BRITAIN'S LEADING MAGAZINE FOR YOUR ATARI ST

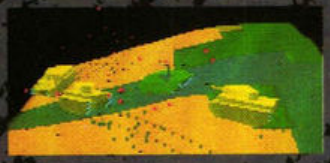
ISSUE 9 ■ APRIL 1990 ■ £2.95

ST FORMAT

COVER DISK 9

BIG 3 DEMOS

1 CONQUEROR
2 PIPE MANIA
3 CANVAS



NEED HELP? TURN TO **PAGE 21** WHERE ALL IS REVEALED

HAVING LOADS OF TROUBLE? DON'T PANIC: JUST TURN TO PAGE 21 FOR EVERYTHING YOU EVER WANTED TO KNOW ABOUT THE COVER DISK

NO COVER DISK? ASK THE NEWSAGENT FOR YOURS NOW!

GRAB IT!

How scanners can give your ST a whole new image

THE ONLY COVER DISK THAT OFFERS YOU THREE BIG FULLY USEABLE DEMOS! /

INSIDE: INCENTIVE EXCLUSIVE / 20 PAGES OF GAMES / ST GOES STARGAZING!

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TAKE THE LA

OWN

THE FASTEST, MOST THRILLING 3D DRIVING GAME YET!

VOTED **ARCADE GAME OF THE YEAR**

Take the wheel of your turbo-charged Porsche as you and your partner go in pursuit of danger-ous criminals all driving an evil array of souped-up roadsters.

TAITO

A Crash Smash

TURBO BOOST!

Need to catch up in a hurry? Well, just one press of your Turbo Button will leave your eyes in the back of your head!

BARRELLING THROUGH THE CITY STREETS, along the roughest of dirt tracks and through busy tunnels – if you can hold the line! The low life can run, but they can't hide ...

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N INTO YOUR HANDS

SIX INSPIRED

action sequences put you in control of Elliot Ness's elite squad of crime-busters.

ALLEYWAY SHOOTOUTS, THE BORDER RAID,

The Railway Station confrontation and Warehouse bust culminating in the thrilling denouement of a

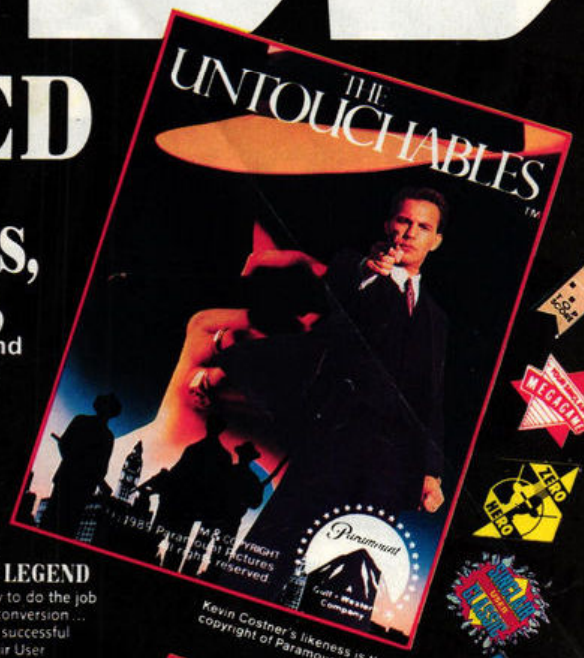
ROOFTOP DUEL

as you re-live the knife edge existence of Ness in his struggle against the retribution of Capone!

THE UNTOUCHABLES – LIVE AN AMERICAN LEGEND

'an absolute corker of a game ... as smooth and polished as you can get. animation is top notch ... a brilliant film conversion' Games Machine

'a fine example of how to do the job properly ... a cracking conversion ... easily one of the most successful licences to date' Sinclair User



Kevin Costner's likeness is the copyright of Paramount Pictures.

BLOCKBUSTER FOLLOW-UP TO LAST CHRISTMAS'S No. 1 HIT... OPERATION WOLF...

NOW WITH TWICE THE ACTION, TWICE THE FUN, TWICE THE CHALLENGE

ROY ADAM IS BACK!

The Hi-jack report came from a DC10 leaving Paris for Boston –Arab guerillas were in control of flight 102 and had turned the aircraft towards Africa... The plane lands in hostile territory and the terrorists begin their demands...

USE THE LASERSIGHT

or the bulletproof vest, but watch out for

AIR-TO-GROUND MISSILES

Operation Thunderbolt the incredible Taito coin-op conversion brought NOW to your home computer.

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Make the most of our *Canvas* Cover Disk demo ——— 28

Cheap ST networking: is this the breakthrough? ——— 31

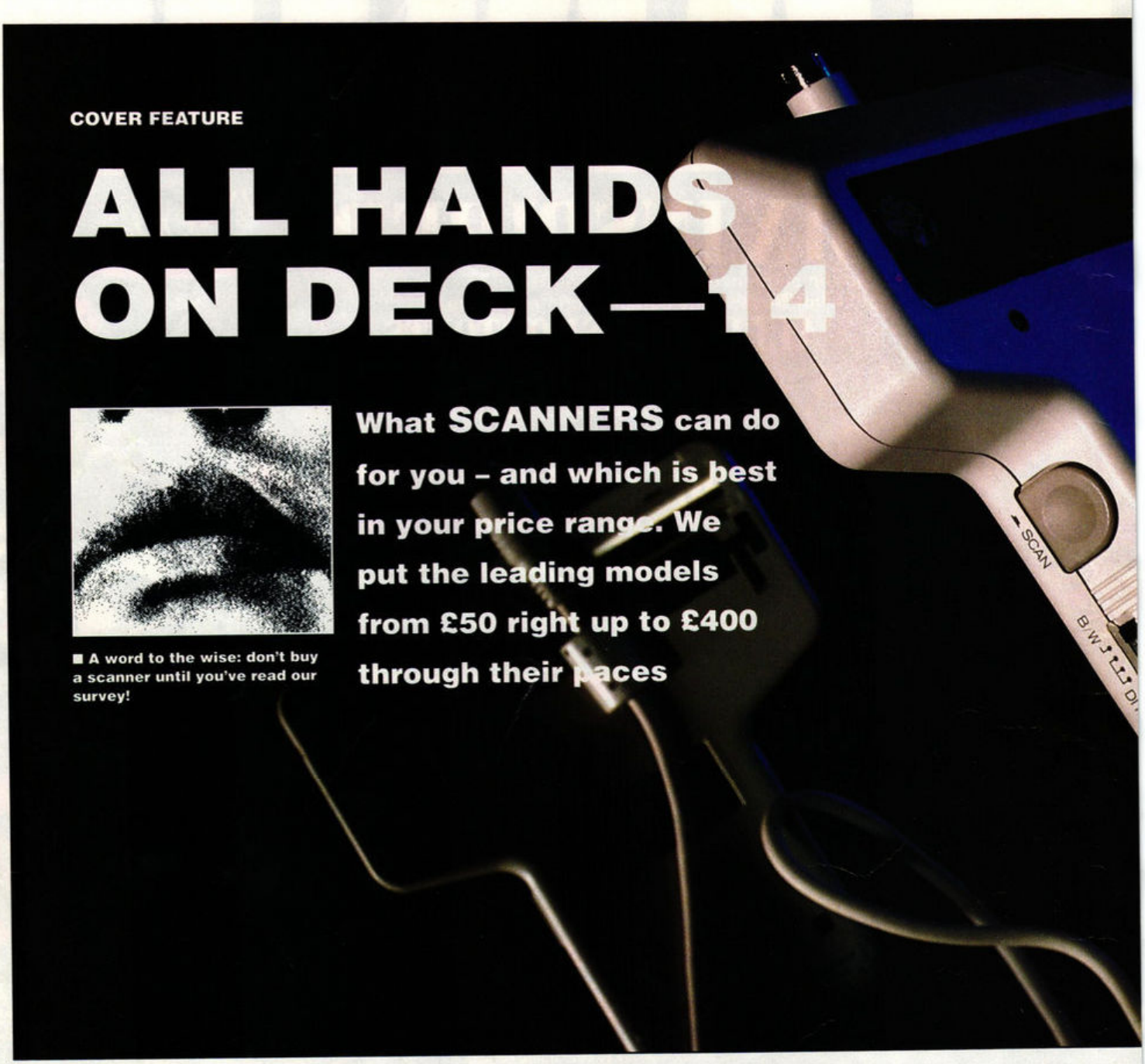
Secrets of the creation of Incentive's *Castle Master* — 70

COVER FEATURE

ALL HANDS ON DECK — 14

■ A word to the wise: don't buy a scanner until you've read our survey!

What SCANNERS can do for you – and which is best in your price range. We put the leading models from £50 right up to £400 through their paces



ST FORMAT

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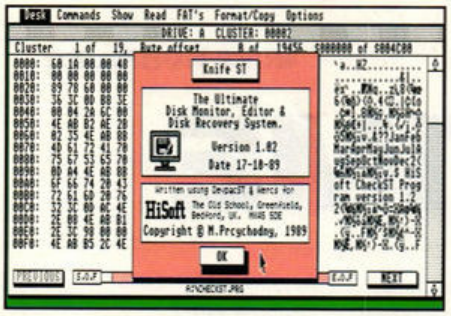

HiSoft's *Knife ST:* the ultimate in utility packages——109

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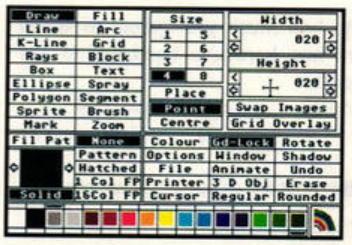
THREE MASSIVE DEMOS – AND MUCH, MUCH MORE!

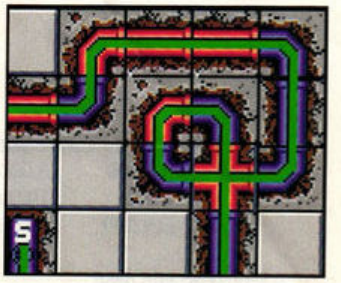
CANVAS

***Show off your talent* with Microdeal's 512-colour art package**



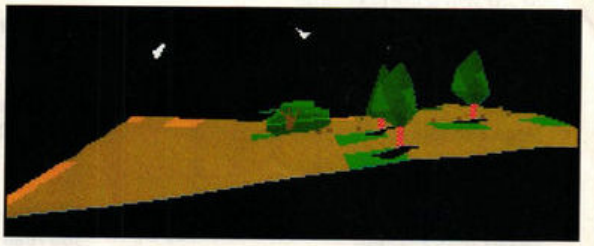
PIPE MANIA

***Plumb the depths* of Empire's massively addictive pipe laying frenzy**



CONQUEROR

***Prepare for war* with Rainbow Arts' superb tank simulation**



Plus TURBO ST turbocharge your ST! ● TEMPUS 2 the ultra-fast text editor ● *CYBER* ANIMATION SEQUENCE (page 94) ● C-PROGRAM EXAMPLES (page 123) ● CANVAS MANUAL (page 28)

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QUESTION TIME

We didn't get where we are today without listening to our readers. But we want to make* ST Format *even better – and with your help we will: spend just a few minutes answering our questionnaire

(Where you are asked to choose from a list, please do so by circling a category or ticking a box)

Name .....

Address .....

.....

.....

1 Are you:

Under 16 | 17-24 | 25-34
35-44 | 45-59 | Over 60

2. Are you:

Female | Male

3 How much do you earn a year?

Less than £3,000 | £3,000-£5,999
£6,000-£9,999 | £10,000-£14,999
£15,000-£19,999 | £20,000 or more

4 Which do you own?

520ST with single-sided drive ☐
520ST with double-sided drive ☐
1040ST ☐
520STE ☐
1040STE ☐
Mega 1 or above ☐
Stacy ☐

5 What hardware do you (a) own or (b) intend to buy during 1990?

	(a)	(b)
Hard disk	☐	☐
Joystick	☐	☐
Memory upgrade	☐	☐
Modem	☐	☐
Monitor	☐	☐
Printer	☐	☐
Scanner	☐	☐
Second disk drive	☐	☐
Sound sampler	☐	☐
Other (please specify)		

.....

6 What software do you (a) own or (b) intend to buy during 1990?

	(a)	(b)
Accounts	☐	☐
Art	☐	☐
Comms	☐	☐
Database	☐	☐
DTP	☐	☐
Games	☐	☐
Music	☐	☐
Programming lang.	☐	☐
Spreadsheet	☐	☐
Word processor	☐	☐
Other (please specify)		

.....

7 What do you use your ST for? Estimate as a percentage of the time you spend on your ST:

Games ..... %
Serious (wp/business/education) ..... %
Creative (art/graphics/music) ..... %

8 Estimate how much you spent on hardware and software last month:

Less than £20 | £20-£39 | £40-£59
£60-£79 | £80-£99 | £100 or more

10 Estimate how much you expect to spend on software and hardware combined in the next 12 months:

Less than £20 | £20-£39 | £40-£59
£60-£79 | £80-£99 | £100 or more

11 Name the best ST game you have played:

.....

12 Name the best piece of serious (ie non-game) ST software you have used:

.....

13 Rate out of ten the computer magazines you read

ST Format ..... /10
..... /10
..... /10
..... /10

14 Which other, non-computer, magazines do you read?

.....
.....
.....
.....

