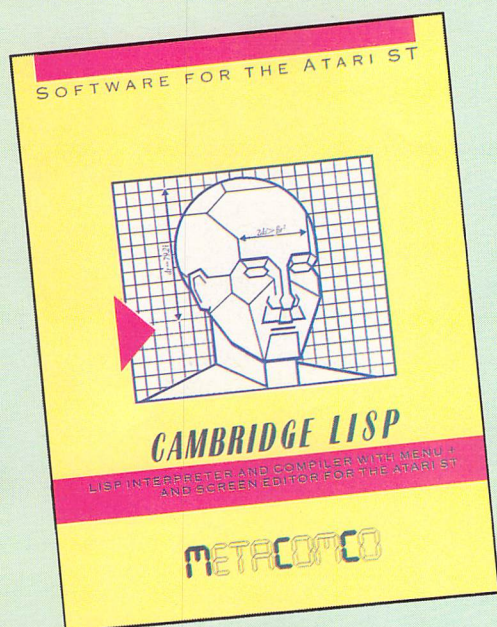
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Budget AI workstation

MANY artificial intelligence (AI) tools and programming languages require expensive specialist hardware to support them – £25,000 being a not uncommon price for an AI workstation. Metacomco's Cambridge Lisp is not only very modestly priced, but also runs on the very inexpensive Atari ST.

Cambridge Lisp differs from all the well-known implementations of the language, but this does not mean that it should prove difficult to convert either staff or program code between Cambridge and non-Cambridge if that should ever be necessary.

Lisp is more fluid than most programming languages and this tends to help conversion between dialects.

It will not be possible to go into any great detail on Lisp programming here, but it should be emphasised that it was designed for work on AI problems, and that includes expert systems, of course.

In brief, Lisp is a powerful symbolic programming language with, in most implementations, an excellent interactive development environment. Its main feature is that both functions (which make up the programs) and data are normally represented in lists – hence the name Lisp, meaning LISt Processing.

Metacomco has provided a comprehensive implementation of Cambridge Lisp including a compiler, interpreter, editor and debugger. The implementation supports integer, real and rational arithmetic, has catch and throw, error processing, and offers all of the common and many of the not-so-common Lisp facilities.

Like most Lisps, Cambridge Lisp was first implemented on a mainframe, but the Atari ST is sufficiently powerful to support the full mainframe version of the language, with room to spare.

Product: Cambridge Lisp
 Price: £149.95
 Supplier: Metacomco, 26 Portland Square,
 Bristol BS2 8RZ.
 Tel: 0272 428781

Mike Liardet explores Lisp, the language of artificial intelligence

The Metacomco package is presented as a paperback manual with two discs – containing a large number of example programs, a text editor and a menu system.

Neither the Lisp system nor the text editor make any use of the mouse or Gem environment. The menu system does use them, but it is a fairly marginal utility.

It is possible to write applications which do work with all the intricacies of Gem and the mouse, and all the Lisp source code for doing this is included on one of the discs.

For newcomers to the language it

would be essential to get a good Lisp tutorial, and the manual does list a number of possible texts. However many of the books listed do not describe the Cambridge dialect of Lisp and this could be a possible source of confusion.

Although the manual gives a very thorough treatment of all the facilities and built-in functions, you can get caught up in a combination of poor indexing and cryptic names for the built-in functions.

If you want to load/consult/execute/read a program file then, "rdf" is the function you need. The information is all there, and is well-written – you just have to find it.

Once Cambridge Lisp is running you are faced with a nearly blank screen. You can then type a Lisp expression and the system will evaluate it and print the result.

This is the way all Lisps work: The read-eval-print loop. This is a particularly ▶

```

Cambridge LISP (Atari R1.10) entered in about 170 Kbytes
Copyright (C) 1986 by Metacomco plc
All rights reserved.
Store image was made at 17:04:12    on 27-Aug-1986
Lisp version - 0.90/0.90    image size = 96636 bytes
  
```

```

Started at 00:32:42 on 20-Nov-1985 after 18.00 SECS - 56.9% store used
Input:
  
```

```

(DE recursion ())
  (PRIN 'Enter! two! numbers)
  (biggest (READ) (READ)))
Value: recursion
  
```

```

Input:
  
```

```

(DE biggest (num1 num2))
  (COND
    ((ZEROP num1) '(Second number is biggest))
    ((ZEROP num2) '(First number is biggest))
    (T (biggest (SUB1 num1) (SUB1 num2))))))
Value: biggest
  
```

```

Input: █
  
```

Cambridge Lisp – the opening screen plus short program

effective environment for software development and debugging as it allows you to selectively run parts of the program, examine the variables, make changes and explore the consequences, and all in very quick succession.

You could write programs from the read-eval-print loop, but using the editor is preferable. This can be accessed from within Cambridge Lisp, or as a stand-alone program in its own right.

You can use the stand-alone editor for any text processing task, in addition to developing Lisp programs.

Text is displayed on screen as it would appear on paper and can be scrolled up or down, with the action point flashing cursor always indicating the point at which any changes will be made.

The editor has about 50 immediate and extended commands. The former are single key strokes which move the cursor and delete characters. For instance, Lisp programs use vast numbers of nested parentheses and one command will match opening and closing parentheses.

The extended commands are used for handling blocks of text, searching, file operation and so on. Most can be preceded by a count to indicate the number of times they should be applied – this allows you to make global changes

throughout a file.

It would have been nice to see a macro-facility with new commands being created from a combination of existing ones.

The system includes a few special debugging facilities, the main one being Trace, where any function or variable can be marked so that when the function is called, or the variable changed, information about this is displayed on the screen.

Because tracing can easily result in voluminous output, there are a number of refinements for reducing this. There is also an Embed facility which allows any function to temporarily be redefined, usually to include special purpose diagnostics.

Normally the text of the user-defined functions is simply converted into list structures which are then executed by the interpreter when the program is run.

This is interpretive mode and the functions run relatively slowly. Yet when they are read into the system their conversion into list structures is almost immediate. Interpretable functions can also subsequently be modified, just like any other list structure, and this can be advantageous in advanced applications.

With Cambridge Lisp, it is also possible to compile any function. The

process is quite slow and the outcome of it cannot be manipulated in any way, but when a function is compiled it runs a lot faster.

There is excellent integration between compiled and interpreted functions. Except for improving the performance, compilation does not make any difference to the behaviour of the program (unless it is self-modifying) and compiled functions can be freely interleaved with interpreted.

One of the example programs supplied with the system is an expert system shell. Rules can be specified in the form of lists, very complex logic can be specified and the logic can be interleaved with ordinary executable Lisp code.

The really impressive aspect is the length of the Lisp program that handles it all – it is only about 100 lines long.

But it must be emphasised that a skilled programmer is needed – Lisp is a programming language and not an end-user product, thus it does need programming skills to get the best out of it.

Metacomco's Cambridge Lisp is an excellent implementation of Lisp. Once you can find your way around the manual it should prove to be a very useful tool for developing expert systems and other AI applications. □

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NEWSLETTER

High tech thrives on Sark

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

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

machines per head of population".

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

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

rying our mail run like a bus service in the summer, rough winter weather can easily cut us off for days at a time.

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

From the Antarctic with love . . .

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

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

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

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

"Inmarsat is an extremely reliable means of communications – though it's expensive at about £5 a minute. By using a MicroLink mailbox, however, my wife and I can exchange letters in a fraction of the time taken by voice calls and make considerable savings.

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

Help for the handicapped

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

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

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

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

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

Your chance to join MicroLink – see Page 35

Discounts on view

THE latest firm to display its wares in MicroLink's Shop Window section is run by Paul Lange, descendant of a Lithuanian family which emigrated to Britain at the turn of the century.

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

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

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

LINK TO CUT COSTS

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

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

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

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

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

Design for living

IN the May issue of *Atari ST User* I introduced you to pseudocode, a program design language. It's really just a posh way of saying that it's a tool that can be used to create and describe programs.

To illustrate how useful this language is, we developed an algorithm for having a drink in a pub. Figure I should hold no surprises – it's Figure V from last time. Indentation and underlining are used to show the structure of the program more clearly.

For a start it's easy to find the mini-algorithms as each one has been given an underlined title. Also you know exactly which code belongs to that mini-algorithm as it appears underneath it, slightly indented.

Now suppose we want to break down some of the tasks even further. We saw last month how *pay for drinks* could be broken down into:

```
open wallet
pass over money
receive change
```

and if this needs further explanation then *receive change* can become:

```
hold out hand
collect money
check amount
put change in pocket
```

Figure II shows these mini-algorithms put into our main piece of pseudocode. Have a good look at it as there's more to it than appears at first sight.

It might just look like a set of instruc-

```
go to bar
buy drink
consume drink

go to bar
stand up
leave table
head towards counter
stop at bar

buy drink
catch eye of barman
order round
pay for drinks
stop crying
```

In part 2 of his series Trevor Roberts brings Pseudocode into real life

tions and at one level this is what it is. However, it's a lot more than that.

It not only shows the instructions needed to achieve a goal (in this case get the editor to buy a drink) but it also shows how they go together. The major tasks are described broadly at the top left of the code.

These are given in fairly general terms. Any further explanation of these actions is shown in a mini-algorithm, whose title is underlined and indented for accuracy.

Notice that the further right a mini-algorithm starts, the more concerned with details it is, yet the less it actually does.

Difficult tasks are broken down into simpler tasks which are broken down into even simpler ones.

The result is that the overall structure and relative importance of the various

```
go to bar
buy drink
consume drink
```

```
go to bar
stand up
leave table
head towards counter
stop at bar
```

```
buy drink
catch eye of barman
order round
pay for drinks
stop crying
```

```
pay for drinks
open wallet
pass over money
receive change
```

```
receive change
hold out hand
collect money
check amount
put change in pocket
```



bits and pieces of the algorithm is shown pictorially in an easy-to-grasp form. You get to see the wood and then select the trees you're interested in.

I must point out that the way I indent and underline my pseudocode is my way – there's no proper, defined way of doing it.

It's not a language like Basic or Pascal where the rules are strict and unfor-giving. Pseudocode is meant to be a flexible, easy-to-use way of thinking about and designing programs.

If you spend more time thinking about a nicely indented layout than you do about the actual algorithm then you're missing the point. None of my pseudocode ever looks as neat or is as complete as the examples shown here.

Having said that, do try to be consistent in whatever way you treat your pseudocode.

You may not want to underline the titles of mini-algorithms or feel that an indentation of one space is enough. Fine and good, it's your pseudocode. But whatever you do, apply your rules consistently and you'll help yourself enormously.

The only real rule with pseudocode is clarity. There's nothing wrong with the

Figure I: Our drinking algorithm from last time

Figure II: Same algorithm, taken further

MEGAPAC

520 STF SYSTEM BY A.S.&T.

The new 520 STF from ATARI has been an instant hit since its announcement. The design has gained from experience with earlier ST and STM machines and the result is a practical and superbly engineered computer that will easily find its place in your home as well as in your business.

MEMORY:

The basic 520 STF has 192K bytes of ROM, an optional 128K bytes of plug-in ROM cartridges and 512K of RAM. The MEGAPAC 520 STF has bigger memory — a full ONE MEGABYTE of RAM, like the 1040 STF.

DISC DRIVES:

The basic 520 STF has a built-in single-sided disc drive. The MEGAPAC 520-STFM comes with two drives, one internal and one external. The latter is double-sided, offering twice the capacity (720K) of the built-in drive (360K). Your disc bill can be cut by almost half when compared with that of basic 520 STF users.

PROCESSOR:

The Central Processor unit (CPU) is a Motorola 16/32 bit 68000 chip, running at a clock speed of 8 MHz. It is further enhanced by Atari's own custom ICs providing a Direct Memory Access (DMA) channel for fast data transfer with other peripherals such as the ATARI SH204 Winchester drive or the Atari Laser printer (available soon) and a real time clock.

DISPLAY:

The 520 STF can display 40 or 80 column text on any domestic TV or colour monitor such as the Philips CM8533 or the dedicated ATARI SM125 high resolution monochrome monitor. Graphic is 600 x 400 pixels on the SM125, 600 x 200 pixels in 4 colours or 320 x 200 pixels in 16 colours on a colour monitor or TV. The colour palette contains 512 possible colours. Some ATARI software indeed uses the exceptional display hardware to produce stunning graphics with up to 256 colours at once.

MIDI INTERFACE:

The 520 STF has 3 programmable sound voices and a Musical Instrument Digital Interface (MIDI) to allow direct connection to a wide range of musical organs and synthesizers such as the Casio CZ230S.

MOUSE:

The 520 STF has its own dedicated mouse as part of its standard hardware.

PERIPHERAL CONNECTORS:

The 520 STF can be easily expanded by plugging in 'add-ons' through its ports. They will accept printer (Centronics port), Modem (RS232 port), musical instruments (Midi port), sensors (joystick port) and fast intelligent devices such as network, Winchester, laser printer etc (SCSI port).

BUILT-IN SOFTWARE IN ROM:

The 520 STF has 192K bytes of permanent software in ROM. This comprises GEMDOS, the disc operating software which is now becoming the dominating standard for 16 bit computers, and GEM, the Graphic Environment which uses pictures and drawing instead of cryptic messages to communicate with the user and the electronic Mouse in place of the keyboard to enter the user's commands.

SOFTWARE ON 5 DISCS:

The MEGAPAC 520 STF comes with 5 discs, containing an impressive collection of software by any standard:
Disc number 1: contains the BASIC language.
Disc number 2: contains LOGO, + DOODLE + MEGAROIDS, and STWRITER a WORDPROCESSOR program.
Disc number 3: contains Neochrome, a painting program and demo pictures.
Disc number 4: contains CPM utilities.
Disc number 5: contains the CP/M emulator.

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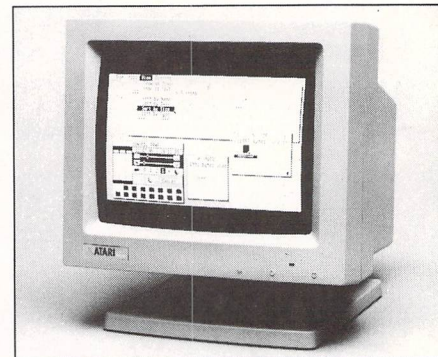
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Buying an A.S.&T. MEGAPAC instead of a basic 520 STFM means that you will have a complete system with everything added right from the beginning. After all, why should you make do with half the memory and put up with swapping discs with just one disc drive?

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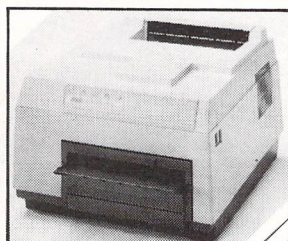
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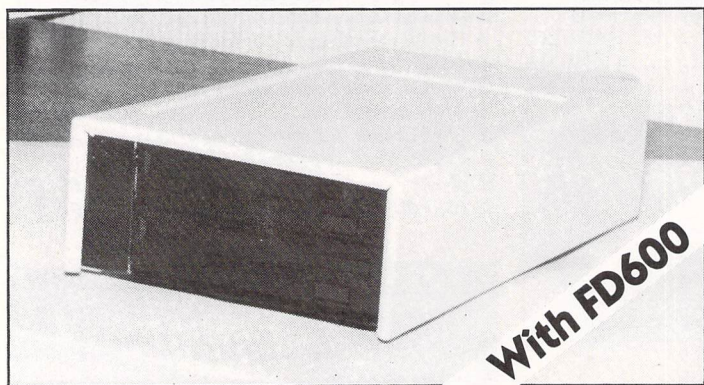
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Andrew Richards puts the ST into Jack Nicklaus mode

WORN out with word processing? Depressed by databases? Bored with bashing aliens? Then what you need is a relaxing hobby. Why not take up golf and spend a quiet afternoon on the links? However, there's no need to leave the comfort of your armchair as you can now play this great game on your micro.

You can play nine holes against the ST, or battle it out with up to four other players with the ST controlling the fifth. There are trees down each side of the fairway and bunkers around each green, so take great care when teeing off. Also watch out for strong winds, as these can carry your ball way off line, even out of bounds.

When the program is run you'll first be asked to input the number of players and their names, then you'll move on to the first tee. You'll see a full description of the hole, including its length, where the bunkers and trees are placed and the wind strength.

At this point you'll be told how far you are from the pin and asked which club you wish to use. You have a wood, nine irons and a putter. Enter W to use the wood, 1 to 9 for an iron or P for the putter. The wood will carry the ball furthest, with the one iron not far behind. The nine iron is for chipping on to the green and the putter is used only when you're close to the hole.

The program is quite well structured and you should find it quite easy to add your own features. Line 1240 holds the club strengths, 1270 to 1350 store the length of each hole and the bunkers, and lines 980 to 1040 contain various messages that will appear as you progress around the course. You can alter any of these and produce your own customised version of the game.

You'll find the ST an excellent player and quite difficult to beat, so get out on the course and get practising!