15 Which newspaper do you read most often?

Express | Guardian | Independent
Mail | Mirror | Sport
Star | Sun | Times
Today | None of these

16 Rate out of ten these regular sections in *ST Format*

Cover Disk ..... /10
Desktop ..... /10
Gamebusters ..... /10
Games reviews ..... /10
Graphics ..... /10
Hardware reviews ..... /10
Music ..... /10
News ..... /10
PD ..... /10
Readers' letters ..... /10
Software reviews ..... /10
Adverts ..... /10

17 To help us get the balance right on the Cover Disk, allocate points to make a total of ten. (For example, if you love playable game demos but aren't keen on reader contributions, you might score demos six points, two each to serious and PD programs, and give none to reader contributions – making ten in all.)

Playable game demos ..... points
Serious software ..... points
Public Domain programs . points
Reader contributions ..... points
(Total .....10 points)

17 What single review or feature do you remember as being the best thing you've seen in *ST Format*? .....

.....

18 – and your least favourite? .....

.....

19 What do you remember as being the best *ST Format* cover? .....

.....

20 – and your least favourite? .....

.....

21 Do you:

(a) have a regular order for *ST Format* with your newsagent ☐
(b) subcribe ☐
(c) intend to subscribe ☐
(d) none of these ☐

Final section. Now, tell us anything you think we should know about *ST Format:* how to improve it; what you love or hate; ideas for series or features; or just better ways of doing things. (We'll print a selection of comments in a future issue.)

.....
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AND FINALLY...

Send this questionnaire or a photocopy to: *ST Format Questionnaire 1990*, Future Publishing, Beauford Court, 30 Monmouth St, Bath BA1 2AP. We shall be collating the replies at the end of March. Thank you for your help.

www.stformat.com

ATARI LAUNCH NEW ST ASSAULT

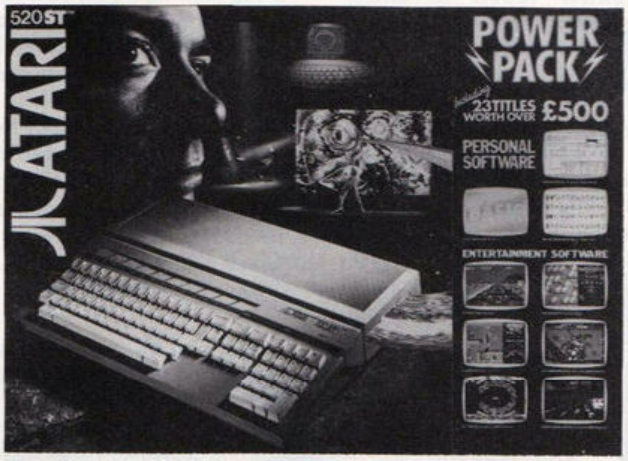
Atari are expected to announce a new sales initiative this month designed to make the ST "the best entry-level option on the market." Details leaked to our sister magazine *New Computer Express* indicate that Atari plan to push the STE very much as an upgrade to the ST, and this is to be reflected in a £100 price differential.

The current ST bundle the "Powerpack" is to be phased out and the 520ST is to be re-launched in a revised bundle called the "Discovery Pack" at £299.

This new price effectively re-instates the price gap between the ST and Commodore's games machine (called the Amiga), and does much to restore the balance upset during the campaign of Christmas '89 by the well-received Amiga *Batman* pack and the ST upgrade incompatibility fiasco (see last issue).

Atari expect stocks of the "Powerpack" to be exhausted by the end of March, leaving the way clear for the new pack. This is good news for prospective ST owners, and also comes as a welcome boost for software houses who are said to have felt the pinch since the introduction of the "PowerPack" and its 23 free games. Although the bundle stimulated hardware turnover, there have been complaints that the number of games that come supplied with the machine have hit over the counter software sales. To emphasise the needs of the first time buyer, the planned bundle is to include a home productivity pack, and five games carefully chosen for their "buyer awareness" and high profile.

The new sales approach for the STE reflects Atari's perception of the machine's place within the ST range. There is currently no price differential between the STE and the ST, but the 520STE is now to be priced at £399 – without an accompanying bundle – and £499, with £3-400 of Kuma serious software. Insiders at Atari say that anyone who has already bought an STE can "count themselves lucky" because the upgrade is now fully operational. (This will no doubt come as a welcome surprise to STE owners still experiencing incompatability problems.)



■ **Atari's PowerPack bundle is being phased out, to be replaced by a new selection of serious software and just five gamesz**

Atari are sounding more bullish than they have for months, boldly countering stories that the Amiga outsold the ST over Christmas with assertions that Commodore could not meet demand and ended up selling only 60,000 Amigas.

Atari had apparently hoped that this new sales initiative would herald the arrival of the STE, but the word from Atari is that a dockstrike at Folkestone before Christmas upset marketing plans and general shortages of the ST meant that they had to fly 20,000 machines into the country to satisfy demand.

The ST "installed user base" in the UK (such terrible jargon these people use) is now claimed to be well over 250,000, and Atari's proclaimed intention is to sell twice as many STs this year as it did last. "We'll be at 300,000 from April," *ST FORMAT* were told.

■ **The Atari Show, wittily entitled Atari '90, is to take place at the Hammersmith Novotel on 1, 2 and 3 June. As predicted in *ST Format* (issue 5), the show will be split, with all Atari's product range on show, together with a users' and developers' workshop, a DTP area and the usual bargains. An extra bonus is the mere £2 entry price (£4 for a family of four). More details next month.**

GFA Raytrace Cover Disk demo: an apology

GFA UK would like to apologise to the readers of *ST FORMAT* who were unable to use their demonstration version of *GFA Raytrace* on *ST FORMAT's* March Cover Disk.

The problem was due to the programmer being over enthusiastic in reducing the size of code required for a demonstration version. Mega ST and 1040 ST/E users were not affected.

We would like to make it absolutely clear that the full version of *GFA Raytrace* is not affected by this problem and functions on all ST machine formats.

GFA UK would like to compensate readers of *ST FORMAT*, by offering *ST FORMAT* the chance to put the full version of *GFA Raytrace* on the next available Cover Disk.

For the *ST FORMAT* readers who would like to purchase the full *GFA Raytrace* package, including manual, other supporting programs and demonstrations, GFA UK have reduced the price from £39.95 to £19.95. This offer is limited to readers of *ST FORMAT* and valid for a period of one month only – after which it will return to its normal recommended retail price of £39.95.

For further information on this excellent offer contact GFA Data Media UK on 0734 794941.

LES PLAYER
(GFA DATA MEDIA UK)

Stiff sentences for German ST spies

Dirk Brzesinski, Peter Karl and Markus Hess, the three Germans charged with espionage for breaking into computer systems and selling secrets to the KGB, were convicted in Celle, West Germany on February 15. The fourth member of the group, Karl Koch, committed suicide in suspicious circumstances before the trial, by setting himself on fire in a forest near Hannover.

After breaking into various military computer systems, by using their modem to navigate through several international network gates, the four sold telephone numbers and IDs to their Soviet contact called "Serge" for a sum of DM90,000 – about £34,000. According to the judge, no demonstrable damage was done but the three still got sentences between 12 and 24 months.

■ **Clifford Stoll: the man with the yo-yo who tracked the hackers**

The main motive, according to Brzesinski, was to help the Soviets catch up with the West and balance the technical know-how on both sides. German television showed the confiscated equipment, among which, an ST, an external floppy drive and two Atari monitors featured prominently. The trial made history because this is the first time anyone has been convicted of a computer related crime in Germany.

DON MAPLE

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NEWS IN BRIEF...

■ Atari have finally decided on a price for the Atari Lynx hand-held. Launched at the British Toy and Hobby Fair last month, the Lynx is to retail at £149 (predicted in *ST FORMAT* issue 8) and should be in the high street as you read this. Television advertising will herald the arrival of the Lynx in retail outlets.

■ In an attempt to boost the traditionally slow summer sales period, electronic high-street box pushers Dixons have knocked a clear £30 off the price of an ST Explorer pack (normally £299), reducing the bundle to £269.99. The company are also planning to give a free electronic hand-held game but haven't decided which one yet.

■ Joysticks giant SpectraVideo have recently acquired the sales and marketing rights to the complete *Quickjoy* range, and the company intend to release a large amount of new sticks soon. Spectravideo hope to have 15 joysticks in the UK covering the £10 to £40 range by the end of 1990.

■ Critics of Arnor's *Prodata* database can take heart – Arnor are releasing an upgrade to the program very soon which irons out the bugs in the current version. Multiple line headers and footers, mouse-based editing, global totalling of data, sub-database creation and better support for smaller memory STs are just some of the new features. Contact Arnor on 0733 68909.

■ One of the world's largest music trade fairs takes place in Frankfurt in March. European and American software houses and Japanese instrument manufacturers traditionally launch their new music products at the show because the event is seen as gateway into the huge European market. We'll be there to report on all the very latest news and product releases.

■ Kempston are releasing a much improved mouse for the ST featuring 250 dpi resolution, micro switch button and extra long lead. Costing £34.95, it comes in a specially colour-co-ordinated tasteful two-tone grey to complement your ST. Phone Pandaal Marketing on 0234 855666 for more information.

■ The latest budget sequencer, *Tiger Cub* from Dr T, weighs in at just under £100. For this you get a 12 track sequencer, graphic editing and notation that can be output to most printers. Phone MCMXCIX on 01 724 4104 for further details.

GEM OF A DATABASE

And now, for stamp collectors, train spotters and record cataloguers everywhere comes *DGBase*, a new and innovative database from popular business software house Digita International. Previously known for their personal finance packages *Cashbook Controller* and *Personal Tax Planner*, the company haves created a filing solution that fully utilises the power of the GEM interface to make managing complex databases easy.

DGBase enables even the complete novice to design customised reports, personnel records and perform label printing and mail merge without poring over heavy technical manuals. All functions are available via pull-down menus and there's a comprehensive on-line help facility should you get stuck.

Other goodies include a built-in word processor so you can write short reports and memos and merge them into your database, relational database design enabling easy manipulation of data and powerful reporting and printing options.

Digita are also releasing *System 3*, a new integrated finance application featuring sales invoicing, stock and cashflow control.

DGBase costs £49.95. A price is yet to be announced for *System 3*. Contact Digital International on 0395 270273 for more information.

■ **Integrate all your cash flow problems with *System 3***

Digital dally with death

Chests are puffing out all round at Digital Integration, the popular flight simulator programming house, after their collective ego was massaged by the editor of jingoistic flying mag *Airforces Monthly*.

Contrary to the theory that computer games – particularly violent ones – can be unhealthy for children, the company firmly believes their *F16 Combat Pilot* flying, shooting-down and killing game is positively educational.

The current issue of the fly-boys monthly contains a stout editorial line containing such phrases as "strong educational basis" and "excellent insight into the complexities of flying...the F16, the world's leading fighter plane."

As each day brings more news of Eastern Europe's further steps towards democracy, *ST FORMAT* wonders the fate awaiting all highly trained young flying fighter/killers...

Yamaha axe DX7

After nearly seven years, Yamaha have launched a replacement for their popular DX7 synth. The new model – the SY77 – contains no less than 11 sound generating configurations, and uses Advanced Frequency Modulation and Advanced Wave Memory. Slightly larger than the DX7, it comes with 128 samples, 64 performance memories and 128 AFM sounds. The SY77 can play 16 instruments simultaneously via MIDI and features a disk drive for storing voices and material created using the on-board sequencer.

Many software houses have started writing for the device already and Steinberg have announced a voice programmer from their *Softworks* range. There's also a host of conversion programs expected for old DX7 voices. A couple of less well specified machines – the SY55 and SY22 – complete the range. Look out for a full review of the SY77 in *ST FORMAT* soon.

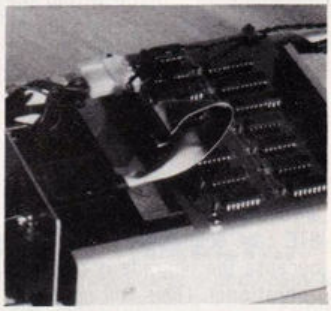
Home-brew hard drive

Want a hard drive, but can't afford the asking price? Just for you bbdp Electronics have designed a little device which enables you to connect a separate or embedded SCSI (Small Computer Systems Interface) hard drive to your ST without the expense.

Although the ST is equipped with a fast DMA port providing direct access to the ST's memory, the interface is completely incompatible with popular hard drives. The new interface board enables any drive connected to a SCSI controller to be used with the ST.

In order to keep costs down, the device doesn't have an on-board clock or DMA through port, though there's space to add these features if required. Price? A breathtakingly cheap £49.95. The package comes complete with DMA cable, software and full assembly instructions, VAT, post and packing.

If you can't spare the time to build your own hard drive, bbdp will sell you a complete 20MByte device based around the interface for £350 + VAT. Further information on 0383 881768.



■ **Now you can connect any SCSI hard drive cheaply and easily**

www.stformat.com

Special K

Kuma have just released the upgraded version of the best selling *K-Spread* spreadsheet program.

After listening to spreadsheeters everywhere, the new *K-Spread 4* features macro support, 200 statistical data management, arithmetic and conditional functions and improved access to graphing and page layout. GDOS is included to enable users to perform sideways printing and a printer driver is available separately for the Atari laser printer. *K-Spread 4* costs £129.95 available from Kuma on 0734 844335.

BARD DISK

A level students, the literate, and members of the computer culterati will be pleased to hear that they can now get a copy of the Complete Works of William Shakespeare in electronic format.

Complete Works Publishing have recently launched a new disk-based edition of the work in the popular *1st Word* format. The current edition comes on three disks each priced at £6.95 and features nine works including *Julius Caesar*, *Richard III*, *The Tempest*, *Hamlet* and *Macbeth*. The remaining material will be released shortly.

Fans of Oscar Wilde, William Blake and William Wordsworth can also rejoice, because Complete Works Publishing plan to release works by each of them very soon.

Publishing classic literature on disk offers a large amount of flexibility for theatre groups who can print their own manuscripts amending them as necessary, and those with reading or eyesight difficulties who can view the text in a larger point size or clearer font.

Does it spell the death of the paperback? For further information on literature hitting the big screen phone 0403 86438.

Trade show looms

Future Publishing, the company that publishes the magazine you're holding in your hand, as well as several other nearly as good market-leading titles, is the sole UK representitive at the prestigious European Computer Leisure Awards Show, to be staged at Olympia, London on the 1st, 2nd and 3rd of April. The show is devoted to awarding the very best serious and leisure software applications launched during the past year.

Computer magazines from around the world are offering nominations for the best software of the year. Award categories include Best Game, Best Database, Best Word processor and so on.

Read all about the winners in next month's *ST FORMAT*...

Laser price stun

From being a plaything of the rich and professional, laser printers have gone on to become the latest "must have" for enthusiastic amateurs everywhere.

Unfortunately, unless you have the wallet and floor space of one of the Getty family, there's little chance to make use of all that laser printing power, until now...

The latest release into the laser market, the LRZR650, comes from relatively unknown Mekon Computer Products Ltd and is a fully-featured device with the smallest footprint on the market (just 1.3 sq.ft.).

Priced at a very reasonable £1625, the LZR650 has two paper hoppers, a hare-like printing speed of six pages per minute, 4.5MByte memory, and five printer emulations as standard – including HP LaserJet II, Epson FX80 and IBM Proprinter. Further details on 021 766 6886.

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STORY *Don Maple*

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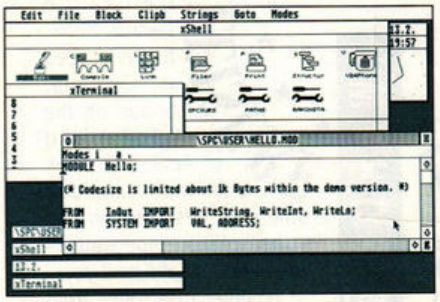
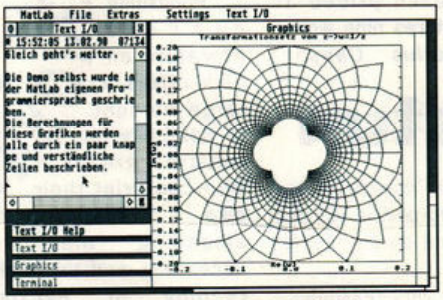


■ ***SPC-Modula-2* is keeping pace with changes**



■ ***ST MATLAB* calculates and displays complex mathematical functions**

SPC-Modula-2 aroused a lot of interest at the recent Modula-2 conference in the UK late last year. As a result of this the English language version is being produced and is scheduled for release this month (April).

In addition to several updates each year the users can look forward to a new compiler and I/O library once the standardization procedure is complete. This standard *Modula-2* also runs under Unix – which means on the ultra-high end ST-compatible TT as well.

The new version, 2.1, of *SPC-Modula-2* is a complete development system supplied on three disks. The language consists of a graphic shell, language specific editor, fast compiler, linker, dynamic loader and source level debugger. A standard *Modula* library and all GEM libraries are also provided. The package is rounded off with an SPC specific RAM disk, the Digital Research Resource Construction Set 2.1 and *GFA Basic*-library.

Modula-2 is a high level language originally developed at the ETH institute in Zurich, Switzerland, by N. Wirth, the father of structured programming. Following Pascal, which was never intended to be more than just a teaching tool, *Modula-2* was designed as a comprehensive top-down language.

As a member of the International *Modula-2* Standardization Committee, AAV are at the forefront of *Modula-2* programming. Their *SPC-Modula-2* is supplied with and runs under the SSWiS windowing system. SSWiS, "Small Systems Windowing Standard," is a generic set of basic functions for a Graphic User Interface (GUI). Because SSWiS is not machine specific, it can be easily ported and offers pseudo-multitasking even on systems without a multitasking operating system.

AAV's commitment to *Modula-2* also extends to other programs. *ST MATLAB* is the most recent standalone application which also offers a symbiotic *Modula-2* interface.

This mathematical package, similar in concept to APL, enables the user to perform various complex, vector and matrix calculations. Unlike APL, however, *ST MATLAB* uses standard mathematical notation wherever possible.

The program does complex matrices with up to 2,047 elements performing matrix multiplication and inversion. Other functions include trigonometric, square root, exponential, logarithmic, polynomial and Fourier calculations. The graphic window can be used for plotting of functions and the scaling is performed automatically. Both, graphics and variables can also be saved to disk.

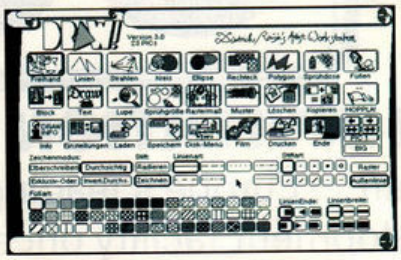
The program contains an interface to *SPC-Modula-2* which enables the linking of *Modula* and *MATLAB* variables. *SPC-Modula-2* can also dynamically load *ST MATLAB* to make all of its functions available to *Modula* programmers. Since the program itself was written in *SPC-Modula-2* it fully utilises its multitasking features. *ST MATLAB* costs DM 248 – about £90. A demo version on disk is available for only DM 10 – about £4.

Advanced Application Viczena do not have a British distributor but can be reached at 01049-721-700912. ■

DRAW!

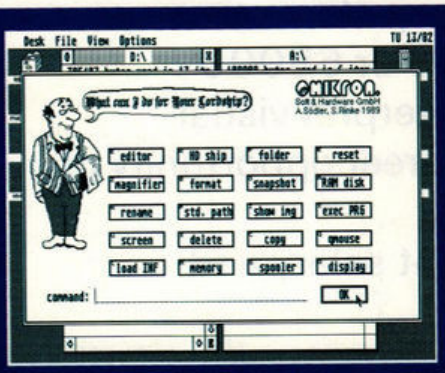
Interested in pixel oriented drawing? *DRAW!* 3.0, released by Omikron, enables you to work simultaneously on as many pictures as will fit in available memory and supports the so-called BIG format with 640x800 pixels.

Augmenting the standard drawing tools, the powerful block editing, automatic masking and contract enhancement are well-suited for touching-up digitised images. *DRAW!* only works in monochrome and requires a minimum of 1MByte of memory. For further information Omikron are available on 01049-7082-50048.



■ **The main screen of *DRAW!***

MORTIMER, AT YOUR SERVICE



■ ***Mortimer*, the gentleman's gentleman!**

Described as "the butler," *Mortimer* from Omikron is a TSR (Terminate and Stay Resident) program with a number of very useful features. Invoked by pressing Alternate/Control it gathers together all those little things you wanted but were too lazy to leave the current program for. In addition to the usual functions such as a notepad, calculator, automatic screen blanking, parallel and serial spoolers, the program also contains a few unusual ones.

The mouse accelerator is controlled by a variable formula adjustable by the user. The snapshot saves the screen in a number of graphic formats, while its counterpart shows different image files at a flick of a wrist. The magnifier function not only enlarges the screen to twice the size but allows you to continue working in this mode. But the most interesting features are the resizeable RAM disk and printer spooler that grow and shrink automatically according to need.

Being a TSR program – as opposed to an accessory – *Mortimer* works from TOS and TTP programs as well, operates in all resolutions, speaks English and costs DM 79 – about £30. Omikron can be reached on 01049-7082-50048.

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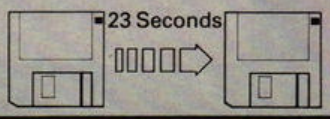

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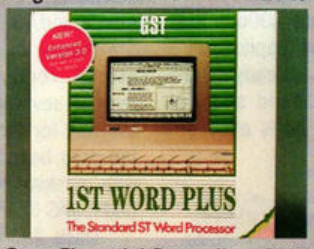

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Getting photographic quality images into your ST takes no more than rolling a hand-sized piece of plastic across an image. Palms still warm from the touch of hot plastic, **ST FORMAT** *scans the options*

A SCAN FOR ALL REASONS

STORY *Jerry Glenwright*
PHOTOGRAPHY *Ashton James*

As the technically superior ST becomes increasingly acceptable to a professional DTP and graphic design market, there's never been a greater need for photographic quality images available on screen and within documents. However, scanning isn't restricted to the professionals. What about filling your music fanzine with groovy scans of your favourite band? And for those who like to play with paint packages but can't draw to save their lives, a scanned image is the perfect base for a fantastic picture.

The scanner is an electronic device that connects to your ST (usually via the cartridge port) and enables you to capture exact copies of photographs, line drawings, text – in fact any image that you want to store, display and manipulate.

Several types of scanner exist but they all work by shining a light at the image to be captured and measuring the concentration of reflected light. This happens hundreds of times forming a matrix over the surface of the image and enables clever software driving the scanner to re-create the original picture in digital form inside the ST. Once stored, the information making up this digital picture can be manipulated in any way using *Degas*, *Neochrome* or any proprietary paint package.

In the right hands, the scanner can produce incredible results. Forget rolling it over photographs, how about introducing it to a piece of sandpaper, lettuce leaf, or textured wall? Roll it down your jumper, over a keyboard or a friend's head. The scanner provides amazing patterns and designs from all those items. Of course you can use it for photographs, line art and other illustrations in order to capture and use them in DTP documents, paint packages and the like, but that's the everyday stuff.

Have you ever had to type a long piece of text into a word processor on your ST? Fine, if you're creating something new, but if you're merely copying existing documents, typing can be a real chore. You need Optical Character Recognition! Basically, clever software that can interpret text captured via a scanner and recognise that text as being true words. Instead of ending up with a digital pictorial representation of a page of text, you get a file which actually contains the ASCII values of the scanned words! No more endless copy-typing getting contributions from freelancers into your fanzine. Roll the hand scanner over a manuscript and it's "typed" in the blink of an eye.

The scanner is just so convenient! Create snappy text effects simply by skewing the device as you roll it down a column of text or design logos and eye-catching banners by capturing unusual images then manipulating the results in your favourite paint package.

Although the most common scanning device is the hand scanner – a plastic box which fits in the hand and is rolled over desired images – there is also the incredibly cheap print head scanner and the up-market flat bed scanner.

The print head scanner consists of two fibre-optic cables emanating from a box attached to the ST's cartridge port. The cables clip onto the print head mechanism of a dot matrix printer. Because this print head can be stepped at precise distances along a page, it can be used to transport the fibre-optic cables in a defined manner over photographs, text and other images. The fibre optics bounce light off the image in the printer (photocopy, photograph and so on) and measure the reflection, relaying the image to the ST via the electronic "black box" attached to the cartridge port. In this way, a digital representation of the original image is captured. Print head devices provide surprisingly good results if you invest a little time and effort into finding the optimum settings for the device.

Next rung on the price ladder is the hand scanner. Slightly larger than the ST mouse, hand scanners have a clear plastic window slit on the underside which emits and measures light. To operate, you simply roll the device over any image and it's captured. Quality of results depend upon the width of the scanning window and the dot resolution of the image capture. Typical width is around 100mm and resolutions between 100 and 200dpi. With a little application – and a steady hand – the hand scanner provides excellent results with high resolution scans possible.

At the top of the range, there's the flat bed scanner. This device is reminiscent of a small photocopier. Lift the lid, lay your image on the scanning surface, close the lid, press a button and scan. Seconds later, an extremely high resolution captured image appears on your ST. The flat bed scanner is expensive but provides results unavailable with any other device.

■ ***IMG Scan*** **consists of two rubber-coated fibre optic cables and a box of electronics that connects to your ST via the cartridge port**

IMG Scan

MACHINE: ALL STs
PRICE: £49.99
FROM: LADBROKE COMPUTING
CONTACT: 0772 203166

Costing just fifty quid, *IMG Scan* is the cheapest scanner in the known universe. The device connects to your dot matrix printer and purports to provide results at resolutions of 1,000dpi! *IMG Scan* consists of a two inch square plastic box which connects to your cartridge port and several feet of fibre optic cable which clips onto the print head of any dot matrix printer. A disk containing the *IMG Scan* software, a manual and example grabs accompany the device.

Load the *IMG Scan* into your ST, fire up the software, attach the fibre optic cable to your printer and you're ready to scan – at least that's the theory. In practice, the cable is tricky to attach, requiring much tinkering. I had to remove several plastic bits and pieces to clear the way for the cable and securing it firmly to the print head was very difficult. After an hour with masking tape, Blu-Tack and various sticky pads, *IMG Scan* was ready to roll.