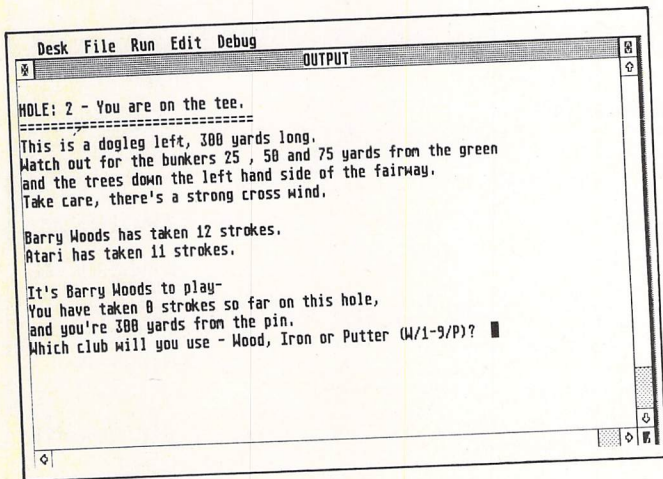
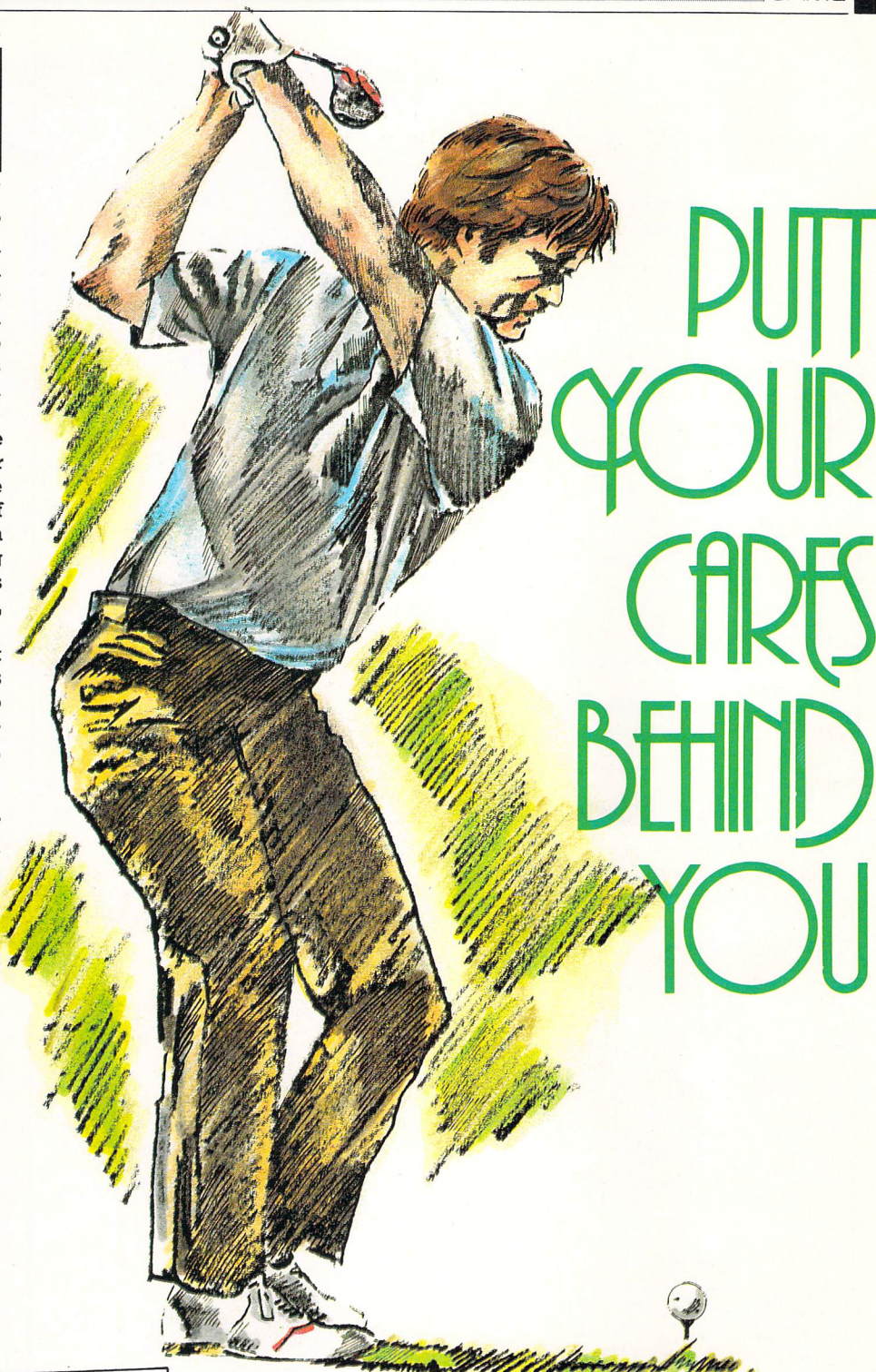


Figure I: It's Barry Woods to play and the ST is one stroke ahead

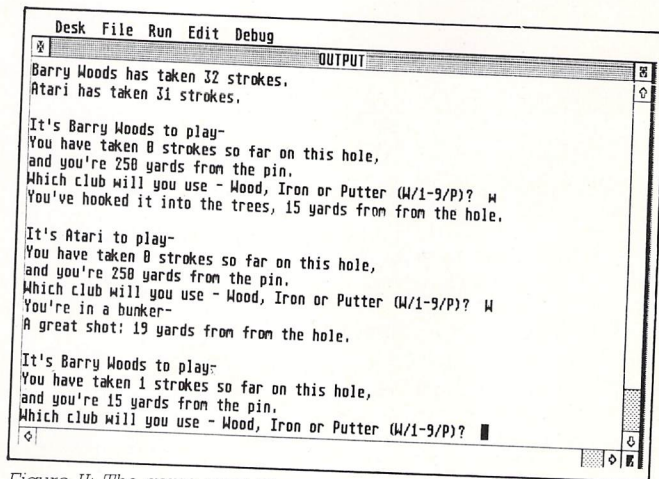
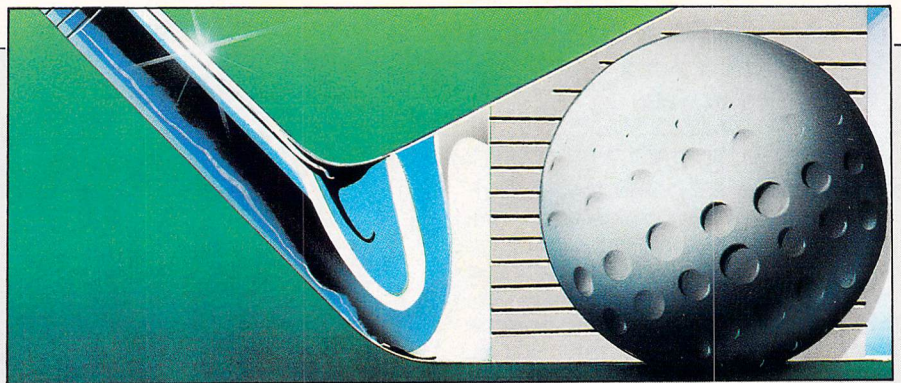


Figure II: The game goes on...



```

10 REM ***** Golf *****
20 REM By Andrew Richards
30 REM (c) Atari ST User
40 REM ***** ST Basic ****
50 REM Med/Hi resolution
60 CLEAR:x=FRE("")
70 GOSUB init
80 FOR hole=1 TO 9
90 GOSUB tee
100 done=0
110 FOR golfer=1 TO players
120 status(golfer)=5
130 WHILE status(golfer)>4 and distance(golfer)>0
140 GOSUB hit.ball
150 GOSUB report
160 WEND
170 total(golfer)=total(golfer)+shots(golfer)
180 done=done+distance(golfer)
190 NEXT
200 IF done THEN GOTO 100
210 NEXT
220 CLEARW 2:GOTOXY 0,0
230 ?"The final scores are:"
240 GOSUB scores
250 ? name$(best);" has won!"
260 k$=INPUT$(1)
270 END
280 REM -----
290 tee:
300 CLEARW 2:GOTOXY 0,0
310 RESTORE 1270
320 FOR i=1 TO hole
330 READ length,bunker(1),bunker(2),bunker(3)
340 NEXT
350 ?:"HOLE:";hole;"- You are on the tee."
360 ?:"=====
"
370 ?"This is a ";
380 IF RND(1)<0.5 THEN ?"dogleg left"; ELSE ?"dogleg right";
390 ? length;"yards long."
400 ?"Watch out for the bunkers";
410 ? bunker(1);";";bunker(2);"and"; bunker(3);"yards from the green"
420 ?"and the trees down the ";
430 IF RND(1)>0.5 THEN ?"right"; ELSE ?"left";
440 ?" hand side of the fairway."
450 IF RND(1)<0.4 THEN ?"Take care, there's a strong cross wind."
460 GOSUB scores
470 FOR golfer=1 TO players
480 shots(golfer)=0
490 status(golfer)=5
500 WHILE status(golfer)>4
510 distance(golfer)=length
520 GOSUB hit.ball
530 GOSUB report
540 WEND
550 NEXT
560 RETURN
570 REM -----
580 hit.ball:
590 ?:"It's ";name$(golfer);" to play-"
600 ?"You have taken";shots(golfer);" strokes so far on this hole,"
610 GOSUB bunker
620 ?"and you're";distance(golfer);" yards from the pin."
630 ?"Which club will you use - Wood, Iron or Putter (W/I-9/P)";
640 IF name$(golfer)="Atari" THEN GOSUB atari ELSE INPUT k$
650 IF k$="W" OR k$="I" THEN k$="0"

```

```

660 IF k$="P" OR k$="p" THEN k$="10"
670 k=VAL(k$):IF k<0 OR k>10 THEN GOTO 630
680 yards=INT((RND(1)*bat(k)/5)+bat(k))
690 IF yards>distance(golfer) THEN ?"Too hard, it's going past the hole-"
700 FOR j=1 TO 3
710 IF ABS(distance(golfer)-bunker(j))<5 THEN yards=INT(RND(1)*20)
720 NEXT
730 shots(golfer)=shots(golfer)+1
740 status(golfer)=1
750 r=INT(RND(1)*100)
760 IF r<5 THEN status(golfer)=5:RETURN
770 IF r<10 THEN status(golfer)=6:RETURN
780 IF r<15 THEN status(golfer)=7:RETURN
790 IF r<20 THEN status(golfer)=2
800 IF r<25 THEN status(golfer)=3
810 IF r<30 THEN status(golfer)=4
820 distance(golfer)=ABS(distance(golfer)-yards)

```

```

1040 DATA "Whoops! Landed in a pond. You're still"
1050 REM -----
1060 init:
1070 FULLW 2:CLEARW 2:GOTOXY 0,0
1080 DIM bunker(3),name$(5),distance(5),shots(5),total(5),bat(10)
1090 INPUT "How many players";players
1100 FOR i=1 TO players
1110 ?"Name of player";i;
1120 INPUT name$(i)
1130 total(i)=0
1140 NEXT
1150 players=players+1
1160 name$(players)="Atari":total(players)=0
1170 RESTORE 1240
1180 FOR i=0 TO 10
1190 READ bat(i)
1200 NEXT
1210 RETURN
1220 REM -----
1230 REM Club strengths
1240 DATA 200,180,165,140,120,100,80,60,30,15,3
1250 REM -----
1260 REM Length,bunker1,bunker2,bunker3
1270 DATA 200,20,50,100
1280 DATA 300,25,50,75
1290 DATA 250,20,55,100
1300 DATA 400,35,170,200
1310 DATA 350,100,200,300
1320 DATA 200,20,30,75
1330 DATA 320,45,80,90
1340 DATA 510,20,40,80
1350 DATA 400,30,35,50
1360 REM -----
1370 atari:
1380 k=10
1390 IF distance(golfer)>bat(k)+10 AND k>0 THEN k=k-1:GOTO 1390
1400 k$=CHR$(48+k)
1410 IF k=10 THEN k$="P"
1420 IF k=0 THEN k$="W"
1430 PRINT? " ";k$
1440 FOR delay=1 TO 3000:NEXT
1450 RETURN
1460 REM -----
1470 scores:
1480 best=1:PRINT
1490 FOR i=1 TO players
1500 IF total(i) THEN ? name$(i);" has taken";total(i);"strokes."
1510 IF total(i)<total(best) THEN best=i
1520 NEXT
1530 RETURN
1540 REM -----
1550 bunker:
1560 FOR j=1 TO 3
1570 IF ABS(distance(golfer)-bunker(j))<5 THEN ?"You're in a bunker-"
1580 NEXT
1590 RETURN

```

This is one of hundreds of programs now available FREE for downloading on **MicroLink**

```

830 IF distance(golfer)<5 THEN ?"You've holed it!":distance(golfer)=0
840 For delay=1 TO 2000:NEXT
850 RETURN
860 REM -----
870 report:
880 IF distance(golfer)=0 THEN RETURN
890 RESTORE 980
900 FOR i=1 TO status(golfer)
910 READ msg$
920 NEXT
930 IF RND(1)>0.9 THEN ?"Wow! Just missed a seagull!"
940 GOSUB bunker
950 IF distance(golfer)<10 THEN msg$="You're on the green,"
960 ? msg$;distance(golfer);"yards from the hole."
970 RETURN
980 DATA "A great shot:"
990 DATA "You're in the rough..."
1000 DATA "You've sliced it into the woods,"
1010 DATA "You've hooked it into the trees,"
1020 DATA "You've hit it out of bounds, you're still"
1030 DATA "Oh, no! Missed it! You're still"

```

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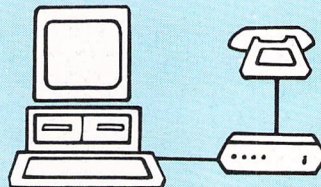
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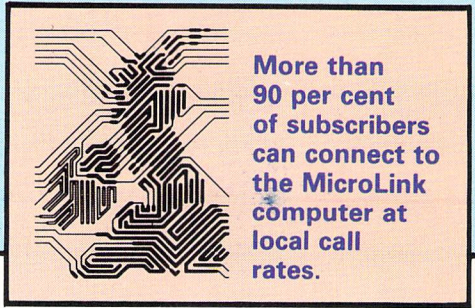


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Easier than a mouse?

A FEW years ago the Atari joysticks and Trak-ball were widely used for input on a variety of computers. Many of us, having since moved on to the ST, have wondered at the possibility of using those devices on the modern system.

The joystick presents few problems: It plugs directly into either of the available joystick/mouse ports, and as long as supporting software exists it will operate perfectly well. A recent article by Steve Holloway (in the May 1987 issue of *Atari ST User*) described a method of reading this from within Basic. But more of joysticks later.

The Trak-ball has two modes of operation; Trak-ball and joystick. Again, in joystick mode it will operate perfectly well, but anyone who has tried the Trak-ball mode will have found that it behaves unpredictably. Why – and what can we do about it?

It seems reasonable to expect the mouse and Trak-ball to be interchangeable since they both work on the same principle – a trackball is a dead mouse.

A light beam is interrupted by a rotating, slotted disc and the pulses of light received are converted into a square wave stream. One detector provides horizontal motion and one vertical. The difference in the two systems comes from the method of detection of direction – in the case of the vertical detector, whether the pulse stream originates from motion up, or from motion down.

On the mouse this is done by producing two pulse streams from each detector. The phase difference between them gives exactly the information required; up or down. For anyone unfamiliar with phase, this may be translated as saying whether the second stream occurs just ahead of, or just behind, the first. The detectors are arranged to produce this difference if rotated one way or the other.

On the Trak-ball the pulse stream for movement is the same as the mouse, but the direction is given by a second line being either zero or one while the pulse stream is being produced. The ST does not understand the lack of a pulse stream on this line, so it doesn't know whether to go up or down. Hence the problem.

Now, most of this so far has been the

Andrew Donald interfaces an Atari Trak-ball to the ST

bad news: Here is the good news. The Trak-ball actually generates this second pulse stream and it is the internal circuitry which changes it into a plain zero or one. With a little internal chopping and changing we can make the Trak-ball produce exactly the right signals and still retain its ability to operate in joystick mode if required.

The Trak-ball unit may be opened up by lifting the small rubber feet on the bottom and removing the four screws hidden underneath. (Make sure it is not plugged into the computer while making these modifications.) Once this is done the top may be lifted off and the internal circuit board is revealed. Remove the ball and you will see the shape of the board, as shown in Figure 1.

By the mitred bottom right hand corner you will observe two horizontal rows of seven soldered joints. This is where the pins of a 40106 CMOS integrated circuit come through the board. The joint fourth from the left of the top row is where we will find the signal for horizontal direction, and the joint third from the left on the bottom row is the vertical signal direction.

At this point in the circuit the pulses

```

10 REM Program 1
20 REM Joystick Port Service
30 REM Routine for Nov. '85 ROMs
40 REM Joystick buffer at $E07
50 REPEAT
60 IF ?$E09=1 THEN PRINT " UP"
70 IF ?$E09=2 THEN PRINT " DOWN"
80 IF ?$E09=4 THEN PRINT " LEFT"
90 IF ?$E09=8 THEN PRINT " RIGHT"
100 IF ?$DFE=$F9 THEN PRINT " FIRE"
110 REM This is the mouse buffer, $D
FE
120 REM Fire+right mouse are hardwar
e identical
130 UNTIL 0

```

Program 1

have been detected and converted into a nice clean wave-form. These have to be passed to the output in place of the 0 and 1 signals currently used. See the details on Figure 1.

Approximately level with the top of the central hole, but on the left side of the board, are a further two sets of eight horizontal joints. Don't confuse them with the two lines of seven just below. Under the 16 pins of the top rows is a CMOS 4019 IC. This has the function of a four pole switch.

The Trak-ball mode switch activates this chip and causes either the four joystick inputs to be connected through to the outputs, or the four Trak-ball inputs to go to the outputs. What we will do is to cut the tracks supplying the 0 and 1 direction signals from the Trak-ball and replace them with the pulse streams from the 40106.

Dealing with the horizontal signal first. The 4019 pin pad, second from the right of the top row of the two rows of eight, is where the horizontal signal is required. First cut the track running from this pad to isolate it. The best way to cut a track properly, is to make two adjacent cuts with a small, very sharp knife and then to scrape away the track between the cuts. The pad must be properly isolated.

When this is done, a piece of fine, insulated wire, (Wirewrap wire is ideal) should be soldered to the isolated pin pad and then be run over the board surface and soldered to the fourth pad from the left, top row, of the 40106. Ensure that the wire doesn't run across the central hole of the board.

Now for the vertical signal. Back to the 4019, cut the track close by the pad 4th from from the right, bottom row. When properly isolated, solder a wire to the pad and run it round to the third from the left, bottom row pad of the 40106. With this soldered in place the unit should now be operative and may be checked out before reassembly.

Power up your ST with the mouse connected in its usual position. Once the desktop is showing, unplug the mouse and plug the Trak-ball in its place. Put the mode switch on the Trak-ball to TB, replace the ball and you should now be able to move the cursor with the device. If all checks out correctly then disconnect the Trak-ball and reassemble.

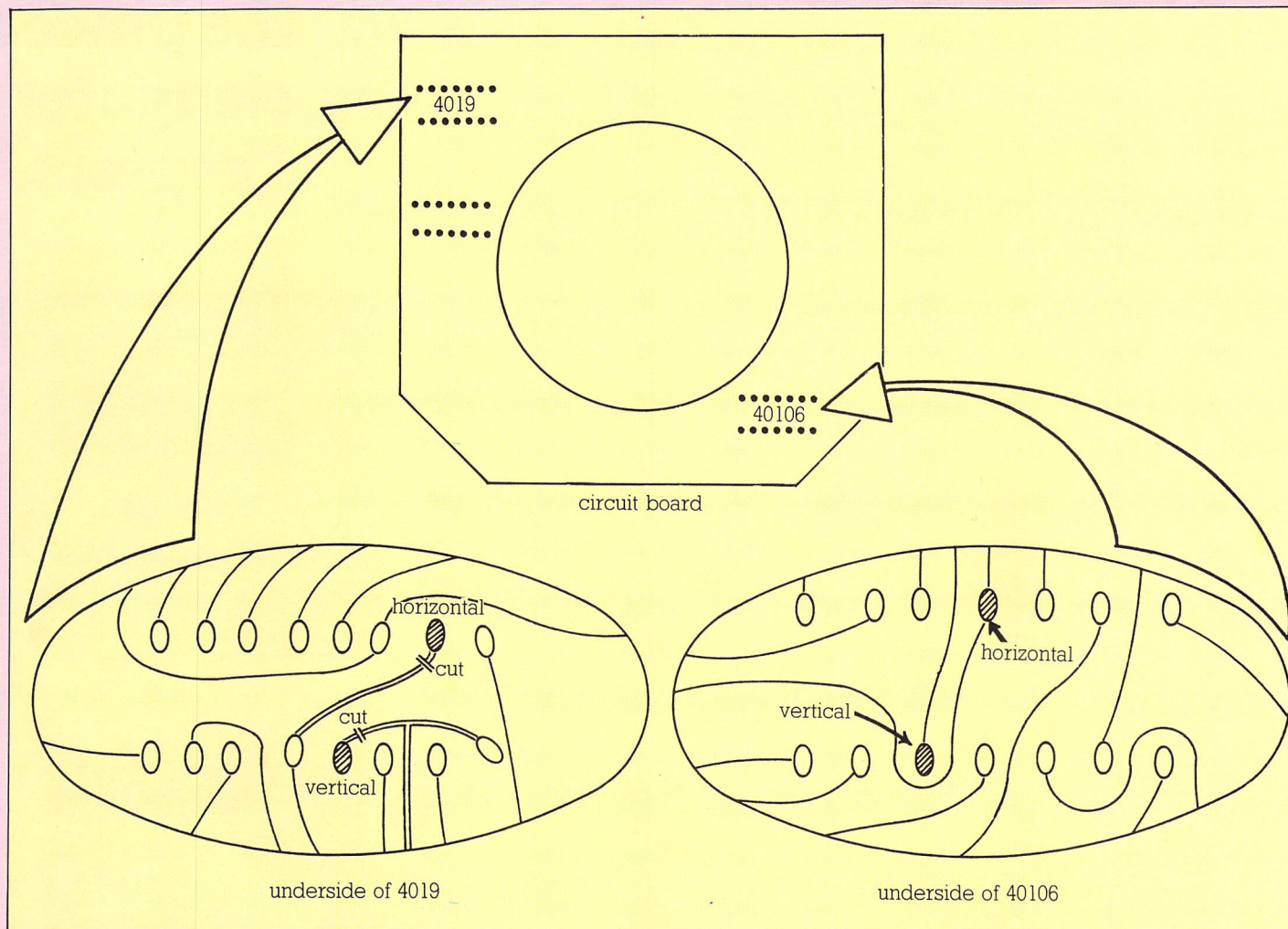


Figure 1: Atari Trak-Ball circuit board details

It is advisable not to have the Trak-ball plugged in when re-booting the system. The ST is very vulnerable to odd signals at the mouse/joystick ports on booting up and will crash if there is anything happening which it doesn't understand.