Once *IMG Scan's* hardware is in place, the accompanying scanning/editing software has to be configured to your printer and the resolution of the scan you wish to perform. This part, however, is comparatively easy. Pull down a ➢

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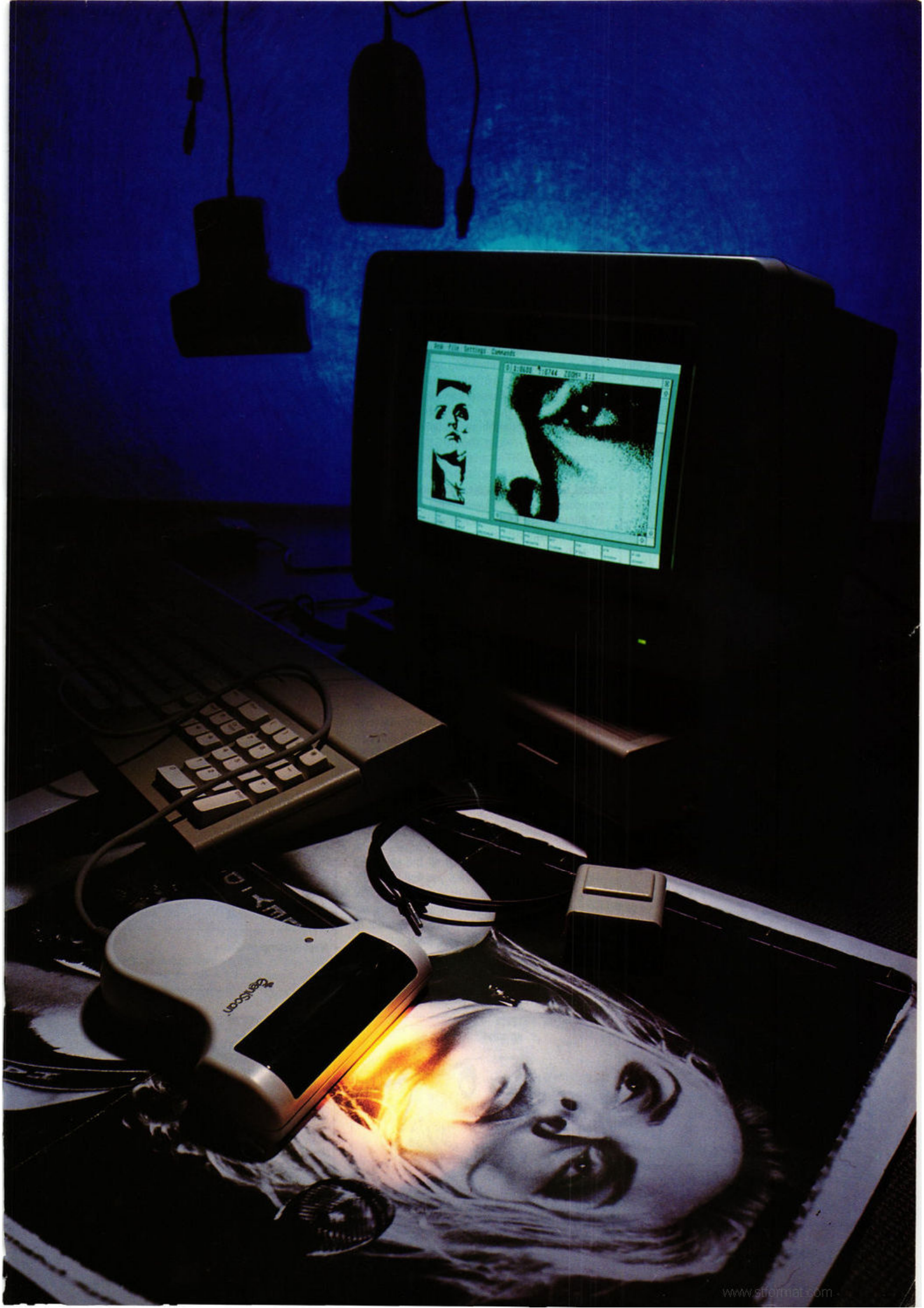
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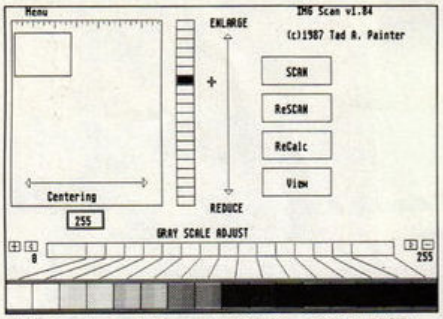
menu, click hither, click thither, select scan and the printer bursts into life. Within seconds a scan is building up on screen. You can select from a range of scanning resolutions covering 75 to 1,000dpi with varying degrees of success. Penalties for choosing the higher resolutions are increased scan time, and greater difficulty securing the fibre optic cables so that they're steady enough to cope with the resolution.

Obviously, it's rather difficult to set-up *IMG Scan* for optimum performance. You must be prepared to invest some time and effort into finding the best position, best software configuration and so on. I found that positioning the fibre optic cable as close as possible to the original image and ensuring that the cables were held clear of the printer to stop them snagging produced quite acceptable results. You can of course touch up the scans afterwards with your favourite paint package.

IMG Scan software saves grabs in several popular formats including *Degas, Neochrome*



■ **You can set the sensitivity of the *IMG Scan* in order to cope with the grey scales of both colour and mono**

and *.IMG*, so there's no problem including its output into your paint and DTP applications.

IMG Scan isn't going to win any quality of reproduction prizes but then it won't give your bank manager a coronary either. At slightly less than £50, the *IMG Scan* is the first rung on the picture capturing ladder. If you're to be found early in the morning on a bicycle with a bag of newpapers, then *IMG Scan* may be the scanner for you. Rich kids, the waged, and anyone currently paying supertax may like to aim slightly higher.

FORMAT RATINGS

IMG SCAN

£49.99 ■ Ladbroke Computing ■ 0772 203166

Features **55%**
Comes with special print head clip and sticky pad

Speed **30%**
Slow compared to hand-held and flat bed scanners

Ease of Use **50%**
Fairly easy to use once the fibre optic cable is attached to your printer

Results **35%**
Pictures can be distorted and it's difficult to affix the cable firmly without stripping down your printer

FORMAT VALUE **64%**
Cheap, but then it doesn't work especially well

The Competition
Absolutely everything else (if you've got the cash) will out-perform the *IMG Scan*

Geniscan GS4500

MACHINE: ALL STs
PRICE: £189.99
FROM: DATEL ELECTRONICS
CONTACT: 0782 744707

The cheapest hand-held scanner on the market, Datel's *Geniscan* offers a resolution of 200dpi using black and white or grey scales and a scanning width of 105mm.

The device connects to the ST via an L-shaped plastic cartridge which also accepts input from the power supply. Once you've fired up the software, scanning is a simple matter of clicking the scan button and rolling – much less of an ordeal than the print head device. *Geniscan* has four resolution settings ranging from 100 to 400dpi, although the accompanying software can only cope with resolutions of 100 and 200 dots per inch. In the manual this is attributed to limitations of the parallel port – even though the *Geniscan* connects to the ST's cartridge port!

There's a photograph/letter switch to select between grey scales and black and white respectively, and a thumb wheel to adjust the brightness. *Geniscan* feels fat and cumbersome in the hand, but it's well-made and has a smooth action across various surfaces. There's a downside, however, in that your thumb tends to slip off the scan button when you draw back the scanner. And although the device is very broad, it has a rubber roller covering two-thirds of the underside. Consequently, *Geniscan* has a tendency to skew when drawn back.

Best settings for the device are with the thumb wheel set slightly "light" of halfway on a light and dark scale, using grey scales. The *Geniscan* grabs images from both colour and black and white photographs, but it's best to make a photocopy of the photograph and use that. You should also set a high level of contrast on the photocopier to get the best resolution from the device. *Geniscan* responds far better to a high-contrast, matt finish on original images.

Accompanying software performs well, but frustratingly has no keyboard shortcuts – you can't scan with one hand and hit the keyboard with the other. And if, like me, you find using the mouse in your left hand (right hand, if you're left-handed) next to impossible, you must swap between the scanner and the mouse in order to pull down menus and change settings or re-scan. *Geniscan* software provides the usual range of editing functions including cut and paste, invert, mirror and so on.

The *Geniscan* is a workmanlike scanner of sound construction, that works well under a variety of conditions. One moan is that there is no contrast control. You can vary the brightness, but scans sometimes appear rather wishy-washy. As the cheapest hand scanner, however, the *Geniscan* is well worth a look.

FORMAT RATINGS

GENISCAN GS4500

£189.99 ■ Datel Electronics ■ 0782 744707

Features **70%**
Two scan modes, two resolutions and a brightness control provide good results in most conditioins

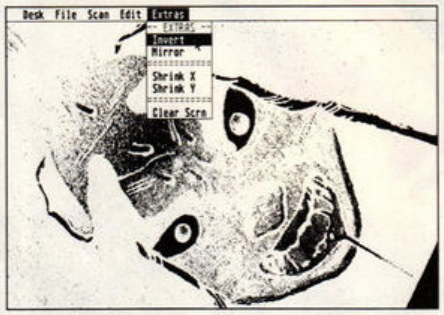
Speed **90%**
Fast scans under all modes

Ease of Use **85%**
Simple to set up, although you must tinker with the brightness to get the best results

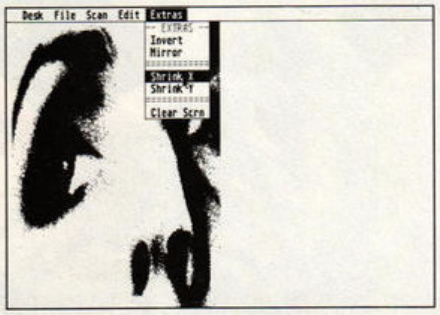
Results **65%**
Good, but scans can be wishy-washy because of the lack of contrast control

FORMAT VALUE **82%**
Cheapest hand scanner on the market

The Competition
The Geniscan is the cheapest, but it's not the best. Plenty of competition from Kempston's *Daatascan*



■ ***Geniscan* provides a full screen for digitising pictures...**



■ **and comes with editing software offering inverting, shrinking and mirroring**

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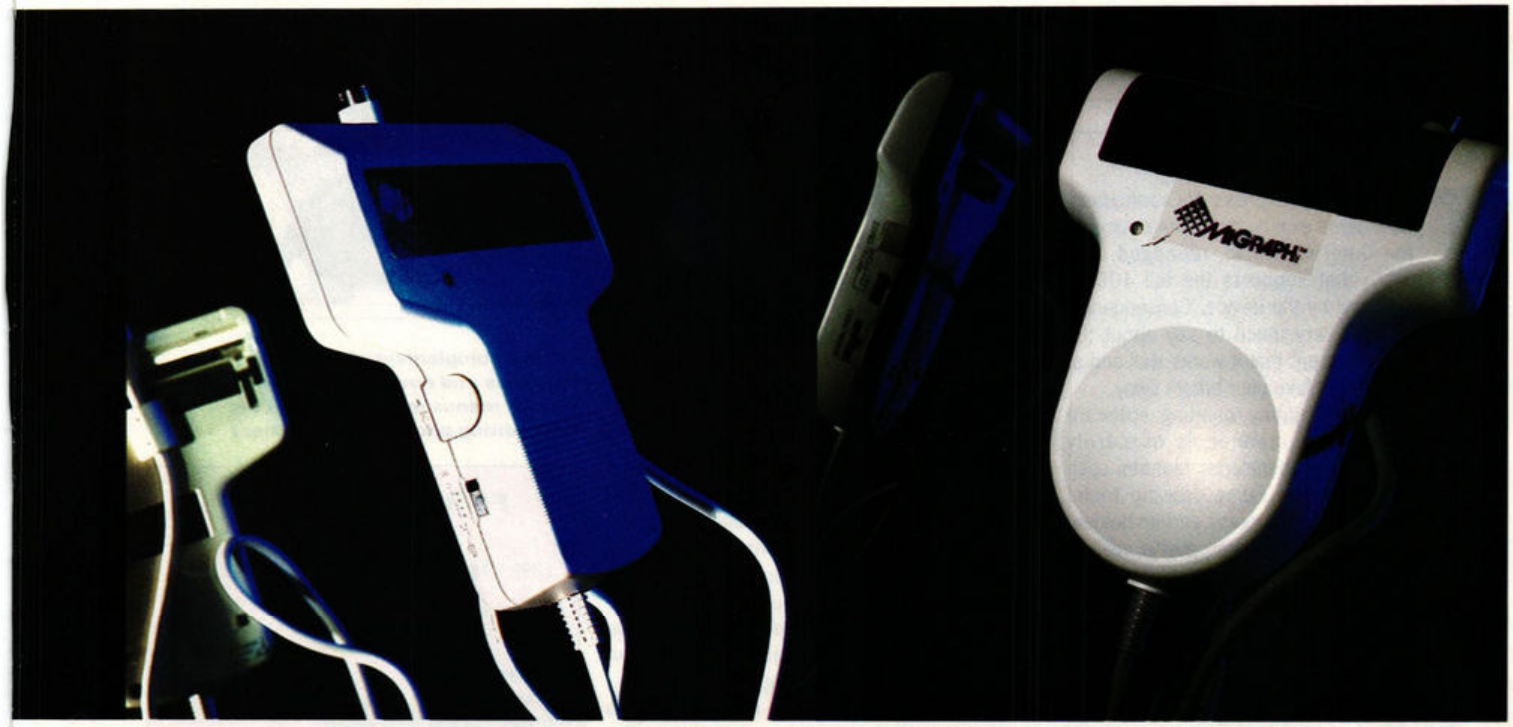


■ **(Left to right) There's a hand scanner to suit all pockets and all needs for the ST. From the cheap *Geniscan* with good software and paint package support; the Kempston *Daatascan* with its very powerful split screen image editing and enlarging facilities; to the *MiGraph* 400dpi device, a breathtakingly high resolution scanner with full-blown graphics manipulation software but with a breathtaking price to match!**

Daatascan

MACHINE: ALL STs
PRICE: £229.00
FROM: KEMPSTON
CONTACT: PANDAAL 0234 855 666

Kempston's *Daatascan* has been on the market for a couple of years and is justly popular. The software accompanying it has recently been overhauled to produce an editing package of exceptional quality. The device itself provides black and white or dithered (grey scales) scanning in three modes and a scanning resolution of 200dpi.