Try booting up with the right mouse button depressed and you'll see what I mean. Just plug it in as and when it is needed. Don't forget to set the correct mode first. Note also that the Trak-ball has only one button equivalent to the fire button in joystick mode. In Trak-ball mode it is equivalent to the left mouse button.

To access this extra facility from your own programs, it is necessary to understand a little of what is happening inside the machine. The two mouse/joystick ports and the keyboard are under the control of a separate processor; a 6301 single chip computer. This has its own Rom and handles all polling and input from these devices. It interrupts the 68000 processor only when it has some information to pass on.

It also contains an internal clock running in one second increments. It will respond to a variety of different commands and modes of operation but

because of Gem's sensitivity to situations which it doesn't understand, I would recommend that it is left in the default mode. This sets port 0 for mouse operation and port 1 for joystick. Your Trak-ball may then be used as a mouse in port 0 or as a joystick in port 1.

Access to port 0 is well-handled in a language like Fast Basic and the commands which apply to the standard mouse, (MOUSE, TAKEMOUSE, SET-MOUSE and so on) will operate equally well with the Trak-ball in TB mode. Use it as you wish in your own programs.

The joystick in port 1, on the other hand, is usually ignored. Some programs have allowed for its connection and look for it, but this only happens if the code is specially written into the program. If you wish to use joystick port 1, then you must do the same.

In the default condition, operating a joystick in port 1 does in fact interrupt the 68000. A message packet containing information about the interrupt, is passed into main memory, but the ST operating system ignores it and returns from the interrupt without taking any action.

For the November 1985 set of roms this buffer is four bytes located at \$E07. The

date of your roms is indicated by the default date in the Control Panel accessory from a cold start, or the instruction, PRINT \$FC0018 in Fast Basic, will return 11201985, indicating the rom date of 20th November 1985.

Peeking into this joystick buffer will return the information we require. Program I is a Fast Basic listing which continually monitors the buffer and reports the state of the joystick. This operation may be easily incorporated into your own programs.

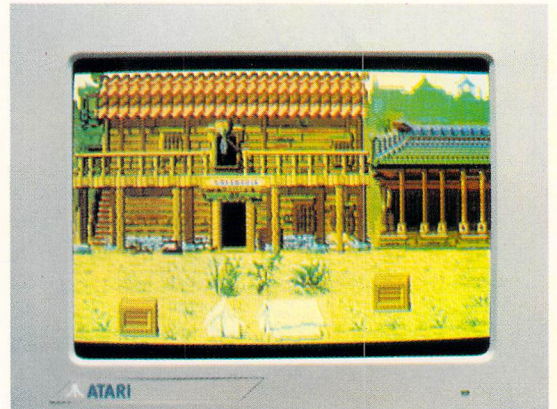
One point to note about this routine. The fire button, you will observe, is not being tested in the joystick buffer! It happens that the right mouse button and the joystick fire button are, from a hardware point of view, absolutely identical. Pressing either is taken by the system as a mouse message and is passed into the mouse buffer; four bytes at \$DFE. It is there that we have to look for the joystick fire button.

8 bit owners who have upgraded to the ST will know how useful this add-on can be. Try it with art packages such as Degas or Neochrome for a different feel – you may find it easier than the mouse for controlling fine detail. □

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



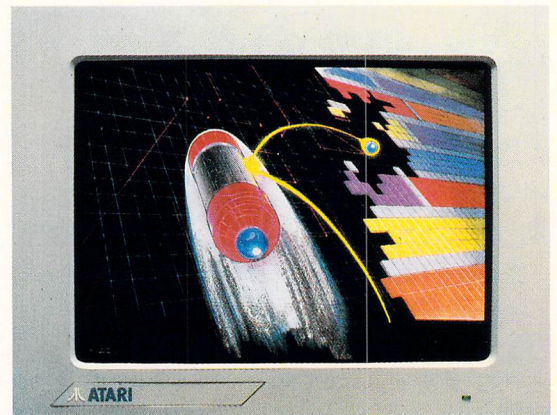
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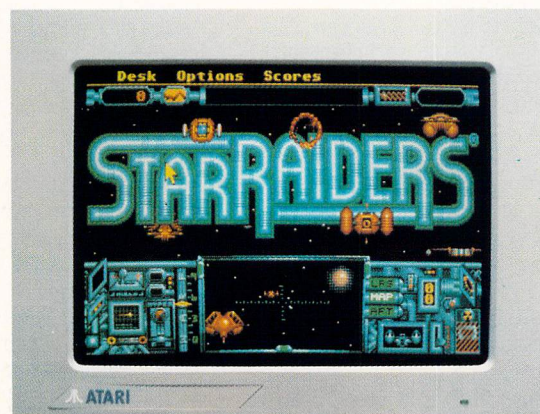
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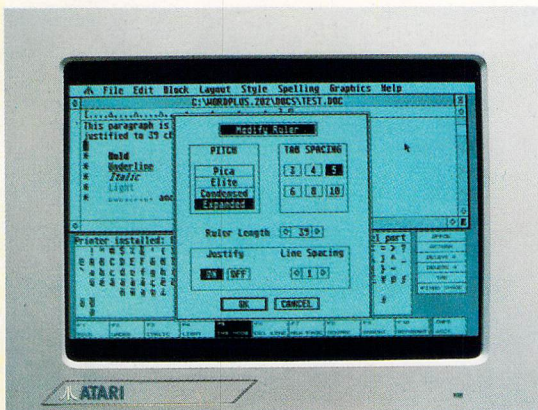


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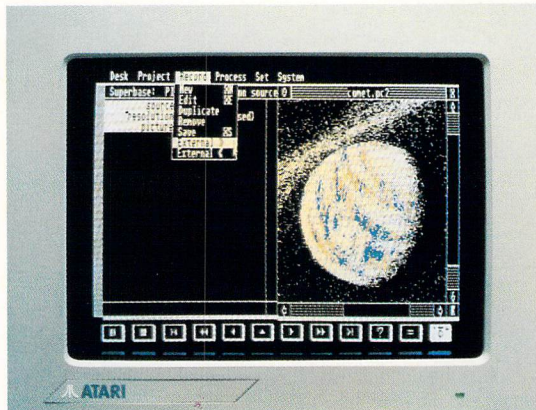


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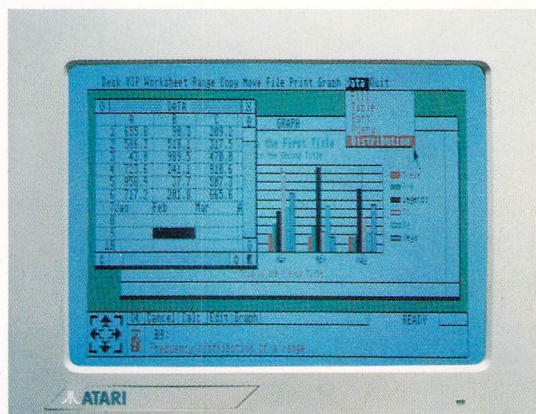
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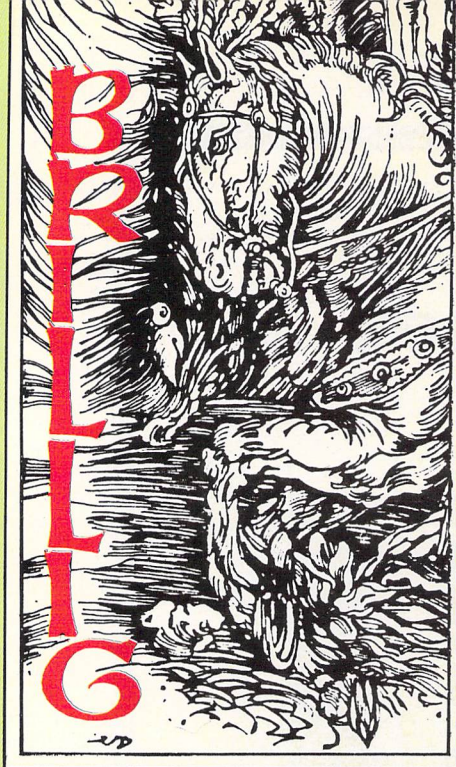
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ATARI 520 ST

WORKS HARD · PLAYS HARD



Cutting through the red tape

ONCE upon a nightmare, a man went to his bank to tell them that he had just moved house and would they note his new address. He should have known better.

The bank would not accept the notification because it had not been completed on their own special change-of-address form and the computer would not like that.

Not to worry, said the bank, we'll send you the correct form – fill it in, return it and everything will be just hunky-dory.

Guess what? The bank sent the form to his old address. Unsuspecting and naively innocent, the man tried to use his credit card and found it had been invalidated. Guess what – the bank had cancelled his credit card and reissued a new one, sending that to his old address.

The man tried talking to the bank, filling in oodles of new forms and endeavoured to get a new credit card issued, but all to no avail. The poor wretch was yet another victim of that curse of the civilised world – Bureaucracy.

Now if you've ever been caught up in the sticky coils of red tape, whether it be bank, postal service, airline, government, telephone company or any other known generator of the scarlet stuff, then you're going to love this new, painfully funny, Infocom text adventure.

And I mean painfully funny. Many of the situations could be all too familiar to you and could cause blood pressure to rise and the ulcer to throb.

Bureaucracy is also very, very funny and just as likely to have your face aching with smiling at its wit and humour. That is



what you might expect since master of the comically absurd, Douglas Adams, played a major part in writing it.

Bureaucracy begins by warning you that you do not have a licence to operate the software. In order to avoid a wait of six months while a postal application is processed, you may continue to play provided you complete an on-line, electronic application form.

And what a masterpiece of bureaucratic computer form design – the cursor leaps wildly from field to field with no logical pattern to its erratic progress.

Among the questions you'll be asked are the name of your previous and current boy/girl friend and your least favourite colour. The immediate response to your completion of the form might lead you to think that there's a bug in the pro-

gram since you are initially addressed as being of the opposite sex.

It's no bug, just an early example of bureaucratic bungling to stoke up your blood pressure. Untypically, this particular blunder is soon rectified. Much of the information you feed into the form is used to splendid effect later in the game.

Your role in the adventure is that of a new employee of Happitec Corporation who are sending you on a two-week, all-expenses-paid trip to Paris. There you'll attend a training seminar but will still have lots of time and cash for fun and leisure.

A money order has been sent to your new home and you can pick up the airline tickets at your travel agency.

What a benevolent employer! Well, maybe not – there's a sting in the tail of

Program: *Bureaucracy*
Price: £34.99
Supplier: *Infocom c/o Activision, 23 Pond Street, London NW3 2PN.*
Tel: 01-431 1101

your instructions. "Be sure to be on time for your flight. We've found that new employees who miss the training scheme usually aren't very happy at Happitec." Point taken.

Two numbers are shown at the top right edge of the screen indicating the state of your blood pressure. Every time you enter an action that is of no use or whenever you encounter frustrations in your dealings with people and events, your blood pressure soars. It descends when life is calmer.

Should the reading go too high, you expire and must restart (or restore a saved game). The Score command will access your marks (out of 21), blood pressure status and current rating.

The game begins with you in the front room of your new apartment. The place is pretty bare because the removal firm have slipped up over the dates.

A delivery man turns up but he doesn't have your money order. What he does have is a bag of llama treats which, according to his records, you ordered.

If you want this bizarre package, it's payment on delivery – he'll take Excess or Beezer credit cards which you just happen to have in your wallet. (By the way, what is the largest known number in the universe? Yep, your credit card number).

Your back room has a few items in it including a computer and a telephone-cun-answering machine. The computer is a Boysenberry (with a partially-digested purple berry as its logo!) on which you can run an adventure or an eclipse prediction cartridge.

The adventure (DORK I) soon crashes out with an internal error message (Boysenberry products are clearly unreliable). A couple of other computers are referenced elsewhere in Bureaucracy – a Daktari SM and a Cormorant Honcho.

I strongly recommend that you listen to the answering machine and dialling of several telephone numbers – this had me laughing so much I did it all over again. One of the delights of Infocom adventures – and Bureaucracy in particular – is the amount of thought, wit and detail that has been lavished on the program.

You'll get an entertaining response from far more of your inputs with Infocom than any other adventures you care to name.

Rampant bureaucracy awaits outside your apartment. The Fillmore Fiduciary Trust Bank will have you tearing your hair out as you move from one to another of their 10 teller windows, trying to change your address, make a deposit or withdrawal or cash a cheque.

In the Travel Agency the agent sits waiting to misunderstand where customers want to go and how to get there just so she can earn a fat commission by sending them to Djakarta.

She's the height of tact and diplomacy – show her your passport and she'll say "Visa's fine but, hey, what kind of happened to your face, buster?" Well, you



"We delivered the change-of-address form just in time!"

were cautioned earlier when examining your passport photo that "you wonder if you really do look like a dead llama".

The fast food restaurant is badly named, for the food is not fast (ordering is a complicated process) nor is it food (small, wrongly-cooked, dog-eared burgers).

The waiter who eventually takes your order is the type who kicks beaches in people's faces. He has small simian eyes, hands like hairy hams and the effort of reading his own writing puts a great strain on his mental tackle.

The mansion house is particularly interesting. In it you'll find a macaw with its left wing missing and who screams "Nuke the whales!" and other objectionable slogans (a right wing parrot!).

In the nearby trophy room, a dowdy matron sits with her ear trumpet glued to the radio. In her lap nestles an elephant gun.

The adventure is crammed with humour. Examine the modular jack that comes with the computer, for example, and you'll be told "It is modular and it is a jack. Hence the name modular jack". In Zalagan currency, a particular stamp is worth many Zalagasan Wosnames – "they were too idle to think of a name".

As to be expected with Infocom

products, the packaging is immaculate. In it you'll find the letter from Happitec, some friendly advice from your bank, an advertisement for Popular Paranoia magazine (Did you know that cash dispensing machines are used to keep track of your movements?), and a tiny, thin pencil for completing your credit card application form.

This form is in triplicate (make sure you check out the copies) and as well as being a bureaucrat's dream, is genuinely funny.

There's no doubt that this new Infocom adventure is a worthy successor to Hitch Hiker. It combines all the professionalism and quality that Infocom bring to their games with the zany and entertaining style of Douglas Adams' writing.

What is certain is that Infocom will score a direct hit with their public – Bureaucracy is as fresh, fertile and funny an adventure as ever cracked across your screens. And you can take that from me in triplicate.

Bob Chapell

Presentation	10
Atmosphere	10
Puzzlement	10
Value for money	10
Overall	10

SAMPLE CHANGE-OF-ADDRESS FORM

Form 624ZB7M-A

FILLMORE FIDUCIARY TRUST CHANGE-OF-ADDRESS FORM

(For use by Fillmore Fiduciary Trust customers and others as explained in the instructions. Please read instructions carefully before completing this form. Type or print clearly using black ballpoint pen.)

Part I Vital Information

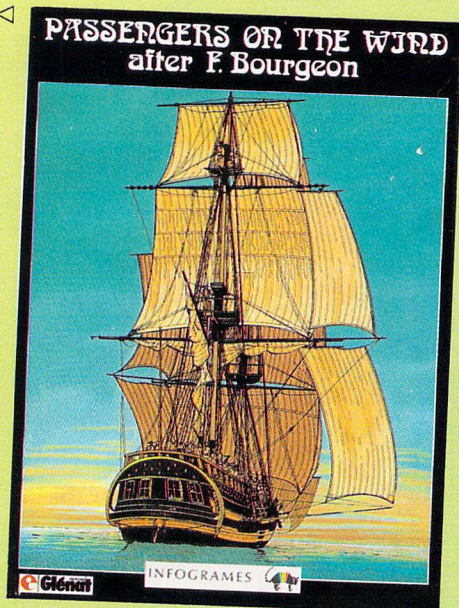
- Name ▶ Millard Fillmore
- Name of Spouse ▶ Gwendolyn
- Old Address ▶ 1600 Pennsylvania Ave.
- City ▶ Washington State ▶ D.C.
Zip
- Old Telephone ▶ (202) 555-5555
- New Name ▶ Lesty Mazzotta
- New Spouse ▶ Bubbles
- New Address ▶ 17237 Crescent Terrace
- City ▶ Rhinoceros State ▶ N. J.
Zip
- New Telephone ▶ (201) 555-5556

Part II Personal Information

- Are you Male Female Banker
- Is change of address for Individual Entire Family Firm Pet
- Are you moving to Houseboat Fallout Shelter Commune Laundrette
- Do you wear Pinstripe Suits. Custom-made Shirts Burberry Raincoat
 Wingtip Shoes Other (itemize) ▶ Rubber Boots

Part III Dates

- Date filed (must be at least 8 weeks before moving date) July 4, 1987
- Moving date (must be within 6 weeks of filing form) November 24, 1987
- If temporary, expiration date



FRANCOIS Bourgeon is a name that means very little to most people in this country but in France it's a very different matter.

Bourgeon is, by all accounts, one of the leading lights in the world of comic strips. Although a self-confessed fan of this form of art, I must admit to never having heard of him before.

In France, though, he is undoubtedly the bees knees and critics have hailed his mastery of script and graphic artistry.

His adult comic strip masterpiece, *Passengers on the Wind*, has sold three million copies worldwide and has been awarded the most prestigious French honour that can be given in this field, the Grand Prix Du Salon D'Angouleme. Yes, well, I haven't heard of that particular prize either but it sure sounds impressive.

The point to which I am wandering is that the French software company Infogrames has taken Bourgeon's work and transformed it into a computer adventure. Has it succeeded in capturing the spirit of

Program: Passengers on the Wind
 Price: £17.95 (disc) £14.95 (cassette)
 Supplier: Infogrames, Mitre House, Abbey
 Road, Enfield, Middlesex EN1 2RQ.
 Tel: 01-364 0123

Losing in the translation

Bourgeon's work? Sorry, I am not competent to judge that. What I will say, though, is that while *Passengers on the Wind* is certainly an original piece of software, I would not rate it very highly as an adventure.

The game is set on the eve of the French Revolution in the slave trade triangle - Brittany, America and Africa. Hoel, a Breton sailor, has been unjustly accused of murder and has fled with Isla, an apparent adventuress who is in reality a usurped countess. Romantic stuff, this. The aim of the game is to regain Hoel's honour and Isla's title.

The screen is split into three sections: The main section occupies the top two thirds of the screen and is used mostly for displaying the current scene. Small overlaid pictures and large slabs of descriptive text often overlay this area.

A smallish section at the bottom left is used to display a character's face and shows who you are dealing with. This area can be rolled up and down, accessing other character symbols.

The remaining section provides short text messages, mostly character's speech or thoughts, and a series of options from which you must select your next action.

The adventure is meant to unfold like a book and, just like a book, is divided into episodes - 10 in this case. No typed input is required as all actions are carried out using the mouse.

At the start of an episode the player must select a character by pointing the mouse at one of the people shown in the main scene. This person will then pop up in the symbol section. When this is pointed a paragraph appears in the text window telling you what that character is thinking or saying. This can be repeated

for all the characters in the scene.

From time to time the speech section will display some text in a different colour. This indicates a choice must be made, and to see what other choices there are the text window must be scrolled. For instance, a character may say words to the effect: "That's a good idea. I'll do it" or "No, I will not trust you."

You have to choose which response to select and further developments will flow from your selection.

The graphics are of a high quality and quite evocative. The music and sound (memorable theme tune and waves beating on the shore, for example) are used to create an unusually atmospheric effect.

The text is literate, even poetic in some places. The rest of the story is not so happy, I'm sorry to say.

Because of the structure of player interaction the adventure plays too slowly and clumsily for my taste. There are other drawbacks too. When, as adventures will, the game comes to a premature end - sometimes you can only detect it because nothing happens in response to usual mouse action. You have to re-boot to start again. The manual says that the Escape key will restart an episode but that key and all others refused to budge the program.

The manual also makes no mention of the mouse, preferring to talk about a joystick. Only the mouse will work, despite what the manual says. Further, it states that it is "absolutely essential" to read the accompanying plot synopsis (in comic book format) before you play. Unfortunately, said comic in my review package was written in French!

If this is how the package goes out, I'm afraid that unless you're well up in parleying Francais you'll find the plot somewhat difficult to follow.

Obviously, some work needs to be done to make the package acceptable to the English-speaking market - even the desk top icon legends are still in French!

Passengers on the Wind is a strange blend of good graphics, sound and text with substandard documentation and uneasy player interaction. The result is an average adventure which, given a different format, might well have been an exceptional one.



Presentation	5
Atmosphere	9
Puzzlement	7
Value for money	7
Overall	7

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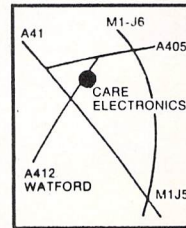
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The truth about TELEX

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You could go the conventional way and buy a dedicated Telex machine. The cheapest will cost you £1,604 (the Whisper), the dearest £2,892 (the Cheetah). You will also need a separate telephone line, costing £101 to install, plus £404 a year rental. That's a total outlay over the first year of a minimum of £2,109. (All prices include VAT.)

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

How do I turn my Atari ST 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 ST users on *MicroLink*. With it you can also read the news as it happens, go teleshopping, create your own closed user group, send telemessages and electronic mail right round the world, download free telesoftware programs directly into your micro... and much more.

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Because it's a standard means of instant communication between businesses. Today there are 150,000 Telex machines in use in Britain - and more than 2 million worldwide. It's 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.

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How to join:
See Page 35



Sounds of music

ONE of the main attractions of the ST – apart from Gem, its graphics, speed, ease of use and so on – is its memory. You can do an awful lot with 512k or one megabyte, but some applications need this much just to get off the ground – and sampling is one of them.

That said, two budget price samplers have appeared on the market simultaneously, so how better to spend a wet afternoon than by filling your ST with digitised sound?

The Pro Sound Designer (PSD) plugs into the printer port and must be powered by a PP3 battery. It houses two mini jack sockets, one for input and the other for output to a hi-fi for improved quality, though this requires the Hi-Fi Upgrade kit.

The program runs in low resolution mode. The main screen is impressive and all operations are icon driven and make full use of the mouse. In the centre of the screen is the Waveform Display area which produces an oscilloscope-type display of incoming sound. This should fill the display, but if it gets clipped at the top and bottom you know the level is too high. You can freeze the display by clicking

Ian Waugh looks at some newcomers on the ST musical scene

the pause button.

Below this is a long window which displays the whole of the sample, or as much as can be squeezed in. A sample could last – at 3KHz on a 1040ST – for 4 minutes 20 seconds. The quality is pretty poor at that rate – but just feel the width.

The record and playback speeds are independently adjustable from 3KHz to 30KHz. The higher the rate, the better the quality. Speech at around 8KHz, the default rate, is reasonable. To record a sample you click on the REC icon and press the spacebar to break out before your time is up.

An auto record option uses pointers in the Waveform Display area to define the level at which recording will start. An auto play function enables an outside

source to trigger playback. The manual suggests this could be used as a burglar alarm ("Help", shouts your ST, "someone is trying to steal me!"), as an answering machine ("This is your ST speaking...") or just to scare Granny if she sneaks into your room to play Starglider.

You can define a section of the sample with start and end markers, and reverse the marked section – you can also play it without physically reversing it, which is great fun). Or you can cut out the section and do a transparent copy which overlays one section on to another, although this results in a reduction in volume.

You can also magnify and telescope a section to help edit it more accurately, and you can do a straight block copy – during which I twice crashed the program. You can loop a section too, but if you want to produce an unbroken sound you'll have to edit very carefully to avoid a glitch. But this is also a problem on professional samplers.

Counters tell you exactly where the markers are and how large the marked sample is – all jolly helpful and friendly. You can assign parts of the sample to the function keys displayed on screen and so

store the marker positions and the playback speed. Clicking on the key or pressing it manually will playback the section.

Unfortunately there is only one demo sample on the disc: A young lady saying, "Welcome to Pro Sound". It was recorded at 8KHz and is quite distinct, if a little noisy. For your own samples, increasing the sampling and playback rate produces better results but quantisation (a breaking-up of the sound) is still quite apparent. This is perhaps to be expected on budget-price samplers.

One of the delights of a sampling program such as PSD is the ability to playback the samples from within your own programs. The hardware need not be attached, so you can give copies to friends. The EXAMPLES folder contains programs to help you do this in Atari Basic, Fast Basic and C.

As a further bonus, PSD includes a sound chip editor which drops down in front of the sampler screen. It uses a similar type of display and lets you manipulate the 16 registers which control the ST's sound chip.

When you have created a sound you like you can save it to a function key (and thence to disc) and load it into your own programs to use with Basic, C or the XBIOS DOSOUND command in 68000 machine code. There are demo programs on the disc to illustrate the procedures and sample effects to load and play.

This certainly takes a lot of effort out of programming the chip and you can have lots of fun with it. To use the editor in a musical context would have been nice, and the addition of a music editor even better, but that's only my wishful thinking.

On now to Replay. If you moved up to the ST from an 8 bit Atari you may have heard of 2-Bit Systems, which produces a Midi interface and a sampler cartridge for the 48k XL. The company has now turned to the ST with Replay and Digi-Drum, distributed by Microdeal.

The Replay Cartridge can be used alone or in conjunction with Digi-Drum. It plugs into the cartridge port, needs no battery and has two phono sockets – one for input and one (built-in) for output to a hi-fi.

The main screen is divided into two: The top half lists the controls and the sampled waveform is shown at the bottom. The program is very easy to use, but surprisingly, it uses the cursor keys instead of the mouse. That wouldn't be so bad, but the keys don't repeat when you hold them down – which means lots of jabbing.

You can sample at six rates: 5KHz, 7.5KHz, 10KHz, 15KHz, 20KHz and 31KHz. The higher rates let Replay's 10KHz filters come into operation which improves the sound. Lower rates will usually suffice for speech and may be useful if you are trying to cram a lot of sample into a little

memory. To record a sample you just press F9. To make sure you record at the optimum level, a volume indicator shows if the incoming sound is peaking or distorting.

A monitor mode plays the sound through the selected output so you can use your ears too, but you can't monitor and use the volume meter at the same time.

It's very important to record a sample under optimum conditions to get the best results: Low volume samples, and those which fade, produce quantisation. The cleanest samples are those which start and finish quickly – drum sounds are an ideal sampling source.

The sample's waveform appears at the bottom of the screen and, as with PSD,

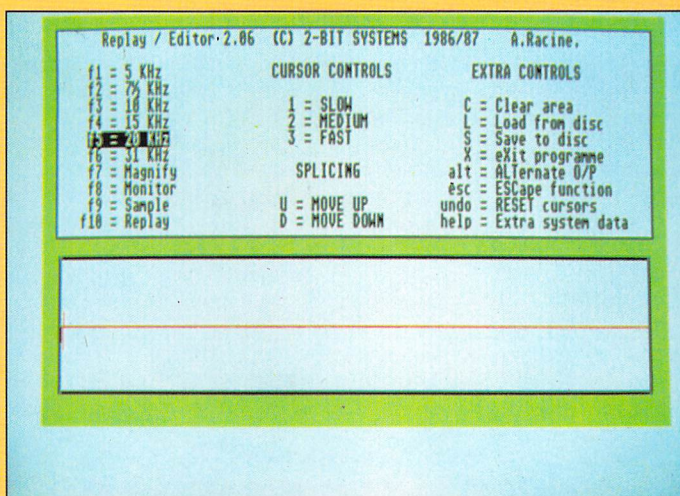
scope but you can reset the display with the Undo key.

Having defined a section of the sample you can produce multiple copies or delete it. You can also create a gap in a sample and close up a gap. New options are being added to let you overlay one sample with another and perform block move and copy operations. Even with the existing facilities it's easy enough to edit HELLO into H-H-H-HELLO or HEL-L-L-LO.

Other features let you reverse a section and produce a fade-in and a fade-out. You can also loop a sample for continuous playback but, the same warnings about glitches apply to Replay as well as to PSD.



Prosound sampler screen



Replay in edit mode

you can define a section with start and end markers using the cursor keys. Movement can be coarse, medium or fine and the resolution is set by pressing the 1, 2 or 3 keys, but you'll probably never use the coarse setting. Whenever the waveform window is redrawn or magnified the speed defaults to medium which is a bit of a nuisance.

Replay has a magnify function which can be called repeatedly to enlarge a section right down to byte level. Here, the screen will display a mere 600 bytes of sample in great detail. There is no tele-

You can load samples into Digi-Drum or use them in your own programs and the Replay cartridge does not need to be attached unless you want to send the output to a hi-fi. The BASICS folder on the disc reveals programs to play samples from Atari Basic, Fast Basic and GFA Basic and there's a short demo program to prove the point.

The manual is concise and includes technical details so programmers can make better use of the samples in their programs. In fact, you are encouraged to experiment. It also hints at how you might ▶



*Digidrum's
cymbals of
power*

apply data compression techniques. There are no samples on the disc, which is a bit disappointing as it's always nice to know what manufacturers can do with their own products.

The disc does include an Echo routine which can produce four different kinds of echo – two multi and two single. It only works on live signals entering the cartridge and there is some quantisation as it runs through the system, but it's a fun extra.

There are also two programs called Bass and Treble (read the CONTENTS file for details) which produce real time moving spectrum analysis displays of the sound entering the cartridge. They only work in colour and although you can't hear the music and the bonny patterns they are very impressive.

The quality of Replay's playback is comparable to the sampled sound in Starglider so that'll give you a yardstick to measure it by. Output through your hi-fi is even better.

PSD's playback quality is perhaps not quite as good. Both have a degree of quantisation and PSD's seems lower pitched. I was able to load the PSD sample into Replay and although it played at 1/2 KHz slower it was just a bit clearer which seems to indicate that Replay's decoding routines also have the edge.

You generally get what you pay for, and although neither sampler has anywhere near the quality of a dedicated sampling keyboard they are certainly fun. I can see both these samplers being used to put speech and music into games programs.

Digi-Drum, as you have probably guessed, turns your ST into a drum machine and the sounds it uses were recorded with Replay. Like the other programs, this is very easy to use, and loads with a demo song – so you don't actually have to do anything to hear it in action.

In good old traditional drum machine style, a complete drum track or song is constructed from a number of patterns, in this case up to 99. Each pattern can have from four to 32 steps and each step can

hold one or two sounds from a total of 16. A song consists of up to 70 steps each containing the number of a pattern and the number of times it is to repeat. Don't worry – it's not as complicated as it sounds. The pattern edit screen is used for construction, and the centre of the screen shows a grid containing the number of steps in the pattern. Down the left is a list of the 16 available sounds. You move around the pattern grid with the cursor keys (like Replay, it doesn't use the mouse and the keys don't repeat) and enter a sound by pressing the 1 or 2 key. These represent channels one and two, though it's not in stereo, and you can't play two sounds on the same channel on the same step. If you try, the existing one is deleted.

As a normal drummer with two hands and two feet can play four drums at once, the two drums restriction is rather limiting, but you can still produce some good patterns.

You can enter sounds in real time, which is one for the skin-basher brigade, but I would rather have been able to listen to the pattern while entering sounds in step time.

You can rename a sound and load a new one into any of the 16 voices. You can load sounds singly or all 16 at once – a collection which the program calls a kit. You can also load a single pattern or all the patterns and, of course, a complete song.

The tempo can be varied from one to 49, although standard metronome values in beats per minute would have been better. You can also alter the playback rate of the samples (which the program calls speed) from 10KHz to 20KHz.

If you channel the sounds through your hi-fi via Replay you'll find the quality of short punchy drum sounds is good enough to record. Drums are ideal sampler fodder, but beware of cymbals with long decays.

DigiDrum loads with 16 preset sounds and there are another six on the disc. You can expand your kit with the Digi-Drum Sample Disc One which contains 41 more sounds: Some of these are brilliant, and

you can build your own drum kits very easily.

Digi-Drum is really quite superb and if 2-Bit rewrote it to use the mouse (and perhaps let you play more than two sounds per step) I think I'd give it 11 out of 10.

Both Digi-Drum and Replay will run with either a colour or monochrome monitor and it's nice to have both options.

If you have Midi cables plugged into your ST, Replay and Digi-Drum will crash when you access the file handling routines. They aren't Midi compatible, so the cables needn't be there, but I mention this in case you do as I did and wonder why your program crashes.

If you have a sampler, you obviously need sounds to sample. You can pull these from various sources, but you may like to consider a tape of samples already put together for you.

One of the most respected sets of tapes around is a collection called Star Samples. They are professional tapes, recorded, processed and mixed digitally and each cassette is a first analogue generation recorded 1:1 from the digital master. They are not cheap, but they are excellent beyond a doubt and you may like to consider one if you are planning to build kits with Replay and Digi-Drum.

The Drum tape at £25 contains 56 instruments arranged in seven suggested kit combinations. The Orchestral Tuned and Latin Percussion tape at £35 with 182 samples is full of terrific sounds and remarkable value. Their quality far exceeds that which the samplers are capable of reproducing, but compare the prices sound for sound with the Digi-Drum Sample Disc One.

Whatever you do and whichever you choose, happy sampling!

Product: Replay Cartridge plus software

Price: £79.95

Product: Digi-Drum

Price: £24.95

Product: Digi-Drum Sample Disc One

Price: £14.95

*Supplier: Microdeal, PO Box 68, St. Austell,
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Product: Pro Sound Designer

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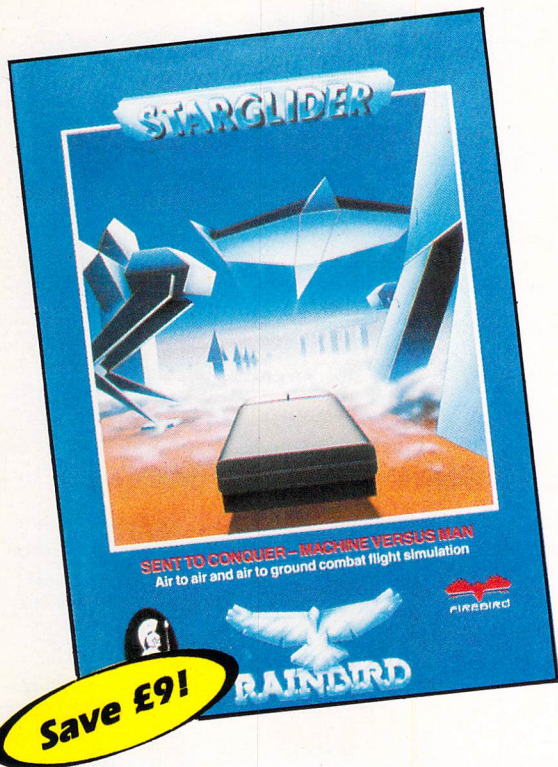
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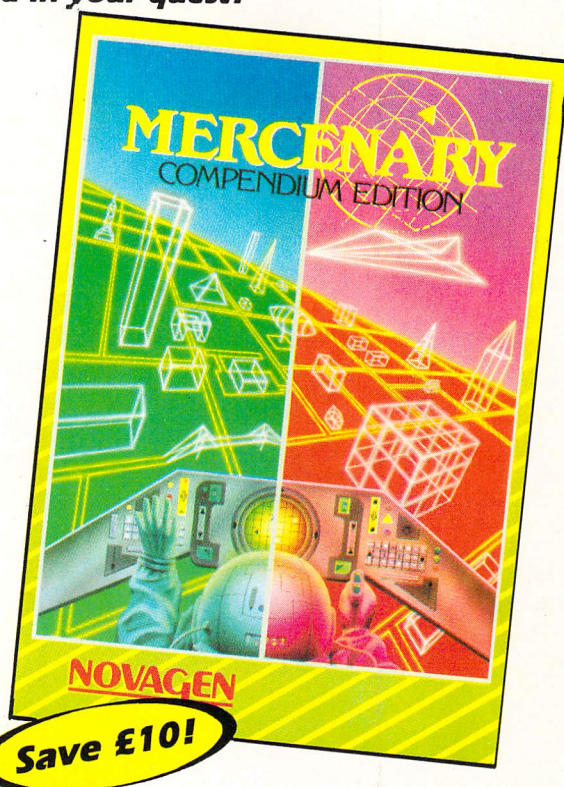
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Setting new standards

AMONG the glut of information management systems popping up almost every month, it's refreshing to see that healthy competition has emerged in the field of databases.

Superbase Personal from Precision Software and Trimbase from Talent Systems are not only leading the way in Gem-based relational databases. They are also setting standards for the industry.

Many existing database management systems are the traditional 'flat card' variety based on the manual index card system so prevalent before computers became popular.

Using this system, the only way to record a large amount of relative data was to cross reference the index cards so that you could retrieve related information from separate files.

You could for example flag the card in file A telling you to check another card in file B for related information. With Superbase Personal and Trimbase, all this can be done with the ease of pull down menus, multiple windows and point and click mouse selections.

Superbase has three main types of field definition, Text, Numeric and Date. The text field will hold up to 255 characters while the numeric field will support 13 digit precision which can be displayed in 12 different formats.