Slightly slimmer than the *Geniscan*, *Daatascan* is all the better for it. Kempston's scanner feels far more comfortable in the hand and doesn't slip when you're drawing the device over an image. Scan width of the *Daatascan* is 105mm – the same as the *Geniscan* – but the roller is wider, providing better grip over slippery glossy photographs.

Daatascan connects to your ST via a small, oblong cartridge box. There's a power supply connector and a socket for the scanner. Plug in the scanner and power supply, fire up the software and you're ready to scan.

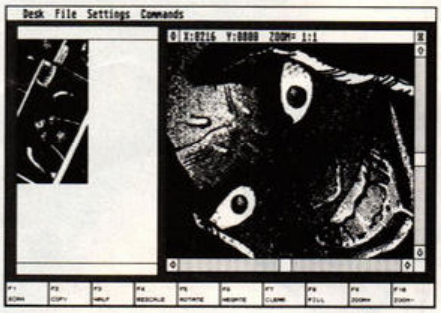
Unfortunately, although the software is powerful it's not at all intuitive and involves you selecting scan, marking out a box in the left editing window, clicking the right mouse button then pressing the scanner's button within five seconds of the right mouse button click. Get through these steps and you're rewarded with a quick flash of the scan head and you can start to scan the desired image.

The results? Truly excellent! Plenty of contrast even in dither mode, it's easy to draw the device over an image without skewing (unless you want to) because of the full width rubber roller positioned just behind the scanning window and the scanner feels exceptionally comfortable in the hand. It's just the right width and length and all controls are positioned "just so." You can zoom in or out, increase or reduce brightness or halve/double the size of the scan.

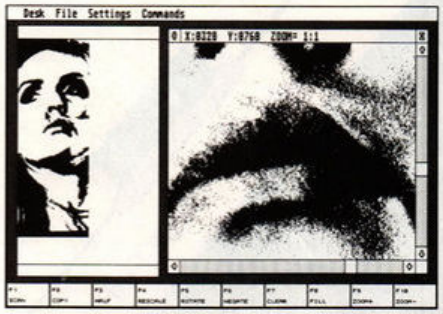
Once you've captured an image, the software offers plenty of scope for editing, resizing, inverting and so on and (and it's a big "and") images can be rotated, enabling you to scan images horizontally as well as vertically then re-position them before importing them into documents and paint packages. There's room in the editing window for two complete scans, so you can cope with wide pictures and pages of text very easily.

I found that the best scanner configuration was in black and white mode with brightness control set half way for text, line drawings and the like, and in first position dither mode again with the brightness set half way for mono and colour photographs, photocopies and other pictures. The neat thing is these are the default "factory" settings – that means no hours of comparing and contrasting trying to find optimum settings. Feel free to experiment, but you'll constantly return to the standard configuration.

The Kempston *Daatascan* is a hand scanner that I wouldn't hesitate to recommend. Powerful and with more ergonomic design than you can shake a stick at, the device has to top the mid-price list for propective scanner users.



■ ***Daatascan* uses a split screen to enable easy editing of scanned images...**



■ **–and images can be enlarged by simply selecting the desired area with the mouse**

FORMAT RATINGS

DATAASCAN

£229.00 ■ Kempston ■ 0234 855 666

Features **90%**
Powerful fully-featured scanning/editing software included

Speed **95%**
Scanning is fast and manipulation of scanned images within the editing software is superfast

Ease of Use **65%**
Requires several steps before you can kick the device into life

Results **95%**
Excellent. Plenty of contrast and good dithering

FORMAT VALUE **90%**
Mid-range price but top-of-range results

The Competition
At this price? There is no competition

www.stformat.com

MiGraph Hand Scanner

MACHINE: 1MBYTE STs
PRICE: £399.99
FROM: SOFTWARE EXPRESS
CONTACT: 021 643 9100

The Software Express *MiGraph Hand Scanner* is exactly the same device as the Datel *GeniScan*, rebadged, and with software that supports the full 400dpi resolution offered by the device. Consequently, there really isn't very much to say about the *MiGraph* device except that it works well and at a resolution that will take your breath away.

Touch-Up, the editing/painting software accompanying the scanner, is of a truly professional quality and includes features such as Bezier and B-Spline curve drawing tools, rotate, slant, stretch, compress and embolden. You can store and manipulate several images limited only by available memory, and for those of you with access to a Mac or PC, *Touch-Up* enables you to save pictures in several widely recognised formats including *MacPaint*, IFF, TIFF, PCX as well as the more familiar *Degas* and .IMG.

This is a quality device, coupled with superior editing/painting software at a price which, although not for the person in the street, is fine for the serious amateur or hardened publishing/design professional.

Hand-held devices certainly seem to be the way forward for scanning. Although several companies attempted to introduce the better quality flat bed scanner into the ST market, the attempts seem to have failed and no-one could actually supply *ST FORMAT* with a review example of the device.

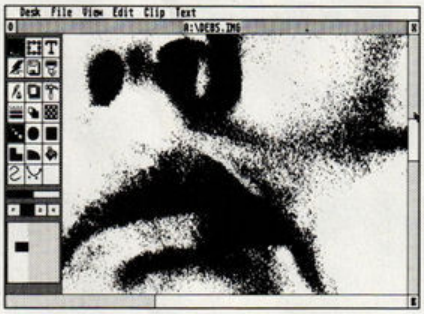
At the very cheapest end, there's the print head scanner, which provides surprisingly good results if you're prepared to spend a little time correctly configuring it to your printer. Using this device means that you must have access to a printer and be prepared to apply Blu-Tack, sticky pads, Sellotape and various other adhesive products to the machine's print head. At a shade under £50, the print head scanner is an excellent entry into the exciting scanning arena.

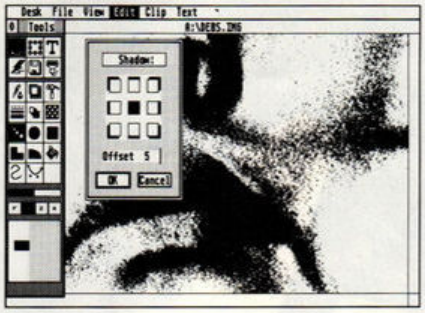
For those with slightly more money to spend there's a clear choice between the Kempston *Daatascan*, a popular device which has been on the market for several years which recently underwent a software facelift, and the *MiGraph* 400dpi device.

If you need 400dpi ultra high-res scanning, then *MiGraph* from Software Express is the only choice. Reasonably priced and accompanied by quality editing software, the scanner is well worth a look.

But for an all round, good quality scanner which you won't have to sell your car for, plump for the Kempston *Daatascan* – it carries your Tech Ed's seal of approval! ■

As well as 400dpi scanning capabilities, the *MiGraph* hand scanner is accompanied by the excellent *Touch-Up* editing package





■ **A full complement of editing functions and novel features such as tear off menus make *Touch-Up* the best editing package for scanners**

FORMAT RATINGS

MIGRAPH

£399.99 ■ S'WARE EXPRESS ■ 021 643 9100

Features **90%**
True 400 dpi

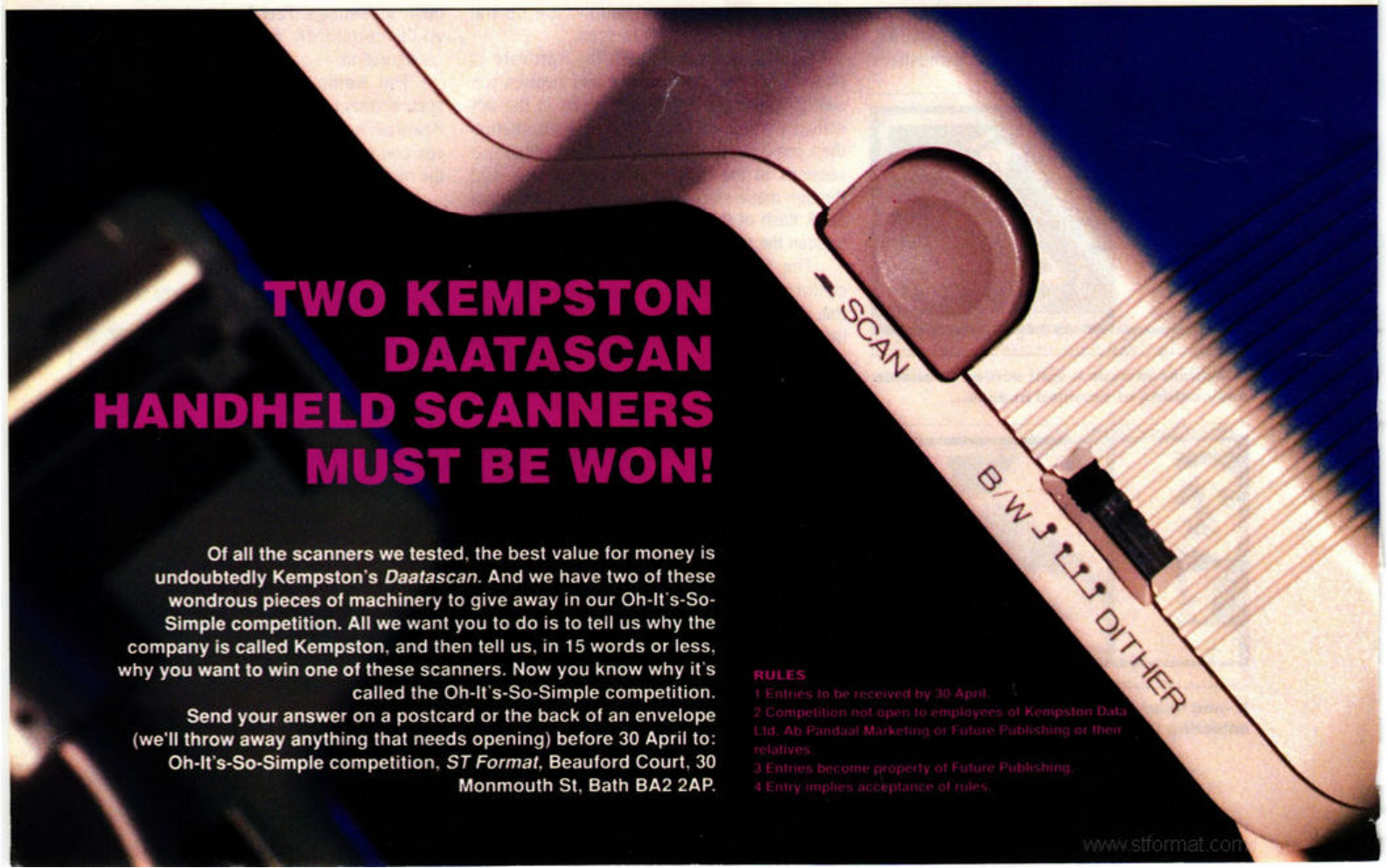
Speed **80%**
As fast as the other scanners tested, although the software is a little tricky at first

Ease of Use **80%**
Simple once you know how

Results **90%**
Breathtaking resolution

FORMAT VALUE **85%**
Good value, but surely too expensive for the ordinary user

The Competition
Absolutely no competition from any hand scanner at the resolutions offered



TWO KEMPSTON DAATASCAN HANDHELD SCANNERS MUST BE WON!

Of all the scanners we tested, the best value for money is undoubtedly Kempston's *Daatascan*. And we have two of these wondrous pieces of machinery to give away in our Oh-It's-So-Simple competition. All we want you to do is to tell us why the company is called Kempston, and then tell us, in 15 words or less, why you want to win one of these scanners. Now you know why it's called the Oh-It's-So-Simple competition.

Send your answer on a postcard or the back of an envelope (we'll throw away anything that needs opening) before 30 April to: Oh-It's-So-Simple competition, *ST Format*, Beauford Court, 30 Monmouth St, Bath BA2 2AP.

RULES
1 Entries to be received by 30 April.
2 Competition not open to employees of Kempston Data Ltd, Ab Pandaal Marketing or Future Publishing or their relatives.
3 Entries become property of Future Publishing.
4 Entry implies acceptance of rules.

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- Uses the Subroutine Threaded Method for maximum speed
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- Turtle graphics routines and simple Midi library
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- Choose between a fully-integrated environment with multi-window editor or a powerful CLI-driven shell - use whichever you feel comfortable with.
- Supplied with a wealth of tools: compiler, linker (Lattice & GST formats), assembler, disassembler, librarian, resource editor (WERCS), debugger, CLI, integrated editor & more.
- Global optimiser which can increase the speed of your object code by 30%.
- Extensive, two-volume documentation covering all aspects of the package.