The date field can accept any date from 0001 to 9999 years and this, too, can be displayed in several styles.

There is one special field unique to Superbase Personal. This is the External file field which will hold the filename of an external Ascii document or a Degas, Gem or Neo format picture (more of this impressive feature later).

As you define your fields, you can also assign formulae such as Validated,

Alan Goldsbro assesses two powerful Gem based databases

Calculated and Required to any field regardless of attributes. Fields may be added to or deleted from the database at any time.

Superbase Personal has three constituent parts to its data, the main data body, the file definition and the index. Each file must have at least one index but up to 999 per file are available if required.

All fields can be moved around the screen and displayed in Tabular, Record or Form format. For added data security there is a three level password system.

Trimbase has five types of field definitions, Numerical, Date, Text, Block and

Class. Date fields can be in any of four preset formats.

The length of the numeric and text fields are governed by the width of the screen display less the length of the field title. For example the screen may be 78 characters wide and your title eight characters. This leaves you a maximum field length of 70.

Block fields are defined to create a block similar to text fields which can extend over several lines. The maximum amount of characters stored in a block is a massive 1120!

The final field is Class, which allows you to define up to 100 possible values in advance. Unfortunately, Trimbase doesn't have the ability to assign formulae at the creation stage - this has to be done within the main program.

Trimbase has the same file structure as Superbase Personal but hides the index within the program, thus removing the

Product: Superbase Personal
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 Supplier: Precision Software, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ
 Tel: 01-330-2089

Product: Trimbase 1.5
 Price: £89.95
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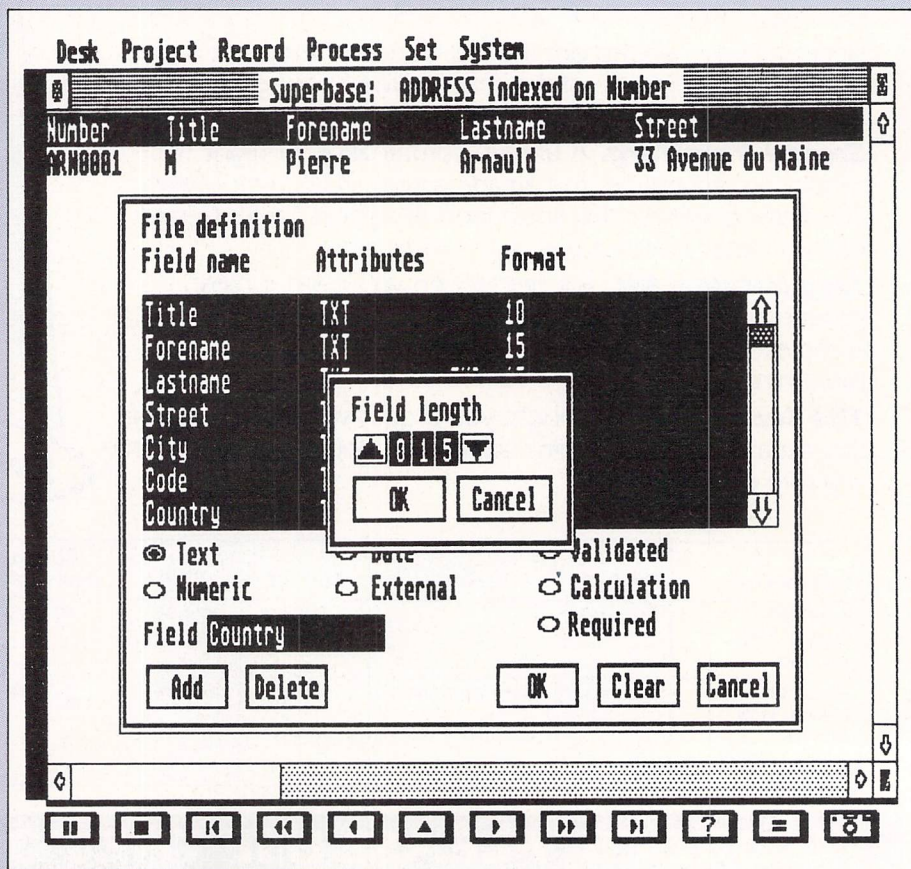


Figure 1: Superbase-creation screen showing field length setting feature

need to identify an index variable upon which to sort data on.

In contrast to Superbase Personal, Trimbase has a fixed display format but fields may be positioned within the display to suit your own preferences. In both programs, fields may be added or deleted at any time.

Both systems have similar operating procedures for entering and editing data. Although separate from the define module they use almost the same methods of keyboard entry and edit.

You can speed up your entries by duplicating the current record and editing only the parts that need changing.

Special features in Trimbase are automatic increment of serial numbers, single keystroke date entry, a footnote facility for unknown numeric values and a good Search and Replace facility coupled with Global Update. This can be used to select certain records and update them quickly and efficiently.

In the 'block' field, text can be typed continuously which will wrap round to the next line or alternately each line can be terminated with the Return key.

Superbase Personal can also search, replace and update and also has the ability to display calculations being performed on screen as data is inserted. This was especially welcome to me but unfortunately is not available in Trimbase.

In saving files, Superbase Personal saves each record individually to disc, whereas Trimbase stores its records in ram and then transfers them to disc before you leave the module. It's worth mentioning at this time that Trimbase has three modules, Define, Maintain and Report. Each module is loaded into memory only as required so as to conserve space for the records. Superbase Personal on the other hand, has all its modules in one program and consequently moves more quickly between them.

The visual impact of Superbase Personal is outstanding, especially when it comes to the selecting and sorting of records.

With its unique tape cassette recorder style buttons placed on a control panel at the base of the screen, searching through the file can be done record by record or in fast forward mode by clicking on the appropriate button.

Records, viewed in tabular format, zoom across the screen just fast enough to read. They can also be rewound by the same method.

Individual records can be accessed by using the key lookup button from the control panel. For a greater selection criteria the filters are put into action.

These allow you to select field names, operators, values and text attributes in a flexible range to search for records. All the standard operators are available as well as mathematical and logical operators.

The combination of standard operators and the opportunity to use plain English

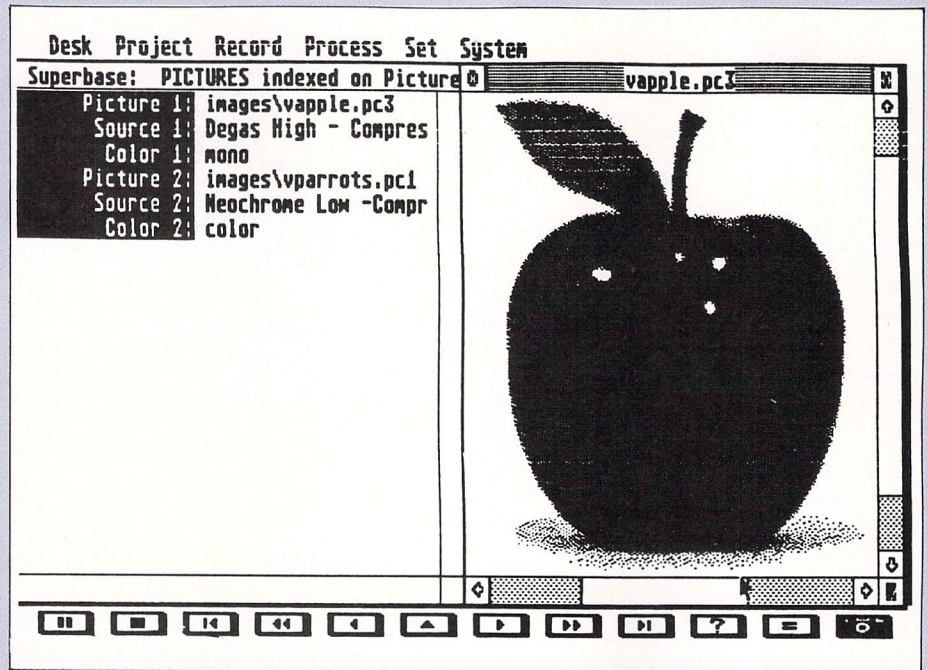


Figure II: Superbase has a built-in graphic facility

in the filter section makes Superbase Personal a database worth recommending.

Trimbase has a similar structure to Superbase Personal but because of the display style can only show one record at a time. But all data can be sent to the printer and printed in tabular format using the powerful report generator.

Records can be printed out singly or in groups. Both programs can produce statistics on any file currently in memory and if required produce hard copies.

While Trimbase produces the same results as Superbase Personal, it uses two modules (Maintain and Report) and consequently doesn't have the simplicity of Superbase Personal.

Neither of the packages are true relational databases with transactions permanently linked and displayed with the main file. They are, however, quite adequate in retrieving linked information from other files, which when combined can produce new files and/or reports.

The procedures for producing relational files are complex and both Superbase Personal and Trimbase have sample files and tutorials to guide you.

I'm convinced that a true relational database is far easier to set up and operate than these pseudo ones. Suffice to say that in general both packages will allow you to produce sub-files, merged files, joined files and reports.

As I've already said Superbase Personal has an excellent selection criteria process to extract information from its bank of data, which can be sent to screen, disc or printer.

Unfortunately the report function of Superbase Personal is rather limited and only really manages to produce lists of your data or mailing labels. But the resulting information from many of the process features can be used to enhance the reports.

The printer options are reasonably impressive and can handle different size paper and allow custom printer commands. If you need to paste your data in a report or letter, it's down to exporting your data in Ascii format to a suitable word processor such as 1st Word.

The Report Generator in Trimbase gives the package a marked advantage over Superbase Personal and you can construct any kind of report using the built in pre-processor.

Forms, labels, invoices summaries and form letters are very easy to design. You can also choose how to present your data so that it is printed in the most effective way possible.

Print commands can be embedded in decimal format to produce custom styles of text. The report layout can be up to 250 lines long which is enough for four pages of A4 text. As a further example, the whole of this review could be contained within a single report.

Report forms can be saved to disc as templates and whole reports with full information extrapolated can also be saved for posterity.

Just as Superbase Personal has tremendous search facilities which are displayed on the screen, Trimbase has a similar procedure within its Report Generator. Not only can you design the layout of the report but also decide upon what criteria to merge.

Other options available are today's date, page number and count.

Individual mail-merged letters, lists in tabular format, and comprehensive documents using data from a number of different records within a file can all be constructed with the report generator.

Without doubt, the report generator in Trimbase is the best yet for any database on the Atari and matches those found in full blown professional systems costing >

< five times as much.

There are so many extra features to be found in both packages that make them a worthwhile buy. Both Superbase Personal and Trimbase can export and import their data in Ascii format.

One of the most attractive features of Superbase Personal is its External file command. This field attribute has the amazing power to import Ascii text files or Gem type picture files and store them as a database using their filename as the field name.

Trimbase has a special feature called the 'learn and use' sequence. This handy facility will remember a sequence of key strokes during the relational section of the program.

If you are joining two separate files to make a larger one and you need to do this on a regular basis, you can record the sequence once so it can be stored on disc and replayed at any time.

Both packages have excellent manuals with tutorials and definitive explanations. Trimbase comes in a two ring folder, with disc protection as unobtrusive as possible by placing it on the define module only.

Superbase Personal has a slightly thinner manual and is spiral bound. The disk is unprotected so you can make backup copies of your software.

In conclusion, Superbase Personal makes full use of the Gem environment with its flexible approach to creating files, entering and editing data, sorting and searching and report generating.

There are many easy to understand pull down menus and its unique control panel coupled with the incredible picture/data library application, make it a highly visual and superlative database management system. Everything taken into consideration, Superbase Personal must be a strong contender for many users.

Trimbase has all the hallmarks of being a functional workhorse, well written, logical and flexible. The program makes use of the Gem environment without overworking the mouse. While it's not as aesthetic as Superbase Personal, Trimbase is not without its style and good looks.

All the functions performed superbly with considerable ease and progression. The built-in word processor and comprehensive report generator combined with an already top of the range system make Trimbase stand out from the crowd.

The decision on which system to buy must of course be yours. If you want to have an easy-to-use, good looking system with unique capabilities to index and display text or graphics then I'm sure that Superbase Personal will be your number one choice.

If you spend a lot of time writing letters and need the facilities of built-in mail merge, a superb report generator and the opportunity to store 1120 characters in one field then Trimbase could fit the bill.

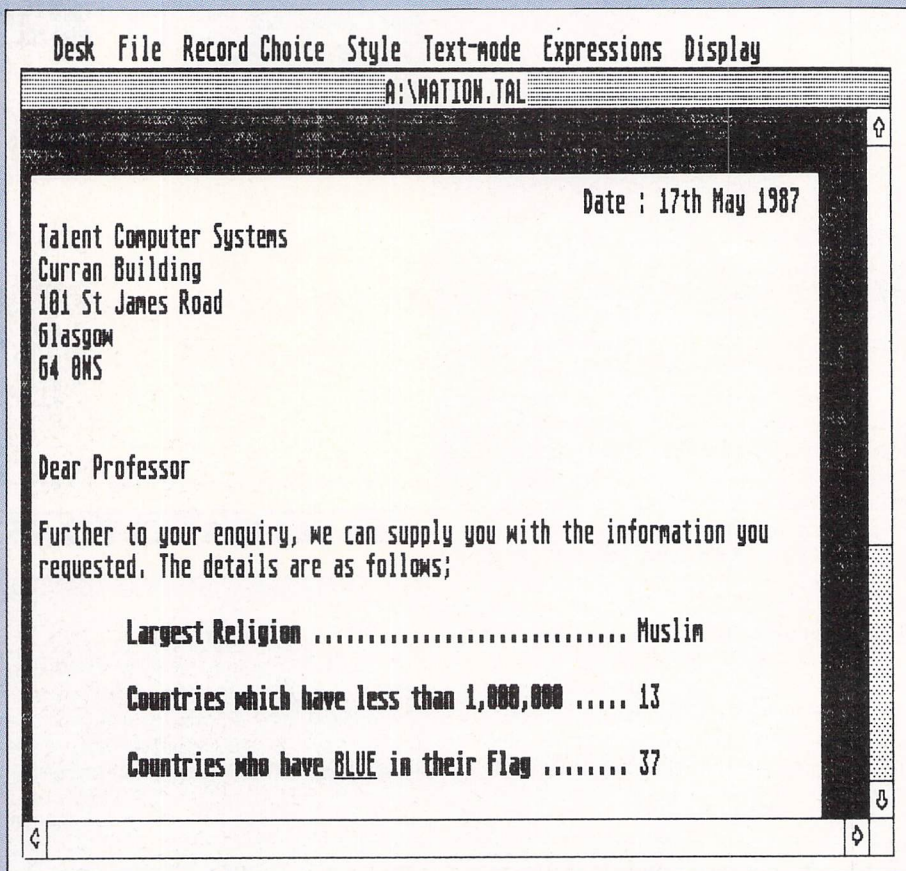


Figure III: Trimbase report screen

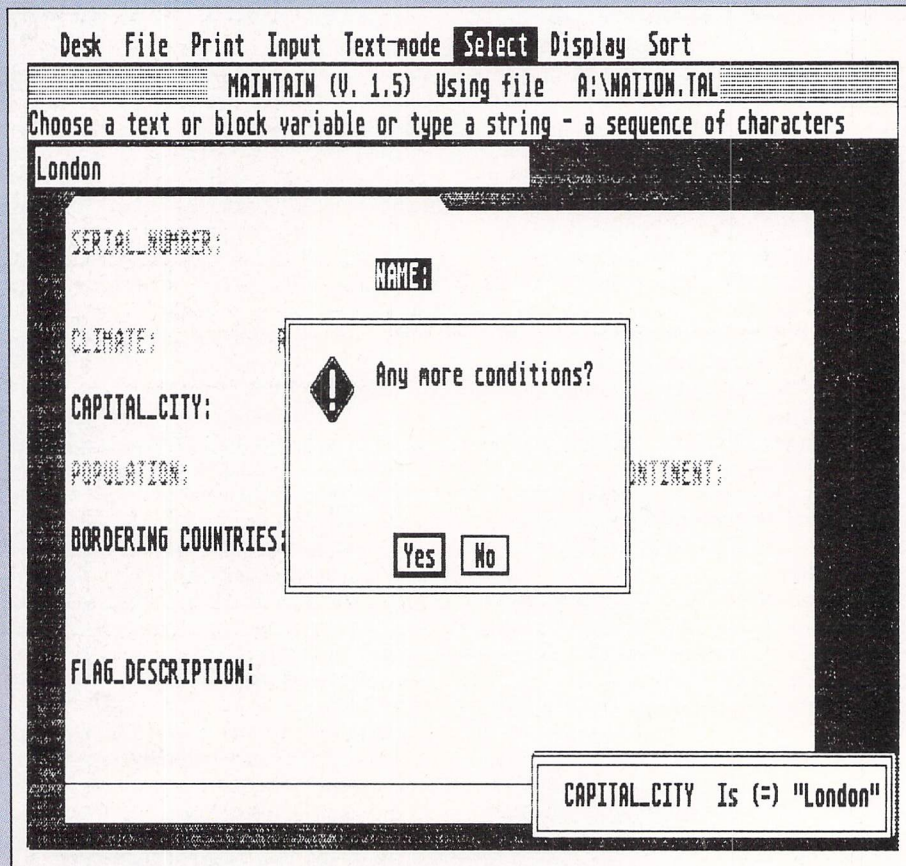


Figure IV: Trimbase selection of parameters for report



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A desktop saver

THERE are many different utility programs available for the Atari ST. They range from "rarely used" to "how ever did I manage without this?". The suite of programs contained in Saved! from HiSoft comes very close to the second category.

Saved! is a desktop accessory which contains most of the functions already available from desktop: Format, disc and file information, rename, copy and so on. As the program is in the form of an accessory, these features are available from within programs such as word processors and spreadsheets, giving you the ability to organise discs without having to leave the application.

You must have encountered this situation before: Just after finishing writing a lengthy document with your word processor, you start to save to disc when the dreaded "Disc full" message appears. You look for a blank, formatted disc but all you can find is your brand new, unopened box which you bought that morning.

Don't panic. Providing that you have the **SAVED.ACC** file on your start of day disc, all you need to do is pull down the accessory menu, select Saved! and format one of your new discs. Your document can now be saved as normal. Unless...

There's always an exception which is supposed to prove the rule. The fly in the ointment in this case is 1st Word Plus.

It would appear that when this particular program loads, it checks to see how much memory is available and then grabs a large chunk of it. It leaves just under 5k of ram free when using a colour monitor and this is not enough to enable the formatting function to be carried out.

The amount left free with 1st Word Plus when using a monochrome monitor, however, is 37k and the original version of 1st Word does not reserve memory. In both these cases all Saved! facilities will operate correctly.

Figure 1 shows the full range of operations possible from the Saved! pull-down menu. The amount of ram available and the time and date are also shown along with "buttons" which enable you to select which drive you want to work on.

The accessory file on its own would have constituted a worthwhile release but with Saved! you get many more utility programs – all of which would be worth

Peter Hartley banishes that dreaded "Disc full" error message

buying individually.

The one I found most useful was the ram disc installer. There are many programs on the market at the moment which allow you to install a ram disc but all those I have seen involve entering the size of the disc and the drive letter each time you run the program.

With the HiSoft **RAMINST.PRG** program this inconvenience is removed. When the installation program is run you are prompted for these details as usual but in addition to the size and drive letter you are asked to supply a file name in which to save the data.

If the filename takes the form **RAM DISCD.PRG**, an executable program file will be saved to your disc which can then be included in an Auto folder on your start of day disc.

All you have to do then is use the disc install program from desktop to put an icon on the screen for that drive letter and then save the new desktop configuration.

Now, every time you boot up your ST

with that disc your ram disc is automatically installed as the drive which you specified and with the amount of space originally allocated. If you wish, you can configure more than one ram disc and have them all installed automatically on start up.

Another program which is worth putting in the Auto folder is **Keuptime**. Most of you will know that the Atari ST has an internal clock which stores time and date.

The information held by the clock is used for date-stamping files when they are first written or updated. The usual way to set the time and date is to enter the control panel accessory and enter the necessary information.

With **Keuptime** in your Auto folder, each time you do a cold start – that is switch on the machine, you will be shown the current settings of the clock and prompted for the current time and date.

The nice feature of **Keuptime** is that you can now reset your ST, by pressing the reset button rather than switching off and on, and the clock settings will be preserved.

Yet a third program which you may like to have in your Auto folder is **Trackbuf**, described by HiSoft as "a floppy disc optimiser".

What **Trackbuf** does is alter the way in which the ST reads data from a disc. The discs themselves need no alteration in the ▽

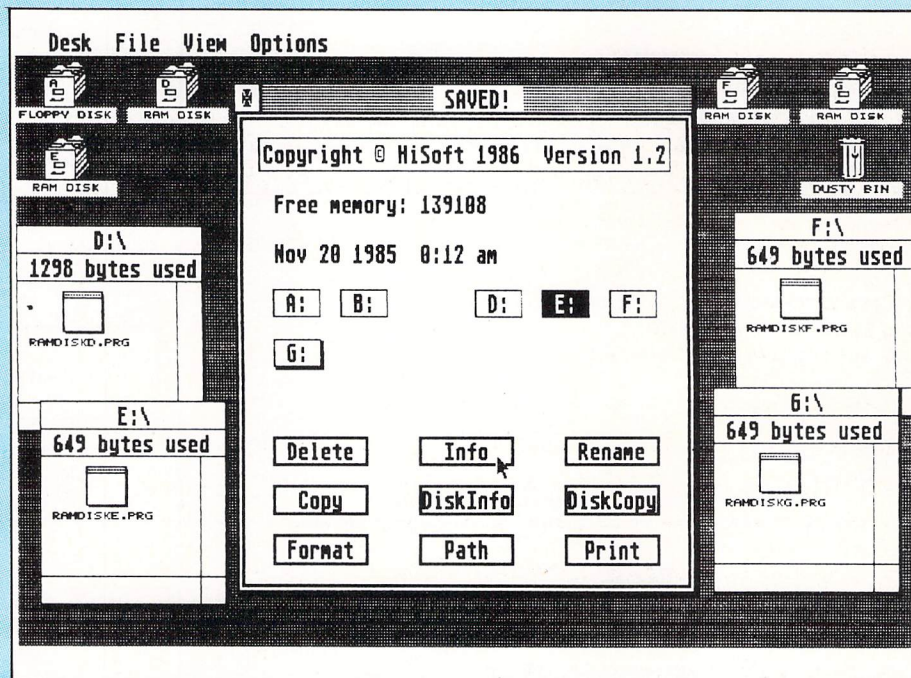


Figure 1: The pull-down menu allows desktop functions to be carried into many programs

Product: *Saved!*
 Price: £29.95
 Supplier: HiSoft, The Old School,
 Greenfield, Bedford, MK45 5DE
 Tel: 0525 718181

way they are formatted nor does the hardware need any modification. The program takes up 5k of memory which will hardly be noticed on a 1040ST.

Once Trackbuf has been run, data files are read into a memory buffer, a whole track at a time. When the data is requested by the loading program, usually one sector at a time, the transfer from the buffer takes place.

This method takes a lot less time than reading each sector from disc with the drive motor being switched on and off at each sector read operation. As you would expect, the time saved is more noticeable with larger files.

If you are printing out a long document, you will have plenty of time to make yourself a cup of tea, wash the car or undergo minor surgery while waiting for the ST to become available for use again.

Included on the Saved! disc is a print spooler program. This allows the contents of the document to be sent to the printer while the computer can be used to perform other tasks.

Again, if this program is placed in an Auto folder on the boot disc, all print functions will be intercepted by the spooler. If for some reason you wish to remove the spooler - maybe you want to recover the reserved memory or you may

want to cancel a printout in mid-flow - running the program Nospool will achieve the required result.

The rest of the programs provided on the disc do not need to go into an Auto folder. They are called as required and can be either in the root directory or in a sub-directory.

Undel, as you may expect, is a utility which recovers deleted files. You may know that when you delete a file, a marker is placed in the directory entry showing that the file is no longer active. No other action is taken. The file allocation data is still present in the directory entry and the file itself is still on the disc in its entirety.

In order to recover the file the inactive marker needs to be reset. Provided no data has been written to the disc since the required file was deleted, recovery will be total and complete. If you have written to the disc since deleting a file, it is possible that part of the disc used to hold the original file will have been overwritten with the new data.

As long as you are aware of the above restrictions, Undel is simple to use. It has a file type of .TTP (Tos Takes Parameters) so when run, a dialogue box opens up asking to enter the parameters.

Enter the name of the file you wish to

recover, press Return and wait. The file will be recovered and you will be informed of the success, or otherwise, of the operation.

The final utility in this mass of useful programs is a file pagination routine.

Page is another .TTP type program and when run you are prompted for the file name which you wish to paginate and the parameters you wish to employ. Page width and length, header and footer margins and other layout options can be specified as can the option to save the file to disc rather than send to the printer.

If you simply press Return without entering any characters on the command line, a concise but full explanation of the program and its usage is displayed on the screen.

The manual which is supplied with the disc explains precisely how to use the various programs and also gives details of the way they work. The disc will work on any ST and in any resolution. There is no copy protection so the programs can be transferred to as many of your discs as you need.

That concludes our look at Saved! At £29.95 for the disc, the cost per program works out at just over £3 each. This has got to be good value for money by anyone's way of thinking. □

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DISC

ST Doctor

This is a new desk accessory, providing a host of useful programmer's utilities for examining and changing memory or disc contents directly. Because all the features are desk accessories, they are available within the current application (assuming that it correctly handles GEM accessories), e.g. Fast BASIC or First Word™

Memory editor

This is a complete scrolling window-based memory editor, allowing any area of ST memory to be displayed in ASCII, Hex, Decimal, Binary or disassembly listing. Any area of user-accessible RAM can also be edited, allowing entry in the current mode (except disassembly).

Linked to the memory editor are many other useful features, including: Copy memory block, Print block, Save block, Fill block, Search for any character or string of characters, Memory map - showing a pie chart of memory usage.

Disc editor

Similar to the memory editor described above, this allows any disc sector or complete file to be loaded into free memory and examined/edited. Other related features include: Fast disc formatting, File recovery, Print file contents, Save a file, Join files, Search disc or file for a specified string, Show free disc space, delete file, Show file size, move to and examine any specified track and sector.

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Key recorder and editor

This unique facility allows up to ten sequences of key-presses to be stored and assigned individually to specified keys. For example, common command sequences can be typed once and stored, one per function key. When required, pressing the function key will 're-play' the stored sequence. Any sequence can be later edited, deleted, replaced, saved to disc, re-loaded from disc, etc.

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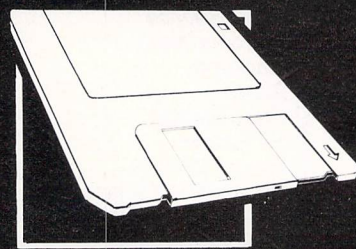
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Files at your fingertips

SUPER Directory is an easy to use, yet powerful disc cataloguing utility running under Gem which enables you to keep track of all your disc files.

If you have dozens of discs packed full of files then this package is the answer to all your prayers. But if you have only a few with just one or two files on each then read no further – it's quicker and cheaper to write the disc contents on the disc label than use this package.

Right, so you're one of those people who squeezes as much as possible on to each disc and then wonders where you put that vital file.

Super Directory lets you number each disc, (although you have to do this manually using a pen or pencil on the disc label itself) and compile a database of all the files on all those discs. This can be stored on a disc or output to the printer.

Once you've read the directories into memory you can add remarks and brief notes to the file entries to indicate their function or any other information. I found that the 25 characters allowed was more than enough.

Now that you've got a list of all your files, it's a simple matter to find out which disc a particular file is on and read the comments.

The Find facility allows full use of wildcard characters and will find the first occurrence of the full or partial name requested. Search then finds each subsequent occurrence. Path allows you to step through the list by pathname and Disk finds the next disc number. The list can be sorted by category, disc number, extension, filename, pathname or remark.

The editor allows you to rename a file within the list, (although I didn't quite get the point of this as it wouldn't match the filename on the disc) – and to change the disc number and pathname, (same problem again).

Mike Monk checks a package that can be a winner

The list of files can be printed in various formats from a straight three across the page to a full descriptive listing. Once you've finished with your database it can be saved to disc and added to later as you introduce more files.

A nice touch is that you can load an old database of files and add the new files from a disc already contained in the list without producing duplicates – only new files are added to the database. Also lists of files from different or even the same discs can be merged and sorted.

In use, the program proved fairly speedy. I compiled a database of 2552 files from 120 discs. Sorting by file extension took 19 seconds and finding a file at the end of the list took 7 seconds.

Saving the database took rather longer at four minutes which I found rather over-long. But this is not an operation that will

be repeated often. Adding files to a list this large and saving them would soon become monotonous and it may be a good idea to keep several smaller lists if you have many files.

Loading the list back into memory took almost two minutes, again suggesting the use of several smaller databases. The utility does allow for up to 6902 records on the 1040ST, but that's not something I'd like to attempt.

There isn't any documentation supplied with Super Directory but this isn't a handicap as it is so easy to use. All the functions are clear, logical and quite easy to understand.

All in all, if you need a good directory lister and organiser this has to be the program for you and at £24.95 it is one of the more reasonably priced pieces of software for a machine that seems to demand more and more from its user's bank balance.

Program: Super Directory

Price: £24.95

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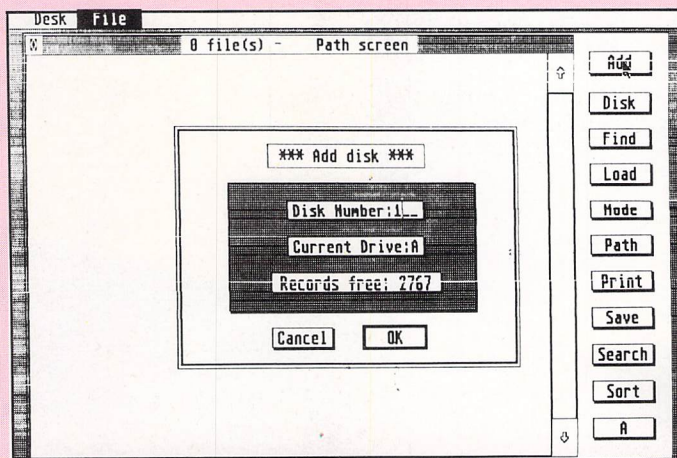


Figure II: Adding a disc to the database

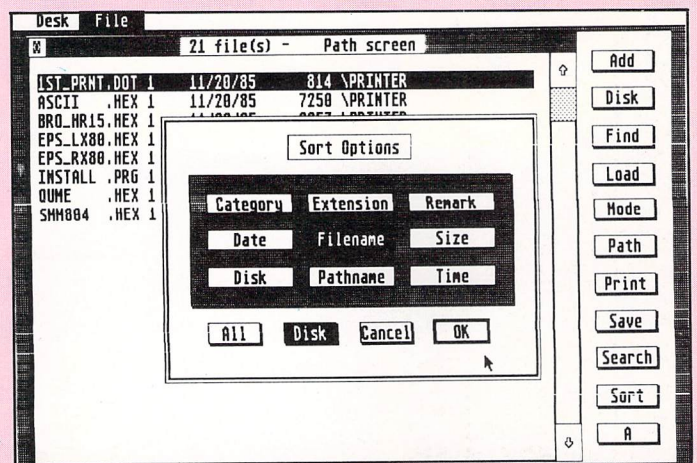


Figure I: Sorting the files

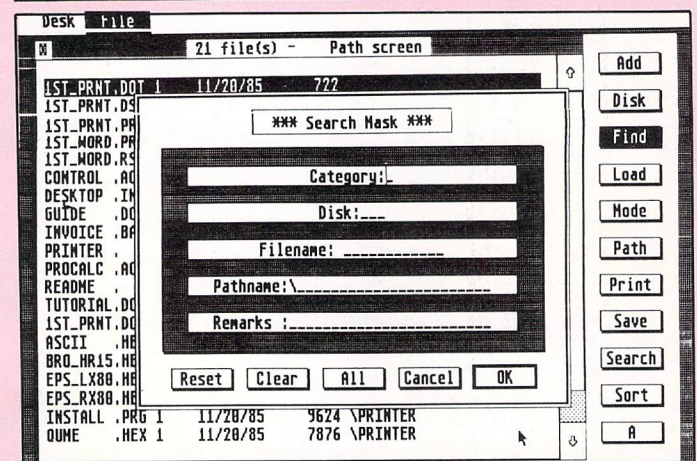
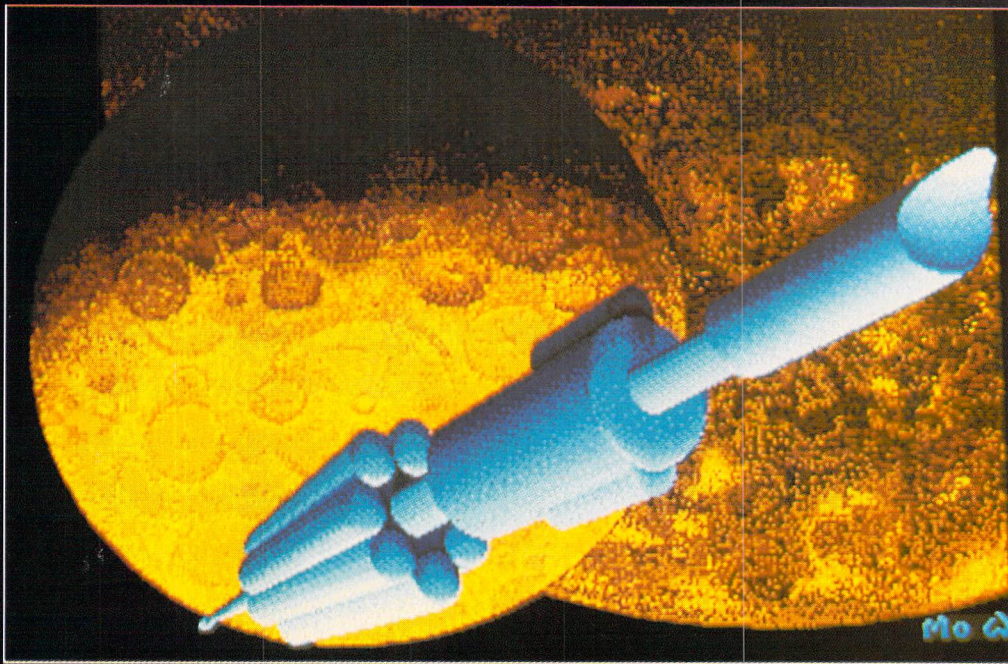


Figure III: Searching the database

FOLLOWING last month's launch of our Gallery feature, the response has been overwhelming. We hadn't realised that there were so many accomplished artists out there.

The pictures we are featuring this month were sent in by Mo Warden of Bloxwich, in the West Midlands. Mo is no stranger to the world of computer graphics, having worked on Anco's Thai Boxing and Llamasoft's Colour-space.

We welcome any pictures you may have drawn, but remember that any artwork submitted must be all your own work and must not be copyright – so we can't use The Flintstones or similar subjects. It should not have been published, or offered for publication elsewhere.

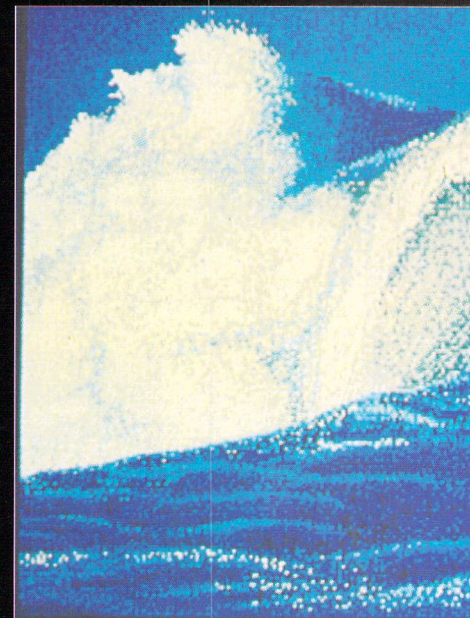


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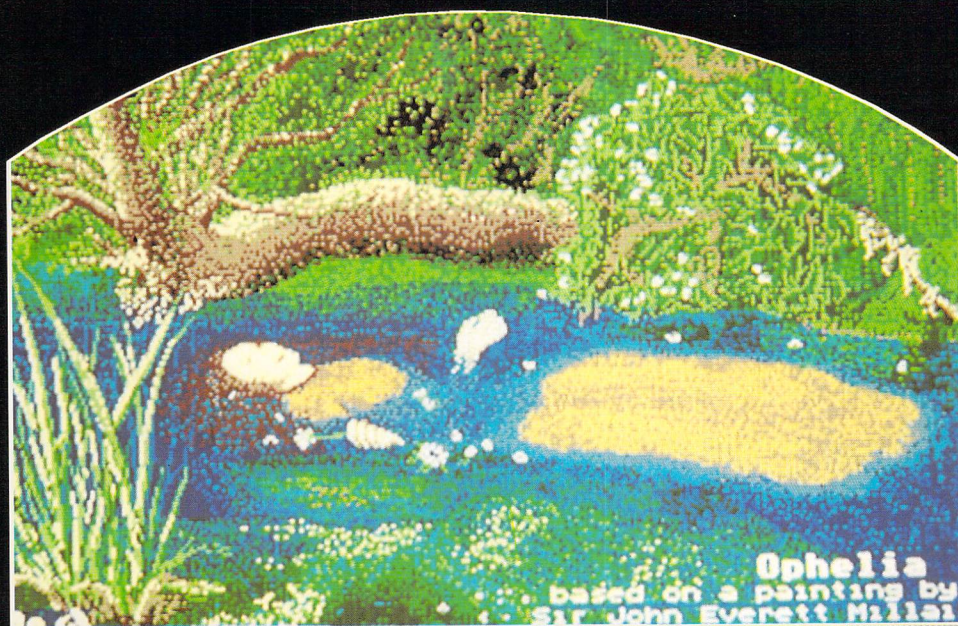
GALLERY



Up, up and away



Making waves



Ophelia

Ophelia
based on a painting by
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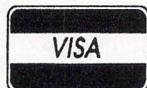
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If in doubt – register!

PERHAPS one of the most popular uses of a business computer is for handling large databases, which enable you to store and retrieve vast amounts of data. It's like having a huge card index on your desk and a secretary whose fingers can move at the speed of light.