Lattice C 5 is a brand-new product (*not related to version 3!*) which gives you a totally professional programming environment together with exceptionally fast code ... and all at the bargain introductory price of **£99.95** inclusive!

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HiSoft

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Also, in the next issue of this magazine you will find a selection of our products and some of our special offers.
Finally, we should like to thank this magazine and the many of our suppliers for their friendly cooperation.

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ST FORMAT

Side A

■ **CONQUEROR** – go to war with Rainbow Arts' superb tank simulation. Prepare for battle in three different modes in Braben's latest compelling game
■ **CANVAS** – demonstrate your artistic ability with Microdeal's phenomenal 512-colour art package for *all* STs and STEs!
■ **PIPE MANIA** – go with the flow in Empire's frustratingly addictive game of plumbing, pipes and puzzles. Guaranteed to have you addicted in seconds!

Side B

■ **TEMPUS 2** – the fastest text editor for the ST in useable demo form courtesy of HiSoft
■ **TURBO ST** – slap some go-faster stripes on your ST and venture into the fast lane with HiSoft's ST speed-up utility
■ **C-SERIES** – Warwick Grigg shows you how to create a pinball simulator in his latest C tutorial
■ **ANIMATION** – Mark Pickavance chops off a robot's legs and lets them run riot on your screen
■ **CANVAS MANUAL** – all you need to know!

COVER DISK

■ **There's well over 800K of demos, games and utilities crammed onto the illustrious *ST FORMAT* Cover Disk. Dare to be different with the delights of this month's disk.**
■ **Not everyone is lucky enough to have a double-sided drive. For that reason a special format disk is used which can be read by both single-sided and double-sided drives. Single-sided drives can still only access the top side of the disk.**
■ **The man they call Rob Northen (for that is his name) is responsible for the disk format which allows everyone to access the SUPERB tank sim *Conqueror,* the ever so PLAYABLE *Pipe Mania,* and the CORKING art package *Canvas.* Double-sided owners get a double dose of delicious delicacies with all the dynamic demos on side A PLUS the mouth-watering *Tempus 2,* the lightning fast *Turbo ST* and all the other utilities on side B!**
■ **To get at side B – assuming you have a double-sided drive, natch – simply double-click on the folder SIDE_2.**
■ **If you have a single-sided drive, a box appears with the rather alarming message that there's an error on the disk. Don't panic! The data is not damaged – it's just a consequence of the format. Click on CANCEL and everything will be fine. Do remember though, you won't be able to access anything on side B if you've got a single-sided drive.**
■ **Do be (do be do be) sensible: don't dare dabble with the disk without making a backup of it first.**

CONQUEROR

Conqueror

BY: RAINBOW ARTS
SIDE: A
MACHINE: ALL COLOUR STs
FILES: CONQUER.TOS

After improving the superb landscaping techniques so prominent in *Virus,* David Braben is back in business with a tank sim enabling you to control a whole fleet of tanks on the battlefield.

Conqueror can be played in three ways: arcade, action or strategy. In arcade mode you have a single tank and pit your wits against a legion of enemy tanks. In action or attrition mode you get to control five tanks against enemy squadrons. Finally, in strategy mode you defend a designated area for a specific time period.

There are so many options in *Conqueror* that things seem complex at first. From the main menu (top of screen) you can choose the game type and control; move the pointer with the mouse and select an item by clicking the left mouse button.

Choose the method of tank control by pressing F9. Please note you need two joysticks if you plan to play *Conqueror* with joystick only. It's possible to use a joystick and mouse simultaneously. The gunner, if controlled from the mouse, elevates the gun barrel when you move the mouse up, lowers the barrel when you move the mouse down, swings the barrel from left to right when you move the mouse in the corresponding direction and fires when you stike either of the mouse buttons. The joystick performs exactly the same actions.

The driver can only be controlled from the joystick or keyboard. Using a joystick forces both tracks forward when you push upwards, both tracks backwards when you push down, turn anti-clockwise when you move left and turn clockwise when you move right.

When using two joysticks, the left track and rotation are controlled by the left joystick and the right track and elevation are controlled by the right stick. The fire button fires a shell.

For map mode press the Return key when driving the tank.

In map mode the large dot is a tank and x is your destination. Board tank with left button. Position destination with right. On leaving map mode, by pressing space, the last boarded tank is the current tank.

GETTING STARTED

Enter the CONQUER folder and then double-click on CONQUER.TOS. The game has been crunched, so don't panic if nothing appears immediately. Do note that the game only works properly if nothing else is resident in memory. It is best to run *Conqueror* before loading anything else.

■ ***Conqueror:* head for the high ground and blast to bits anything that approaches**

DON'T BE DUMB! BACK UP YOUR COVER DISK **NOW!** How? **See page 26**

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SUPERCHARGER

WHAT OTHERS SAY!!!

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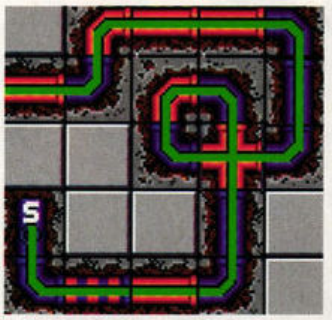
Pipe Mania

BY: EMPIRE
SIDE: A
MACHINE: ALL COLOUR STs
fiLES: PIPELINE.PRG, PIPELINE.DOC, PIPELINE.BIN

It's all about flooz, a thick yucky liquid not too dissimilar from tomato soup that flows along pipes. Your objective in this sickening addictive game is to guide the foul fluid through pipes to exits around the edge of the screen before it engulfs you.

You've a few seconds to lay down as much piping as possible before the sluices are opened. Even when the gunge starts flowing, you can still lay more pipes. The idea is to lay down enough piping to prevent yourself from getting a soaking.

In principle this sounds simple. Unfortunately all manner of differently shaped pipes are handed to you. It's your job to fit the pipes together and make one long throughway for the water. Pipes needn't be laid out sequentially – and, indeed, the way in which pipes are given to you means that it is often prohibitive to attempt sequential pipelaying. Forward



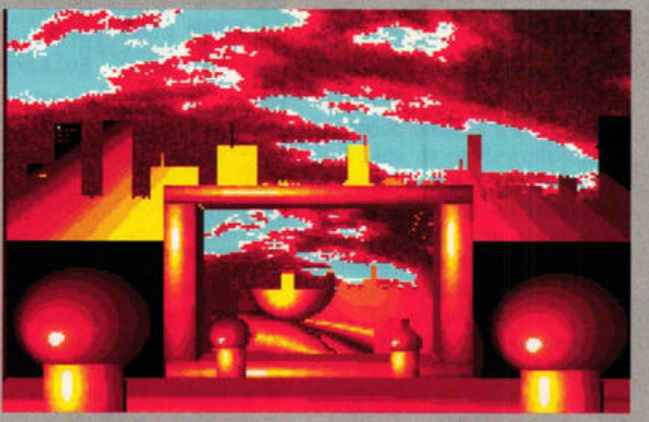
■ **Keep the liquid flowing in *Pipe Mania*'s manic mind bending pipe puzzle**

thinking is what's needed. Objects dotted around the play area are there to help and hinder: it's for you to discover which do what!

To the left of the screen is a column of pipes, the bottom one of the pile is the next to be deposited on the screen. Pipe sections can't be discarded, but they can be put anywhere on screen to keep them out of the way. Another way to deal with unwanted pipe sections is by placing them over an already existing pipe. If the flooz reaches the end of the pipe, or you run out of time, the game ends.

Pipe Mania has 36 levels: the playable demo on the disk comprises three complete levels for you to attempt within a limited time. (The full version has no time limit; a level is completed when the flooz stops flowing. ➢

CANVAS



■ **Reader RS Hall's abstract art goes down a treat. From within *Canvas*, click on File. Then click on load. Click on the *Canvas* folder from the requestor that subesquently appears. Double-click on either 3.CPT or 6.CPT. When it's loaded, click the right mouse button to see the image**

■ **Even herself cracked a smile when she saw this superb graphics package!**

Canvas

BY: MICRODEAL
SIDE: A
MACHINE: ALL STs/STEs
fiLES: CANVAS.PRG, CANVAS.DOC, 3.CPT, 6.CPT

■ **Produce startling effects even on mundane images**

■ **See the tutorial on page 28 for a hands-on tour around Canvas' features, and the full review on page 85.**

There are more art packages for the ST than there are versions of the machine (and that's saying something!). You could be forgiven for thinking Microdeal crazy for releasing another graphics program – if *Canvas* wasn't such a mould-breaker.

For starters *Canvas* is the only package so far to support the STE's extra colours. Add to that operation in any ST mode, up to 512 colours on screen, *Degas* and *Neochrome* screen support, animation, object manipulation, speed and compactness and you have a *very* versatile art package.

Canvas has all the usual features – magnify mode, fill, shading, shape drawing, brushes – together with a smattering of the unusual. For instance:

- Multiple work screens (over 100 on a 4MByte machine).
- Sprite animation and sequencing.
- 3D wire-frame object editing.
- Nine-stage zoom together with on-screen hotspot zoom.
- HBL option for displaying 512 colours on screen at once (4096 on an STE).
- Numerous file formats including *Neochrome*, *Degas* and IMG supported.

All facilities except saving are available in this astounding demo of *Canvas*.

GETTING STARTED

Because of the sheer size of the programs on this month's Cover Disk it was impossible to include the *Canvas* documentation files on the same side as *Canvas*.

This is a nuisance if you're a single-sided drive owner. But don't worry, for there is a tutorial on page 28, and limited instructions can be found in the CANVAS.DOC file inside the CANVAS folder.

Double-click on CANVAS.PRG to start the paint package.

Just to spur you on and give you a taste of what's possible using *Canvas*, a stunning selection of expertly-crafted pixel masterpieces can also be found inside the CANVAS folder. This month's artwork comes from **RS Hall** from Swansea. Simply choose Load from the File menu and follow the prompt.

Follow the tutorial on page 28 to guide you through the basic steps. You'll soon become familiar with its features – and then nothing can stop you producing wonderful graphics!

■ **Click on zoom with the left mouse button and click on the right to see the picture**

■ **Select the area to be magnified with the mouse and click the left button**

■ **A close up of the picture allows you to make minor alterations**

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GETTING STARTED

Insert a joystick into port 1, plug in your mouse, or head for the cursor pad to control the game. Double-click on the folder PIPEMAN. Double-click on the file PIPELINE.PRG and wait for the game to load.

Press fire once to read the instructions and press it a second time to go to the options menu. From here you can select the control method, level and so on. With keyboard control you use the four cursor keys to select the square and Return drops the pipe onto the screen.

Two other keys also serve a purpose: P pauses the game and F speeds up the flooz flow.

Tempus 2

BY: HISOFT
SIDE: B
MACHINE: ALL STs
fiLES: TEMPUS2.PRG, TEMPUS2.DOC

When you're creating programs in Assembler, Basic, C or some other programming language, you need a text editor and not some fancy word processor which lets you do everything except edit text quickly. HiSoft's *Tempus 2* is designed to be very fast, yet friendly and configurable.

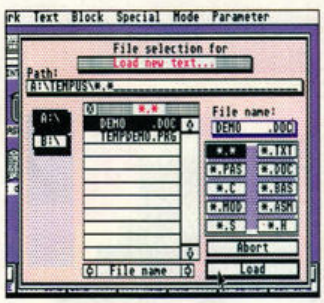
A very friendly environment featuring simple icons is used to edit the text. Keyboard macros can be assigned to speed up repetitive data entry.

Text can also be sorted, have line numbers added and even compared with another text file in memory.

GETTING STARTED

To use *Tempus 2* you must first double-click on the TEMPUS2 folder which is inside the SIDE_2 folder.

Double-click on the file TEMPUS2.PRG to get going.



■ **As soon as *Tempus* loads you're asked which file you want to open for editing – click on OK when you've chosen the file**

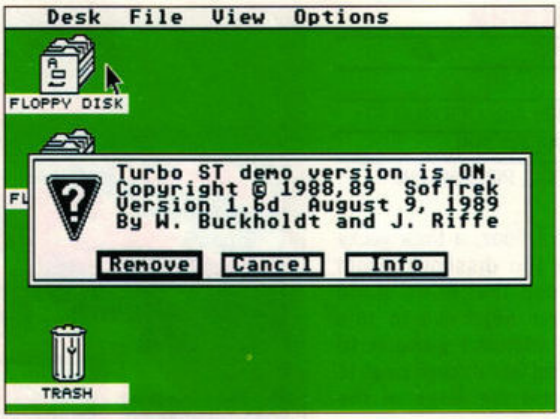
Turbo ST

BY: HISOFT
SIDE: B
MACHINE: ALL STs
fiLES: TURBOST.ACC, TURBOST.DOC

Give your ST a fuel-injected boost in its screen redrawing routines. *Turbo ST* is a Desktop accessory which allows you to speed up considerably the execution of programs on your ST. Screen updating and the like is accelerated so that you waste less time waiting for things to happen.

In effect, *Turbo ST* is a software blitter. Only it's better than the hardware blitter because there's no soldering involved and the results are faster.

You're ST only remains turbo charged for around 15 minutes, so make sure you do everything you want to do in that space of time otherwise it's back to the doldrums of a deathly-slow machine. Once you've tried it you'll never want to be without it!