And a database can be used imaginatively. Records can be kept which will list your suppliers, complete with details of what goods you buy from them, how much they charge and how long they take to deliver.

Customers can also be stored in a file. An insurance broker friend of mine keeps records of all his clients. He can find out very quickly how many people have a certain type of policy, how much business is being done with individual companies and, perhaps most important, how many policies are in danger of lapsing because they have not been renewed.

At this point, storing information about members of the general public, we come into contact with the 1984 Data Protection Act. Its purpose is to protect individuals from the misuse of information about themselves held on computers. It also lays down a set of standards for the processing of such information.

The act covers the use of automatic methods to process personal data regarding living individuals. While it does not specify the types of equipment which are classed as automatic, computers and word processors are generally held to be the two most common examples.

The key words in the above paragraph are: automatic, living and individuals. The act does not cover manual processing methods, information about companies and other incorporated bodies or about people who have died. Companies in this context, should be taken as those limited by shares or guarantee – in other words, those who have Ltd. or plc in their title. A sole trader or partnership is not a company.

Personal data consists of information about any living individual, including expressions of opinion but excluding any indication of the data user's intentions towards that individual. In other words, if you keep on record your opinion that the subject is a bad credit risk, then this is personal data; if you keep on record the fact that you intend to sue the subject in a court of law, it is not.

Exemptions from the act are usually accompanied by provisos or limitations. The advice from the Data Protection Reg-

Alan Woodford outlines the Data Protection Act

istrar's office is, "If in doubt, register. A register entry can always be changed or deleted at a later date". Exemptions from the act as a whole include:

- Information held for security reasons.
 - Information which, by law, has to be made public.
 - Home users who hold information only about their personal family or household affairs, or for recreational purposes.
- Some other examples which may gain exemption from the requirement to register, but which have specific conditions are:
- Information held only for the processing of pay and pensions or keeping accounts.
 - Information held by unincorporated clubs about their members provided that individual members agree to this information being stored on a computer.
 - Names, addresses and other information, such as telephone numbers held only for distribution purposes.

If you think that you may be eligible for exemption, make sure. The penalties for failing to satisfy the requirements of the Data Protection Act are severe. Fines can be up to £2000 on summary conviction or an unlimited fine for conviction on indictment. The material connected with the offence can be forfeited, destroyed or erased.

Over and above these penalties, an individual may seek compensation through the courts for damages and any associated distress caused, not only by unauthorised disclosure or misuse of the data but also through loss or destruction of data or because of inaccuracies.

Not only is the data user liable. His servants and agents may also be liable if they infringe the requirements of the act. The offences are criminal not civil.

Some of the offences which can be committed by the data user are:

- Holding personal data without being registered, or without having applied for registration.
- Knowingly or recklessly holding data other than as described in the register entry.
- Failure to comply with a transfer prohibition notice.

The data user, his servants or agents

can also fall foul of the following:

- Knowingly or recklessly using data, obtaining or disclosing data, or transferring data other than as described in the register entry.

Computer bureaux have even more offences available to them. In general, if you are operating a computer bureau you would be well advised to register.

So what must data users do? The act requires that they be open about their use of personal data (this is done by registration) and that good practice is observed in the processing and storage of personal data.

The principles that users must observe are basically that personal data shall:

- Be collected and processed fairly and lawfully.
- Only be held for specified, lawful, registered purposes.
- Only be used for registered purposes or disclosed to registered recipients.
- Be adequate and relevant to the purpose for which they are held.
- Be accurate and where necessary, kept up to date.
- Be held no longer than is necessary for the stated purpose.
- Have appropriate security surrounding them.

The principles also entitle people to see data held about themselves.

At the time of writing, some 130,000 applications have been received by the Data Protection Registrar and more than 6000 potential data users are being investigated. A spokesman for the Registrar's office said that it was their policy to persuade users to register rather than to resort to law.

Existing data users should have registered by May 11th, 1986. By November of this year, individual members of the public will have the right to request details of the information held about themselves. Again I must stress, if you are in doubt as to whether the act applies to you or your business, register. □

● The registrar can be contacted at: Office of The Data Protection Registrar, Springfield House, Water Lane, Wilmslow, Cheshire SK9 5AX, Tel: Wilmslow (0625) 535777

Two free booklets are available, *Guideline No.1: An introduction and guide to the act, and questions and answers on the act.*

Codes of Practice are being written by the Registrar's staff. The first one published is for travel agents and can be obtained free of charge.

A DATABASE is a program which is used to store information for later sorting, selection and retrieval.

Applications range from simple name, address and telephone number files to the most complex storage facility, the type used by Government departments to hold tax and national insurance records, census data and much more.

But whether you are a business executive storing clients' and suppliers' addresses, a club secretary maintaining membership records, a caterer making a permanent record of menus or a schoolboy keeping track of a timetable, a database program will make the task a lot easier.

The making of a database

Ken Hughes begins a new series on the mechanics of storage

IN this series of articles we will look at the mechanics of file storage, and also write our own database program to illustrate the various methods. We'll start with a very simple listing and work up to a full blown database package.

Imagine a card index system sitting on your desk. It will probably be a coloured plastic box. When you open the lid there are several compartments containing scores of blank cards. There may also be 26 different coloured cards with a letter of the alphabet printed on each one.

When you have a name and address that you want to remember you remove a blank card and, write the name at the top, followed by the address and possibly, the telephone number. Then you replace the card in the box making sure that it goes behind the appropriate alphabetical divider card.

At a later date you can recover this address by going to the correct section of the system, finding the card with the required name on and reading off info-

mation. It doesn't matter how many cards have been added since you wrote the first one, the information will still be there. Even if you have put the card in the wrong alphabetic section, the data will still be there - it will just take longer to find.

So how does our computer perform these tasks? The following demonstration programs are written in ST Basic and will run in any resolution.

Let's suppose that we want to store just five names and five telephone numbers. Program I will allow us to do this, and provided the program is saved, it will give us the ability to recall the names and numbers at a later date.

This program works by assigning a different variable to each name and number, and the information you enter becomes part of the program. We need new variable names and program lines for each name and number entered: And each variable has its own print statement, which takes yet another program line.

This is fine for five names but suppose we wanted to store 50 or even 500? Obviously, it would be impractical to write a program line to hold each name and number and then another to print them on screen. What we need is a system which allows us to automatically fill up as many variables as we need - or can hold in memory.

ST Basic gives us that facility. Using an

array we can easily store many different names and numbers without having to write a program line for each person. As there isn't much point in storing data if you can't recover it, we can also read the data in the arrays and print it on screen without having to write a separate print line for each name.

```

10 REM Program II
20 DIM name$(50),number$(50)
30 CLEARW 2:FULLW 2
40 WHILE recs<1 OR recs>50
50 INPUT "Enter Number of Records Required (1 -50)",recs
60 WEND
70 GOSUB input.names
100 END
500 input.names:
510 FOR i%=1 TO recs
520 INPUT "Enter Name ",name$(i%)
530 INPUT "Enter Tel. No. ",number$(i%)
)
540 NEXT
550 RETURN
    
```

Program II

```

10 REM Program I
20 name1$="Fred Bloggs"
30 name2$="John Smith"
40 name3$="Murray Mint"
50 name4$="Harry Carey"
60 name5$="Honour Back"
70 number1$="123456"
80 number2$="654321"
90 number3$="101010"
100 number4$="456789"
110 number5$="987654"
120 PRINT "Name: ";name1$;tab(20);"Tel
: ";number$1
130 PRINT "Name: ";name2$;tab(20);"Tel
: ";number$2
140 PRINT "Name: ";name3$;tab(20);"Tel
: ";number$3
150 PRINT "Name: ";name4$;tab(20);"Tel
: ";number$4
160 PRINT "Name: ";name5$;tab(20);"Tel
: ";number$5
170 END
    
```

Program I

Program II allows us to select a number of records between one and 50 and enter the information from the keyboard. Line 20 reserves space in memory for the information which is going to be entered.

Line 50 asks you to enter the number of records that you want to store and the WHILE/WEND loop at lines 40 to 60 checks that you have entered a valid number.

The subroutine at lines 500 to 550, reads in the data from the keyboard and stores it in the two arrays *name\$()* and *number\$()*.

We now need to be able to read the data back and display it on the screen.

Record 1	Record 2	...	Record 5
name\$ number\$	name\$ number\$...	name\$ number\$

Figure I: A sequential database file.

Add the following lines to Program II and run it again.

```

80 GOSUB search.for
600 search.for:
610 INPUT "Enter Name To Find ",q$
620 FOR i%=1 TO recs
630 IF name$(i%)=q$ THEN PRINT "Name:
";name$(i%);TAB(20);"Tel No: ";number$(i
%)
640 NEXT
650 PRINT "End of Search"
660 RETURN

```

This routine compares each element of the array `name$` with the name entered as `q$`. The name being searched for must exactly match the name stored – if you have stored 'Fred', a search string of 'fred' or 'FRED' will not match.

We now have a small database with a store of names and telephone numbers in memory. The only problem is that when we switch off the micro the data will be lost: What we need is a way of saving it so that we can recover it next time we switch on. All we need to do is to tell our ST to store the information it is holding in its arrays on to a disc.

Add the following lines to Program II:

```

90 GOSUB save.data
700 save.data:
710 OPEN "O",#1,"NAME.DAT"
720 FOR i%=1 TO recs
730 WRITE #1,name$(i%),number$(i%)
740 NEXT
750 CLOSE #1
760 RETURN

```

Before you run the amended program, make sure that you have a disc in your drive, that the write protect window on the disc isn't open and that you have enough free space.

Line 710 tells Basic that we want to open a file and the "O" says that we want to open it for Output or writing to. Had we wanted to read from it we would have opened it with "I" for Input.

The next part of the line informs the system that we want to address the file as stream #1. Between the open and close statements on line 750, all WRITE or PRINT statements directed to stream #1 will be stored in this file. Because of this facility we can have more than one file open and we can be sure that the data is going to the correct file.

The final part of line 710 assigns the name "NAME.DAT" to the file. Because we haven't put a disc drive identifier (such as B:) in front of the file name, it will be placed on the default drive.

Lines 720 to 740 form a loop which writes the data to the file. Finally, line 750 closes the file. Once this has happened no further operations can be performed on the file until it is reopened.

Run the amended version of the program and enter five or six names and numbers. Now save Program II and leave Basic: Your database program and data file are safely stored on disc. If you double click on the file NAME.DAT a window will open up giving you the option to show or print the file. Place the mouse cursor on show, click once and the

names and numbers you entered in will be displayed in the form:

```

"Fred Bloggs","123456"
"John Smith","654321"
"Murray Mint","101010"
"Harry Carey","456789"
"Honour Back","987654"

```

Return to Basic and reload Program II. Change WRITE in line 730 to PRINT and change NAME.DAT in line 710 to NAME1.DAT. Now run the program again. When it ends, leave Basic and double click on NAME1.DAT. Select SHOW from the options window and the display should now be:

```

Fred Bloggs 123456
John Smith 654321
Murray Mint 101010
Harry Carey 456789
Honour Back 987654

```

Note there are no quote marks and no commas. This file could be output to a printer without further processing. In this example whether we use PRINT or WRITE makes no difference to the way in which the file is read in from disc.

If we were to enter for example, an address where we wanted to use commas we would have to use WRITE to write to the disc. If we tried to use PRINT Basic would become confused by the extra commas when reading the data back from disc.

To complete our database program we need to be able to read the data from disc and display it on screen. Type in Program III and save it to disc.

Lines 40 to 140 put the program under menu control. After each operation has been completed, the menu will appear on-screen and wait for you to make your next choice.

```

10 REM Program III
20 DIM name$(50),number$(50)
30 CLEARW 2:FULLW 2
40 WHILE q<>5
50 CLEARW 2:FULLW 2
60 GOTOXY 0,5
70 PRINT "1. Load Data File":PRINT
80 PRINT "2. Enter Data":PRINT
90 PRINT "3. Read Data":PRINT
100 PRINT "4. Save Data":PRINT
110 PRINT "5. Quit":PRINT
120 GOTOXY 0,14:INPUT "Enter Selection
";q
130 ON q GOSUB read.data,data.in,searc
h.data,save.data
140 WEND
150 END
160 data.in:
170 GOSUB enter.data1:GOSUB enter.data
2:RETURN
180 enter.data1:
190 WHILE recs<1 or recs>50
200 INPUT "Enter Number Of Records (1
-50)";recs
210 WEND
220 RETURN
230 enter.data2:
240 FOR i%=1 TO recs
250 INPUT "Enter Name ",name$(i%)
260 INPUT "Enter Tel. No. ",number$(i%
)
270 NEXT
280 RETURN
290 search.data:
300 INPUT "Enter Name To Find ",q$
310 FOR i%=1 TO recs
320 IF name$(i%)=q$ THEN PRINT "Name:
";name$(i%);TAB(20);"Tel No: ";number$(i
%)
330 NEXT
340 PRINT "End of Search"
350 INPUT "Press RETURN to continue",q
$
360 RETURN
370 save.data:
380 OPEN "O",#1,"NAME.DAT"
390 FOR i%=1 TO recs
400 WRITE #1,name$(i%),number$(i%)
410 NEXT
420 CLOSE 1
430 RETURN
440 read.data:
450 OPEN "I",#1,"NAME.DAT"
460 recs=1
470 WHILE NOT EOF(1)
480 INPUT #1,name$(recs),number$(recs)
490 recs=recs+1
500 WEND
510 CLOSE #1
520 RETURN

```

Program III

The load file routine, lines 440 to 520, is similar to the save data routine described above. You will notice that we have opened the file with "I" for input. The stream number, #1, is the same as with the output file. This is allowed because we closed the output file before leaving that subroutine – if the previous file was still opened for output, an attempt to re-open, in any mode, would have resulted in an error.

Instead of WRITE we use INPUT to read the data from the disc file. Had we saved a file with commas as part of the data rather than as separators, we would have had to use the Basic command LINE INPUT to ensure the data was read in correctly.

The loop is controlled by line 470. This looks for the End Of the data File (EOF). If the end is not reached the program loops and reads in the next item of data. If EOF is true the end has been reached and the program drops through the WHILE/WEND loop, closes the file and returns to the menu.

The file created is called a sequential file. The data is written to it in sequence and must be read back in the same order. Our database file looks like Figure I.

You may have noticed that we have stored the telephone numbers as an alpha numeric string rather than as a numeric variable. The reason for this is that you would lose the leading zero in numbers such as 061-456-7890 and you would not be able to include the minus sign or spaces. Using numeric variables, the neatly formatted number shown above would have to be written to disc as 614567890.

● Next month we will have a look at a different method of storing and retrieving data.

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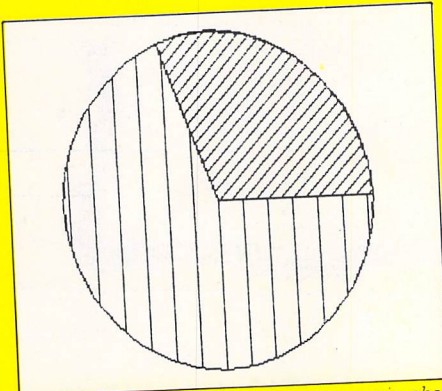


Figure 1. Free disc space shown as a pie chart

THIS month we start with a short program from Mr. R. A. Noddings of Hartlepool – a routine that displays the free space of a disc in the form of a pie chart and runs best in high resolution.

Lines 80 to 100 set up the screen for text and graphics display and the text size. Line 120 puts an Alert Box on screen and waits for you to select drive A or B. The number in line 130 is the amount of free space on a clean, formatted single sided disc as used on a 520STF. If you are using a double sided, 1Mb drive, change the number to 726016.

Lines 140 to 180 get the disc space used, calculate and adjust the free space and assign it to the variable *U*. The next five lines, 190 to 230 set the fill style, and then display a full circle followed by the pie segment. Line 240 prints the amount of free space in figures and then the program loops waiting for a key press.

The routine is written in Fast Basic so the line numbers should not be typed in when entering the program. We include them to make reference to the various lines easier and to ensure that our readers can identify the start of a new line in the listing.

```

10 REM *****
20 REM * DISC SPACE PIE CHART *
30 REM * by R. A. Noddings *
40 REM * (c) Atari ST User *
50 REM * Written in Fast Basic *
60 REM * Do NOT enter line nos *
70 REM *****
80 TXTRECT 0,0,700,600
90 GRAFRECT 0,0,700,600
100 TXTSIZE 13
110 CLS
120 dri=ALERT("[1][SELECT DRIVE][A:1
IB:1",1)
130 M=376375

140 F=DISCFREE(dri-1)
150 F2=(F/M)*100
160 XS=STR$(F2)
170 XS=LEFT$(XS,4)
180 U=M-F
190 FILLPERIM 1
200 FILLSTYLE 3,10
210 PIE 320,150,100,0,3600
220 FILLSTYLE 3,14
230 PIE 320,150,100,0,U/100
240 PRINTTAB(30,20)'Disc space free I
: [";XS;"%]"
250 WHILE INKEYS=""
260 WEND

```

SCRAP BOOK

SCRAPBOOK is a regular feature consisting of short, simple programs sent in by our readers. It's a place where we can publish all of the interesting little routines that don't end up in our regular features but are too good for us not to share with other readers.

If you have a short program which you think other readers would find useful, send it to:

*Scrapbook, Atari ST User,
Europa House, 68 Chester Road,
Hazel Grove, Stockport SK7 5NY.*

SCRAP BOOK

HAVE you ever wondered what day June 9, 1926 fell on? Reg Williamson of Kildgrove did and he wrote this Fast Basic program to discover just that.

For greater precision, account has to be taken of the change from the Julian to the Gregorian calendar in 1582 and an algorithm which does that was published in 1886 by Zeller (although we don't think it was written in Fast Basic!).

Reg has used this algorithm as the basis of his program and he also wishes to acknowledge the assistance of Dr. Bernard Yallop of the Royal Greenwich Observatory.

In Program II, lines 90 to 160 take care of the screen setup and the input of data from the keyboard. It's important to remember to enter the year fully - that is, 1987 rather than 87. The calculation is carried out in lines 170 to 190 and the result is held in the numeric variable *w*.

Lines 200 to 310 display the results on the screen. In line 220 there are two spaces between Sunday and Monday and two spaces between Monday and the double quotes ("). In line 260, be sure to enter two spaces between Tuesday and Wednesday, one between Thursday and Friday and three between Friday and the quotes. If these spaces are not entered accurately, unexpected results will be displayed.

```

10 REM *****
20 REM * Date to Day Calculator *
30 REM * by Reg Williamson *
40 REM * (c) Atari ST User *
50 REM *
60 REM *****
70 REM Fast Basic Program
80 REM Do NOT enter line numbers
90 CLS:PRINT:PRINT:TXTSIZE 13
100 start_off:
110 PRINT TAB(8)"This Program gives
the day for"
120 PRINT TAB(8)"any date entry...":
PRINT
130 INPUT" First, enter the D
ay: "D
140 INPUT" ...next, the Month
:"M
150 INPUT" ...and now the Year
:"Y
160 PRINT
170 IF M<3 THEN M=M+12:Y=Y-1
180 W=D+2*M+2+INT((3*M+3)/5)+Y+INT(
/4)-INT(Y/100)+INT(Y/400)
190 W=W-7*INT(W/7)
200 TXTEFFECTS $1
210 IF W>2 THEN GOTO correct
220 PRINT TAB(8)"The Day is " MID$(
SATURDAYSUNDAY MONDAY ",1+W*8,8)
230 TXTEFFECTS $0:GOTO end_it
240 correct:
250 W=W-3
260 PRINT TAB(8)"The Day is " MID$(
UESDAY WEDNESDAYTHURSDAY FRIDAY ",1
+W*9,9)
270 TXTEFFECTS $0
280 end_it:
290 PRINT
300 PRINT " * * * * *
* * *"
310 PRINT
320 GOTO start_off
    
```

HOW many times have you searched for a telling phrase that will impress your boss? (Tell him he's a responsive managerial projection). Maybe you are thinking of becoming a technocrat or perhaps you are trying to write an impressive advertisement, (For Sale: One functional fifth-generation concept).