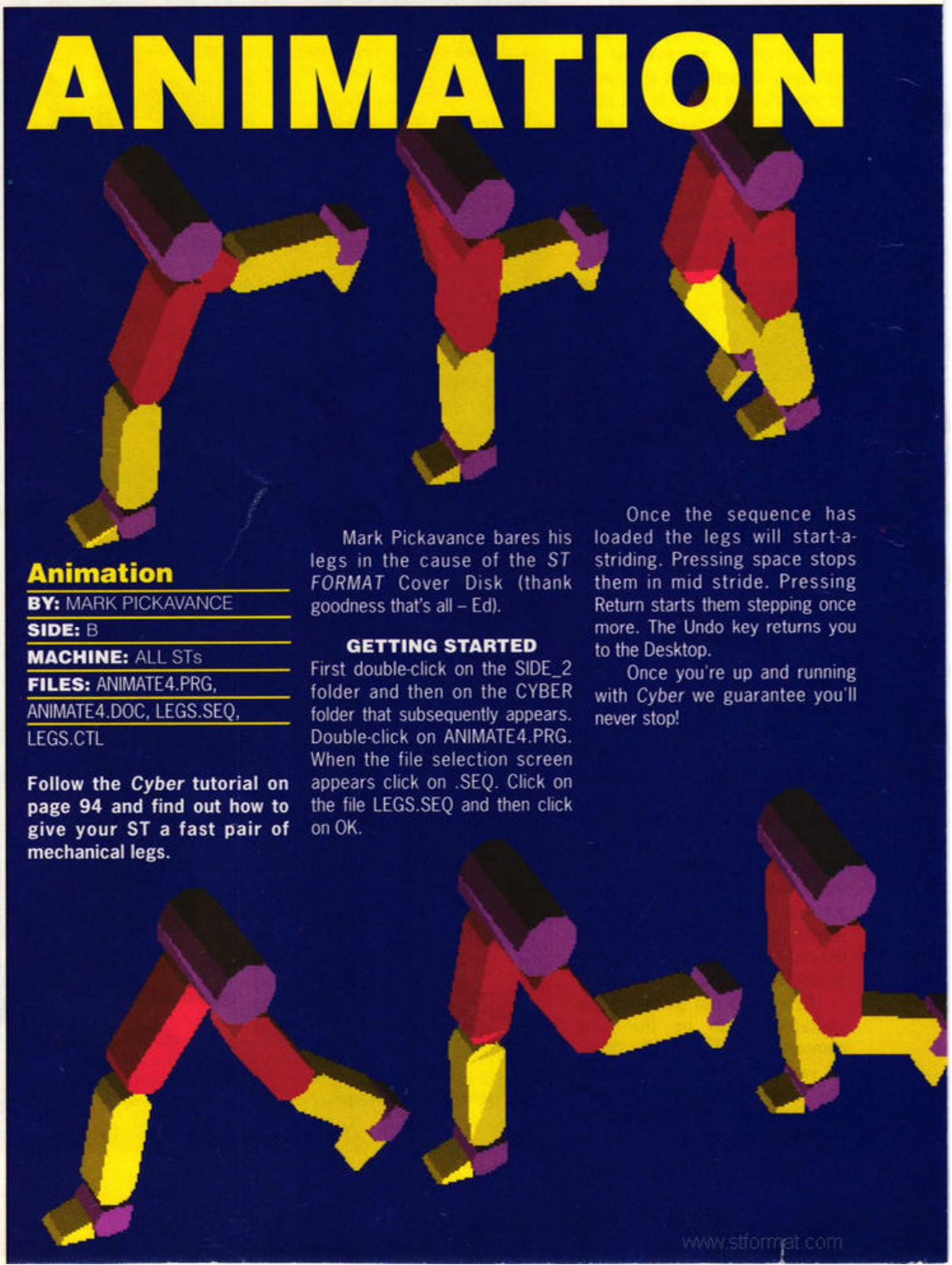
■ **See this button? One click of the mouse sends your ST to the stars**

GETTING STARTED

Before you can use *Turbo ST* you must copy it onto another disk because it doesn't work while inside a folder.

Prepare a blank disk by formatting it – make sure it's a ➢

ANIMATION



Animation

BY: MARK PICKAVANCE
SIDE: B
MACHINE: ALL STs
FILES: ANIMATE4.PRG, ANIMATE4.DOC, LEGS.SEQ, LEGS.CTL

Follow the *Cyber* tutorial on page 94 and find out how to give your ST a fast pair of mechanical legs.

Mark Pickavance bares his legs in the cause of the *ST FORMAT* Cover Disk (thank goodness that's all – Ed).

GETTING STARTED

First double-click on the SIDE_2 folder and then on the CYBER folder that subsequently appears. Double-click on ANIMATE4.PRG. When the file selection screen appears click on .SEQ. Click on the file LEGS.SEQ and then click on OK.

Once the sequence has loaded the legs will start-a-striding. Pressing space stops them in mid stride. Pressing Return starts them stepping once more. The Undo key returns you to the Desktop.

Once you're up and running with *Cyber* we guarantee you'll never stop!

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blank disk and not the Cover Disk!

Double-click on drive A and then on the folder SIDE_2. Double-click on the TURBO_ST folder that subsequently appears. Drag the file TRBODEMO.ACC onto the drive B icon and, when prompted to insert the disk for drive B, put in the ready prepared disk. Follow the on-screen prompts. Put the Cover Disk in when asked for the disk for drive A.

When the disk copying is completed put the disk with *Turbo ST* in the drive and reset your ST. When the Desktop appears activate *Turbo ST* by going up to the Desk menu at the top of screen and selecting TURBO ST DEMO.

C-Series

BY: WARWICK GRIGG
SIDE: B
MACHINE: ALL STs
fiLES: PINBALL.C, PINBALL.PC1, PINBALL.PC2, PINBALL.PC3, C_SERIES.DOC

Check out Warwick Grigg's C tutorial (page 123), which continues this month with a simple pinball program. Just load up your C compiler and then load in PINBALL.C. Compile it and away you go.

The demo runs in all three resolutions. ■

COVER DISK HOTLINE 0225 765086 4PM TO 6PM WEEKDAYS

Flummoxed by files? Dumbfounded by disks? Perplexed by Cover Disk programs? If you have a problem with the disk – and you're sure there is no corrupted data – phone 0225 765086 with your query. You'll be through to Richard Monteiro, our Disk Editor.

Before you call have ready the info Dickie needs to help you: the model of your machine; the version of GEM/TOS you're using; and anything you've got attached to (or plugged inside) the computer. Have the disk handy and your ST up and running, and a pen and paper handy to take any notes.

For problems with disks *before issue 5* phone *ST Format* on 0225 442244.

TO B-SIDE OR NOT TO B-SIDE

You single-sided drive owners don't have to miss out: get hold of the B side by sending your name and address with a cheque or postal order for £1.75 to:

April B-Side Disk,
***ST Format*, Beauford Court,**
30 Monmouth St,
Bath,Avon BA1 2AP

BACK UP YOUR DISK!

Because the oh-so-delicious *ST FORMAT* Cover Disk is non-standard and squeezes in a whacking great 400K of data per side, the back up procedure is not simple. Follow these steps, though, and you won't encounter any problems. Do it any other way and you could knacker your Cover Disk.

1. **Format a couple of blank disks – single-sided if you've got a single-sided drive, double-sided if you have a double-sided drive.**
2. **Write protect the Cover Disk and insert it into drive A (if you have two drives, you lucky devil, insert the Cover Disk into drive B). Double-click on the drive B icon. If you're still saving up to buy a second drive, a message appears requesting you to put disk B in drive A. Simply click on OK.**
3. **Insert a freshly formatted disk into drive A. Double-click on the drive A icon.**
4. **Pick up a folder at a time from the Cover Disk window and plonk it into the drive A window.**
5. **If you have one drive then you'll be asked to insert disk A and disk B at regular intervals. Don't mix the two up! Disk B is the Cover Disk and disk A is the freshly formatted disk.**
6. **When you get a "disk full" error message, recopy the last folder – and subsequent folders – onto the second freshly formatted disk.**
7. **Double-sided owners, double-click on SIDE_2 once you've finished copying all the folders from side A of the Cover Disk. Job done!**

READING DOCUMENTATION FILES

In virtually every folder on the Cover Disk there's a file with the extension .DOC. This is a help file and contains instructions on using the program. Ensure you read all help files before running any program.

To read a help file simply double-click on it. Click on CANCEL if you don't wish to read the file; click on PRINT to send the document to a printer; click on SCREEN to send the text to your monitor. After each screenful of text the display halts. Pressing return scrolls up a line of text. Pressing Q or Control C returns you to the Desktop.

Future Publishing CANNOT be held responsible for improper use of any programs on the Cover Disk. Be sensible, follow the instructions and you won't have any trouble.

Next month: how to lose all your friends simply by borrowing money and not paying it back.

THE DISK NEEDS YOU!

We need *your* software – games, utilities, demos, anything good, original and preferably short. If you've written anything worthy of the *ST FORMAT* Cover Disk (and remember, it's the ones we reject that makes ours the best), send it with this form and full documentation to: Richard Monteiro, *ST FORMAT* Cover Disk Editor, 71 Barn Glebe, Trowbridge, Wiltshire, BA14 7JZ. Allow four weeks for a reply.

NAME_____
ADDRESS_____
_____**DAYTIME 'PHONE**_
PROGRAM TITLE_
SIZE OF FILES IN K_
WHAT'S SO BRILLIANT ABOUT IT: _____
_____
_____

Don't forget to: ■ Enclose an SAE ■ Include on-disk and paper documentation ■ Write your name and address on the disk ■ Use a virus-free disk ■ Keep your eyes closed when you're asleep

Please sign the following declaration: This program is submitted for publication in *ST FORMAT* and is wholly my own work and I agree to indemnify Future Publishing against any legal action should copyright problems arise. Signed

Note: we pay out *up to* £800 for contributions to our Cover Disk. But to earn that kind of dosh, of course, you'd have to write something pretty spectacular, original and complex.

FAULTY DISK?

In any disk duplication run as massive as *ST FORMAT*, it's possible that a minuscule proportion of the disks might be faulty. If you're unlucky, sorry. You're guaranteed a working replacement, however, if you send your corrupted disk to:

ST FORMAT
April disk returns,
Discopy Labs Unit A,
West March, London Rd,
Daventry, Northants NN11 4NA

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We now have software for all popular machines, from the Spectrum to PC compatibles, including the Atari ST and the Amiga.

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Micronet is also a computer magazine. Our computer news area is updated every day, so there's no better way to stay up-to-date, and our software reviews and features for all popular micros mean Micronet members are always better informed.

Add to this Prestel's massive database and you'll have all the facts at your fingertips.

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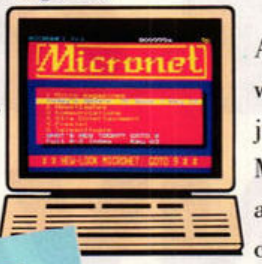
But Micronet is not just informative, it's also a lot of fun! As a member you'll have access to a range of games, including the UK's most popular multi-user game, Shades, where the action is live and so are your opponents!



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If you have access to a modem (1200/75 baud) and viewdata communications software you can see a free demonstration of Micronet. Just Dial 0272 250000 and use the ID 4444444444 and password 4444.

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■ **Double vision: *Canvas* is capable of amazing graphic effects**

STORY *Maff Evans*

ART ON CANVAS

Use the amazing* Canvas *art package featured on the Cover Disk and ease your way into the world of moving graphics. Load your disk now and follow us on a hands-on tour...

On this month's superb and value-packed *ST FORMAT* Cover Disk is a demo version of Kingfisher's new art and animation package *Canvas* (see review on page 85). Even those of you familiar with computer graphics may be daunted by the prospect of contructing moving 3D shapes with an unfamiliar program – not to mention those ST users who don't know the difference between "cyclic colour mode" and a packet of crisps! This is a short guide designed to help you worm your way into *Canvas'* extensive art environment. Follow the instructions on the disk info pages (on page 21) to get the program up and running and let's start having fun!

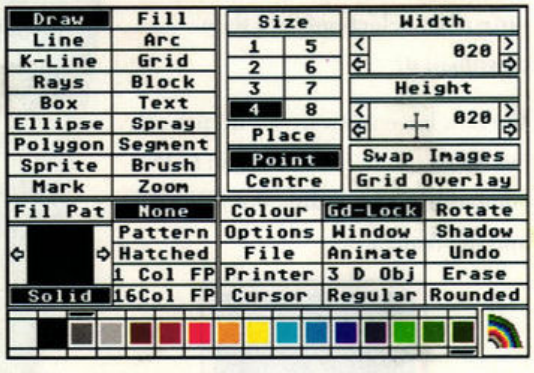
Two of *Canvas'* most noteworthy assets are 3D construction and frame animation. These require use of a number of the program's facilities, so before experimenting by yourself, let's get right in there and see how you animate shapes.

First we need to build a shape to move, so click on the menu bar that says "3D Obj" to enter the 3D Constructor menu. For the purpose of this tutorial a cube suffices. All 3D shapes in *Canvas* are wire-frames built from straight lines and eight of them can exist in memory at any one time.