Worry no longer - help is at hand in the form of Mike Cook's Buzzword Generator. With it you can produce phrase after phrase of impressive sounding, totally meaningless technical jargon.

You will instantly recognise the output of this balanced reciprocal software as used by Government departments, salesmen, yuppies and general flannelers throughout the world.

Program III works by gathering words from three groups of DATA statements into an array. This is done in lines 90 to 160.

These are placed in the two dimensional string variable *word\$*. The first two groups consist of adjectives and the third of nouns.

A note of how many words are in each group is kept in the array called *max*. This structure allows you to add your own words to the listing without having to alter any of the program apart from the DATA statements.

Lines 180 to 320 display the words on the screen. A phrase is built up in three

parts consisting of a random word from each of the groups. By pressing Return you can scan through the 100 phrases held in *word\$*. If you can't find a phrase

that meets your requirements, press Q and run the program again to fill up the array with a completely new set of phrases.

```

10 REM *****
20 REM * Buzzword Generator *
30 REM * by Mike Cook *
40 REM * (c) Atari ST User *
50 REM * Written in ST Basic*
60 REM *****
70 DIM word$(3,100),max(3)
80 CLEARW2:FULLW 2
90 FOR a%=1 TO 3
100 m%=0
110 WHILE word$(a%,m%)<>" "
120 m%=m%+1
130 READ word$(a%,m%)
140 WEND
150 max(a%)=m%-1
160 NEXT
170 WHILE q$<>"q" OR q$<>"Q"
180 CLEARW 2
190 GOTOXY 5,0
200 PRINT "BUZZ-WORD GENERATOR"
210 GOTOXY 5,5
220 FOR a%=1 TO 3
230 nextword%=RND*max(a%)+1
240 PRINT word$(a%,nextword%);";";
250 NEXT
260 GOTOXY 5,12
270 PRINT "Press Return for another
phrase or Q to Quit"
280 q$=""
290 WHILE q$<>chr$(13)
300 q$=INPUT$(1)
310 IF q$="q" OR q$="Q" THEN END
320 WEND
330 WEND
340 DATA INTEGRATED,SYNCHRONISED,RES
PONSIVE,PARALLEL,BALANCED
350 DATA TOTAL,FUNCTIONAL,USER-FRIEN
DLY,ABSOLUTE
360 DATA OPTIMAL,COMPATIBLE,NEW,SIXT
EEN-BIT
370 DATA " "
380 DATA MANAGERIAL,ORGANISATIONAL,M
ONITORED
390 DATA RECIPROCAL,DIGITAL,LOGISTIC
AL
400 DATA TRANSITIONAL,INCREMENTAL,FI
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410 DATA " "
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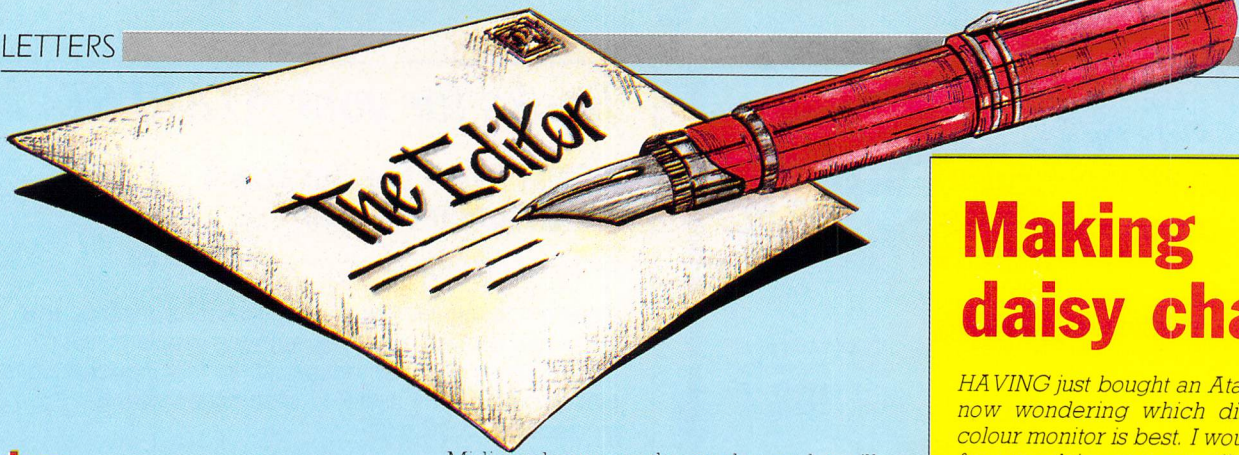
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Crisp picture

I OWN a Commodore C128 but am looking at upgrading to an Atari 1040STF. I read your answer to Paul Whyles' letter in your April issue of Atari ST User and went down to the recent Atari Computer Show to see when the Mega ST will be available to the public.

I saw the Atari monochrome and colour monitors side by side and obviously the mono monitor was much clearer because of the higher resolution.

Would a high resolution colour monitor produce as good a picture as the mono version, and if so, could you recommend one, for instance one of the Philips 88 range, NEC, Multisync and so on.

Finally, if I was using a medium resolution monitor and I was to do a screen dump of a drawing would the printout using a Star NL10 be any better or worse if I was using a high resolution monitor? –

K.Morley, Hindley, Lancs.

● You will find that you will not get as crisp a picture out of a high resolution colour monitor as with a high res mono monitor due to the difficulty in creating a colour display. This is easily seen when working with text. Most games run either in low or medium resolution colour and few will run in monochrome.

In answer to your final question, the monitor cannot directly affect the printer in terms of quality.

If you are using a poor, out of focus colour television you won't get a poor, out of focus screen dump! The dump depends on the screen mode the ST is operating in.

Making Midi music

I AM the owner of a Technics SX70 organ, with all the latest Midi equipment. I am thinking of buying a computer with a view to computing, editing and printing out music via the Midi interface.

Could you please advise me on the best computer to buy for this purpose and where the software can be bought. –

D.Taylor, Southport.

● The ST is an excellent computer and has a built-in Midi facility which will connect to any suitable keyboard or synthesizer. There are a host of music and

Midi packages on the market and you'll find a survey of suitable software in the May 1987 issue of Atari ST User and full reviews of Super Conductor and Ez Track in the June 1987 issue.

You'll find the addresses of the software companies within the survey and reviews.

Looking into the future

I HOPE you don't mind a Spectrum Plus owner writing to you because I'm seriously thinking of upgrading my computer from the 48k Spectrum to the Atari 520STFM in the near future.

I can't do this for the next 6 to 12 months because of the cost. Can you tell me if it will still be available then and will it have dropped in price?

Will all the extras such as a mouse, discs and free software be part of the package?

I have read quite a bit about the 520STFM and like it a lot. Will my Fergusson MC01 monitor with RGB input and Brother M1009 dot matrix printer with serial and parallel interfaces work?

I have been told that they should but can you confirm this?

The only thing that puts me off the ST is the price of software and I would only buy a few items such as an art package, a word processor and Fleet Street Publisher.

I have also read that the ST cannot be used without Gem. I have seen this on other micros and found it very exciting. Can I use this with my discs or will I have to buy extra ones?

I am interested in astronomy and space and want to know if there are any software packages dealing with these subjects? –

A. Pemberton, Northants.

● The ST is likely to be around for some time to come so don't worry about it disappearing in the next year. The old 8-bit Ataris have been around since about 1978 and are still going strong after nine years. In fact some of the best software is just beginning to appear.

Looking at Atari's track record it's a pretty safe bet that in a couple of years the current ST's will be about half the present price and there will be several upgraded models available such as Mega ST's. We can't say what, if anything, will be bundled with the ST a year from now.

If your Ferguson monitor has an analogue RGB input it should work with

Making daisy chains

HAVING just bought an Atari 520ST, I am now wondering which disc drive and colour monitor is best. I would be grateful for any advice you can offer.

I am considering buying a third party drive such as a Cumana or Eidersoft 1Mb drive. Can these be daisy chained like the Atari drives? Do they offer any other advantages (other than price) over the Atari 1Mb drive?

In terms of graphic quality is the Atari medium resolution colour monitor (SC1224) any better than a comparable third party monitor, such as the Philips CM8533?

One particular problem I have observed with colour output is the tendency of some displays to show faint vertical lines (presumably the 80 column character positions) which tend to detract from the excellent graphics.

Is this a problem with the computer or

your ST. An STFM will plug directly into any colour or black and white television. The Brother M1009 printer will plug straight in to your ST and you shouldn't experience any compatibility problems.

Arabic ST

I WAS delighted to read the letter from Peter Savage regarding Arabic word processing in the April 1987 issue of Atari ST User.

Unfortunately, neither the address or telephone number of Micro Praxis was mentioned in your reply. As I am eager to acquire this program, I would be most grateful if you could supply the aforementioned information. –

M.Abdelkarim, Kuwait.

● Happy to oblige. Micro Praxis can be found at Enterprise Workshops, Nursery Street, Sheffield. S3 8CG and their telephone number is Sheffield (0742) 739982.

Piggy-back blitter

I AM an 8-bit Atari owner about to buy a 520STFM and I need your help. Is it possible to fit a blitter to the main circuit board without having it piggy-back on top of the CPU as I am worried about reports of this chip crashing games software?

I would fit the chip if it was possible to switch it out when running games.

Of course, with it piggy-backed to the CPU it wouldn't have this option and this

with the monitor, and how, if at all, could it be rectified? Like many newcomers to the ST I would appreciate regular reviews in your helpful and informative magazine of the more general peripherals like those I have mentioned. I hope these are a feature in the near future. – **M. Thornton, Skirlaugh, Hull.**

● If Cumana have adopted Atari's disc drive guidelines you will find that it will be possible to chain up to two drives. We have not had any experience of Eidersoft drives but it is likely to follow the same guidelines.

You will find that there is hardly any noticeable difference in picture quality between the Atari and Philips monitors, though the Philips is very slightly sharper if you look closely.

We found that the Sony KX14C1 is the best compromise between quality and price and is the one we use in the office. As to the faint lines appearing on the screen we have not encountered this problem and you may find that it is caused by the unit being positioned near a high frequency device which causes interference on the monitor.

would relegate the computer to business use only. – **Ken Brunning, Cambridge.**

● At the moment the blitter chip is not available and there is no definite release date. The chip is piggy-backed and must be mounted like this due to the nature of its job and also because there's no room on the main board.

It should not crash software. Much software should be improved by the blitter, particularly if it runs under Gem.

Games software normally doesn't as the programmers usually bypass the operating system and write directly to the main screen memory and hardware. The blitter is unlikely to have any affect at all on games.

Out of control

EVERY so often the Control Panel and Install Printer facilities fail to appear on the drop down menus of my 520ST, both before and after booting up with my 1st Word disc.

The Tos is in rom so they should be there every time. It happens both after booting up with the master disc, my working copy and with the language disc.

The lack of Install Printer means that I can't print out a file, which I need as a freelance journalist. Resetting the computer does not always bring up the facilities. Other times, I have to turn off the machine and wait.

I have had problems with three 520ST's

– the original, which eventually had a complete nervous breakdown (bombs and migraine patterns all over the screen), the supplier's demonstrator, (which we had while waiting for a replacement) and a new machine. Can you offer any advice?

Is it commonly known that 1st Word's Ok, Cancel and Continue boxes which have a bold border can be 'clicked on' by pressing the Enter key? And that clicking above or beneath the scroll bar moves the text up or down one screen's worth of information at a time? – **Rob Searle, Woking, Surrey.**

● The Desktop accessories you refer to are contained in an .ACC file called CONTROL.ACC. This file needs to be present on the disc when resetting or booting up the computer. It makes no difference whether you have Tos in rom or on disc.

You should still be able to print out your 1st Word files without Install Printer appearing on the drop down menu. It sounds like you may have another faulty micro.

One of the buttons in all Dialogue and Alert boxes will have a thicker border than the rest. This is the default option, chosen when you hit Return or Enter.

Colour only?

I HAVE noticed that some software advertisements carry the legend "For colour monitors only". Does this mean that these programs are not usable on an ordinary television via the modulator? – **Robert Baines, Winslow, Bucks.**

● This warning can normally be taken to mean that the software will not run on high resolution monochrome monitors.

If the program is a game with little text, a normal domestic television fed by a modulator should display the picture well enough to play.

Remember a program with a high text content, such as text adventures, word-processors, databases and so on that uses 80 column text in medium resolution mode will be very difficult to read.

Monochrome v colour

WHEN changing from a high resolution, monochrome monitor to a television, is it necessary to unplug the monitor from the back of the ST before connecting the television?

I would rather not unplug it to cut out wear and tear to the monitor plug and socket.

Are there any monitors available that display all three screen modes and which are relatively cheap? If not, will there be any on the market soon? – **Peter Medrow, West Sussex.**

● We assume you are referring to a 520STFM with a composite video output

for feeding into a UHF modulator.

You can have both modulator and monitor connected at the same time but the monitor will take priority and all you'll see is a blank television screen. The only way to output the video signal through the modulator is to unplug the monitor.

There are no monitors available which will allow all three screen resolutions to be used. The chief reason for this is that monochrome pictures are transmitted at 70 MHz and colour at 50 MHz.

Printer control

I HAVE only had an ST, Fast Basic and Epson LX86 combination for a few weeks, having upgraded from a Spectrum and Alphacom combination. The following may be decidedly old hat, but there must be quite a few like me who haven't been able to resist the current prices and although not new to home computing, are new to real computers and printers.

The first job after reading the Fast Basic manual was to list some of the programs from the demonstration disc. However, I didn't like the default format of the listings so the LX86 manual was opened again. I'm not new to hexadecimal and Ascii, but found the LPRINT method of sending the printer commands a bit of a bind.

Assuming fan fold paper with the top of the ribbon guide set at the perforation, execute the following:

```
OUT 0,27,102,1,tm-1,
27,64,27,78,tm+bm,
27,82,0,27,33,ms,
27,108,lm,27,81,rm,7
```

where tm is the top of form margin, bm is the bottom of form margin, ms is the master style combination, lm is the left margin and rm is the right margin.

Admittedly this isn't user-friendly, but it could be incorporated within a Basic program and expanded. It has the advantage that you can forget about whether a carriage return (or anything else for that matter) is inadvertently sent, since only the bytes in the listing are sent to the printer.

ST Basic also has an OUT command, but it only allows two parameters including the port number. I didn't pursue this. – **David Roberts, Lewisham, London.**

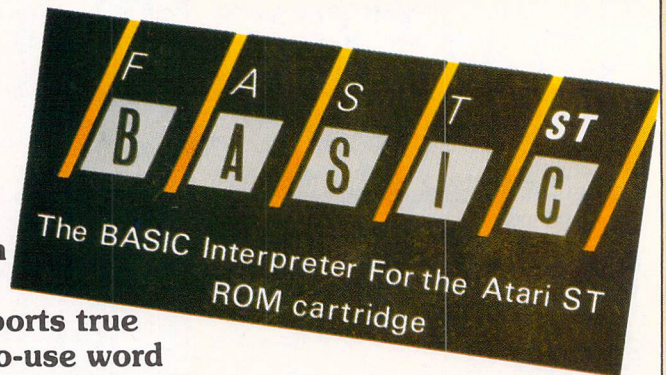
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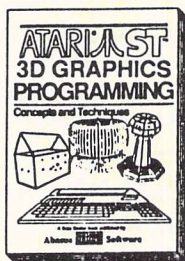
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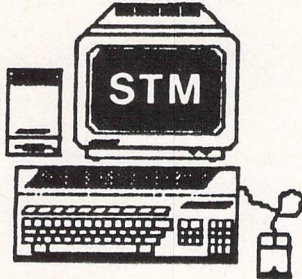
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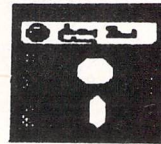


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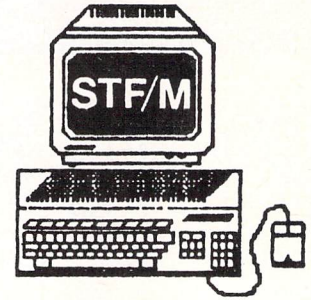


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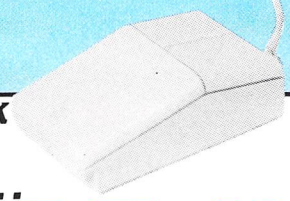
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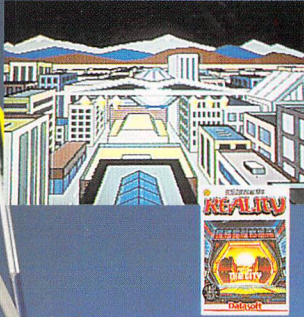
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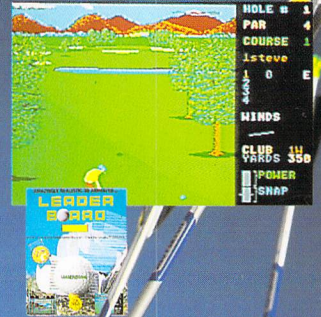
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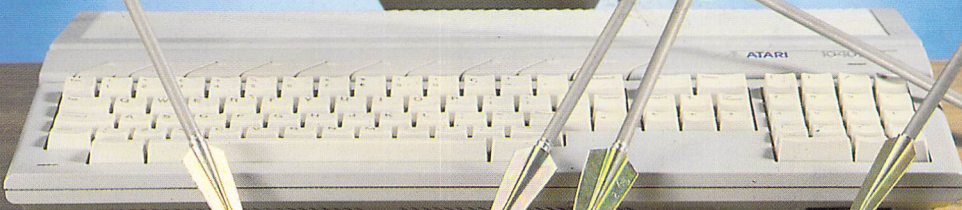
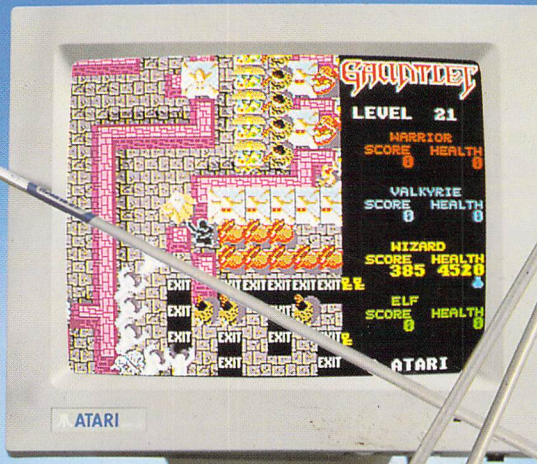
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