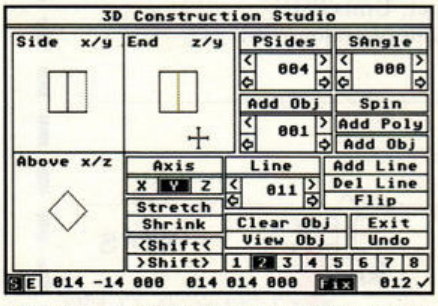
Click on the "1" in the object selector (the row of figures 1-8 on the right of the screen) to start editing. You need to have a squarish polygon to work from, so make sure the "Z" axis button is set and move the "PSides" (Polygon Sides) value to 004 with the arrows.

Click on the "Add Poly" box to create a polygon made of four straight lines in the "Above x/z" window. Move the mouse around until the sides look straight and the shape is roughly square. Then press the left button (the shape appears as a diamond, but don't worry – it's supposed to!).

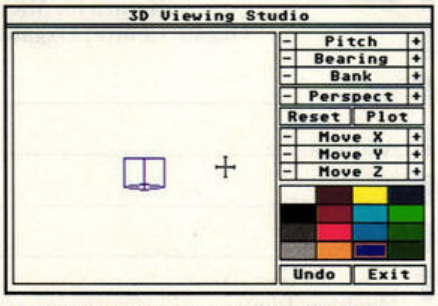
The coordinate strip at the bottom of the screen displays the x, y and z values of the



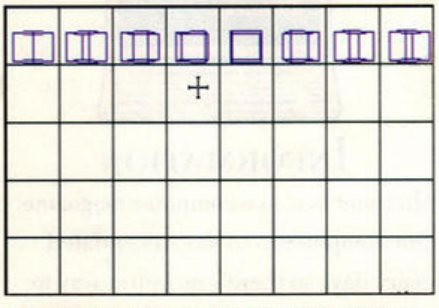
1 ■ **The main menu showing the grid window active on the right**



5 ■ **With all the lines in place, the wire-frame is now complete**



6 ■ **Changing the orientation of the finished shape in the viewing studio**



7 ■ **The work screen showing all the frames for the animation sequence**

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shape. Use the "stretch" and "shrink" buttons to get the size to about 15.

Now the polygon has to be shifted to form the top of the box. Click on the "Y" axis button and move the polygon using the "Shift" button until the Y value is the same as the biggest Z value – this means that the shape has moved the length of one of the sides.

Now move to the next object by clicking on the "2" in object selector. The frames should be empty, but if they're not then click on the "Clear Obj" button. Make sure the value in the "Add Obj" window is set to 001 and click the "Add Obj" button (you must also click the "Yes" button in the requester window to confirm).

The diamond shape you just drew should appear in the edit frame. Use the "Shift" button to move the shape so that this time the Y value matches the *lowest* Z value. Click to add the object again (that is without changing any values) so that you have two diamond shapes at different heights. The line counter in the bottom right-hand corner should read eight. Increase the value in the "Line" window until the tick in the bottom right of the screen turns to a cross. This means that the line doesn't exist yet. To bring it into existence, click on the "Add Line" button.

Positioning the line in the right place could be tricky. To aid things, turn on the "Fix" function – this means that you don't have to be spot on when joining lines together, since the Fix function will slap the end of the line at the nearest point to where you clicked the mouse button. Now click on the "S" button in the bottom left to plot the Start point of the line and point to the corner of a diamond. Click on the "E" button to plot the End point.

Remember that to form a cube the corners of the two diamonds have to be linked vertically, so move to the corner corresponding to the one you chose as the line's start point and click on it. Repeat the process for the other three edges of the cube (remember to advance the line value by one each time and create the line with the "Add Line" button).

When you've finished you should have three frames showing different views of the cube and twelve lines in existence (look at the number in the bottom right. If it doesn't say "12" then retrace your steps – you've gone wrong somewhere!).

Animating the shape is not simply a matter of placing the shape into an animator and whizzing it around. Frames can only be grabbed from the main drawing screens, so the shape has to be carefully positioned on the canvas and manipulated to create the in-between stages of animation.

To get back to the main menu, click on the "Exit" box. Make sure that the line in the edit window is solid with rounded ends and as thin as it will go. Now click on the "Gd Lock" button to bring up the grid selector. Use the "Height" and "Width" value windows to set the grid size to the maximum (40x40), and switch the grid on by clicking on the "Grid" button. Now go to the work screen and draw the grid from the top left to the bottom right.

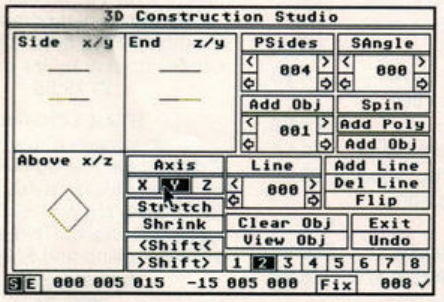
It's now time to put the cube onto the work screen, so return to the 3D generator via the "3D Obj" button and enter the 3D viewing studio by clicking on the "View Obj" button. Choose the colour you want the shape to be from the palette (be sure to select a different colour from the overlay grid) and click on the "Plot" button. Move the shape into the first grid position and press the left mouse button. Return to the viewer and rotate the cube slightly by clicking a few times on the "+" button next to the "Bearing" bar. Now plot this shape in the next frame to the right on the work screen. Continue this process until the cube looks like it's in the same place as you started (you should be looking for about eight frames). You don't have to turn it all the way round, just a quarter of the way – since the animation makes it look as though it does a complete circle.

Take a look at the work screen by clicking on the "Exit" buttons in the viewing studio and construction screen. You can now swap between the menu and work screen by pressing the right-hand mouse button. The work screen should have the grid in place with a series of cubes at various stages of rotation in some of the frames. If you feel confident enough with art programs, you might want to use *Canvas'* draw and fill commands to make the cube appear solid at this stage. You should get rid of the grid, otherwise the program animates that as well!

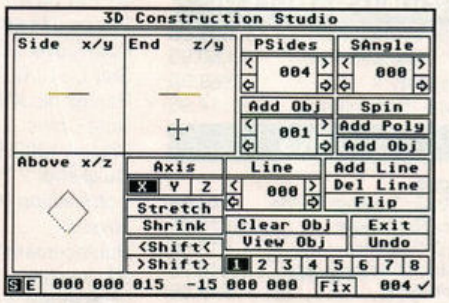
Press the right button to get to the main menu and click on the "Block" button. Select the "Replace Block" option (the Brush screen should appear) and choose the colour of the grid with the "Rep Colour" selector. Now select the background colour by clicking on the coloured square furthest left at the bottom of the screen and press the right-hand button to get to the work screen. Go to the top left of the screen and carry out the replacement by clicking and dragging the box right across the screen so the grid disappears.

Now go back to the main menu and click on the "Animate" button. Switch sequence "0" on in the big strip of numbers towards the left. Set "Delay" to 999, "Repeat" to 0 and "Step" to 1. Click on the 40x40 size box in the bottom right to get the biggest frame. Now click on the big "X" in the left of the "Start Image" box and select the first cube picture. Do the same with the "End Image" box for the last cube. The end image should be the number of different cube orientations you designed. Click on the "Sequence" button and you've got yourself a rotating cube!

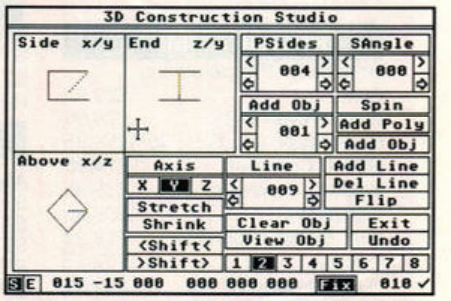
Obviously it takes a while before you can rival Walt Disney, but this should give you an insight into the functions of *Canvas*. Now try experimenting with more intricate designs of your own – you never know, you could find an animator lurking in there somewhere! ■



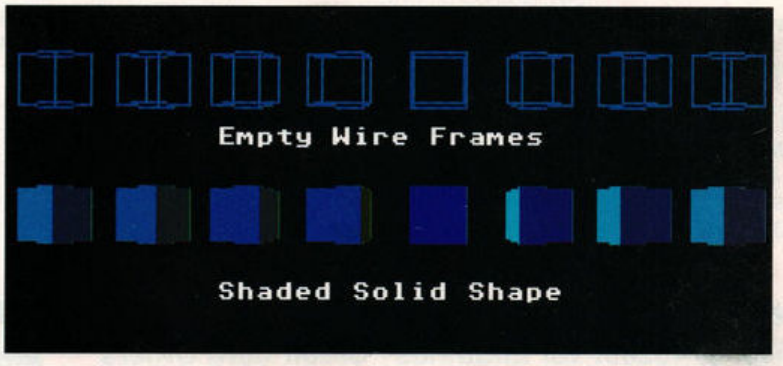
2 ■ **Step one of the box creation with the first polygon fixed**



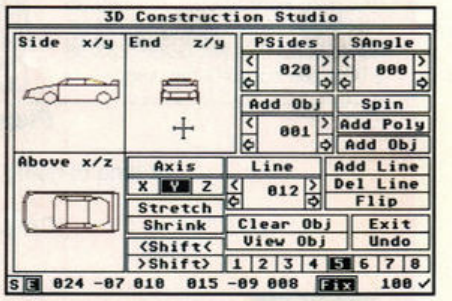
3 ■ **The second object is added to form the other side of the box**



4 ■ **Fixing the lines to the corners to form the vertical edges**



8 ■ **To add realism, you may wish to fill the frames to form a solid box**



9 ■ **With practice you can produce more complex wire-frames like this**

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SGS Net

MACHINE: ALL STs
PRICE: £145.95
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■ ***SGS Net*** **uses the MIDI ports to network the ST, providing a cheap and effective solution to the problems of peripheral and program sharing**

ALL FOR ONE AND ONE FOR ALL!

STORY *Jerry Glenwright*

SGS Net *offers connectivity at a price you just can't afford to ignore*

After 20 years of shared systems, the microcomputer finally came into its own during the 1980s. At last, computer users had their own central processor, RAM and disk drives. The long waits caused by mainframe and mini computer terminals sharing processor time and peripherals were history.

Suddenly, the network arrived to break up this tranquil state. Everything had to be connected to everything again – peripheral sharing became paramount. Why the about-face?

Well, it suddenly occurred to everyone that although having individual central processors was a good idea, there was no point in providing expensive hard drives and printers for individual users when as a group they could share one or two examples of each and not lose any productivity. Providing only one networked copy of a program, rather than 20 or 30 individual examples, also saves oodles of cash.

Sophisticated networks for the IBM PC and compatibles abound, but they've only recently arrived for the ST. Is connectivity a good idea for the Atari? And how does *SGS Net* perform?

SGS Net, from American ST specialist Paradise Computers, is an incredibly cheap MIDI-based network that has just been released in the UK. For £145.95 you get the *SGS Starter Kit* consisting of one non-dedicated file server interface and software, and one terminal interface and software. Further terminals, up to a maximum of 32, can be added at £95.95 each. Compared to the three or four hundred pounds necessary for just one PC terminal interface card, this really is networking on the cheap.

Previous attempts at ST networks have relied on the RS232 port to provide connections between machines. Unfortunately, RS232 is unreliable and impossibly slow when used for networking. A cheap, fast alternative was needed: enter the MIDI port. Provided as standard on all STs, it's capable of transmitting data reliably at relatively high speeds across long cables – and *SGS Net* uses the MIDI ports to good effect.

Plug the filerserver and terminal interfaces into the MIDI ports of two STs, boot the fileserver software specifying how many terminals are attached, boot the terminal, log in to the fileserver and you have a working ST network. Simple, right?

At the fileserver, you can define various permissions for the attached terminals. Nodes can access any hard drive attached to the fileserver, so obviously some method of restricting their behaviour is necessary. Networks quickly lose their advantages if irresponsible terminal users delete files and mess around with directories. To counter this, *SGS* comes complete with fileserver utilities that enable the network manager to stop terminal users from creating and deleting directories and files, modifying and renaming existing files and changing file attributes.

The fileserver itself is non-dedicated, meaning that it can be used for any other tasks such as word processing and spreadsheeting while the network is in operation. There's a slight danger when using a non-dedicated fileserver that the network may be shut down while terminals are accessing files. To overcome this possibility, the network manager can bring up a "files window" displaying all files currently in use. From this window, it's possible to pause the network, close individual files and shut the whole thing down.

When booting and logging in, terminals have access to the fileserver's hard drive and printer just as if they were connected to the user's own machine. You can open hard drive partitions, run programs, access files and print out work without any specific knowledge of the net, although most disk accesses are relatively slow. *SGS Net* includes file locking algorithms so that several nodes can access the same file without the possibility of corruption.

SGS Net is a cheap and effective solution to the problems of peripheral and program sharing. For £145 you can connect two STs enabling them to share hard drives, printers, programs and data. In operation, *SGS Net* is reliable and resilient to crashes. If you're a small business-person with several STs, don't buy each of them peripherals – get connected with *SGS Net*. ■

JARGON BUSTERS

Fileserver: ST which controls the operation of the network such as drive accesses, printing and so on. A dedicated fileserver devotes all its time to network tasks. Non-dedicated fileservers can be used for other tasks while the network is in operation.
Node/terminal: slave computer attached to the fileserver used by network users to access peripherals and data on the net.
File locking: a software method of stopping one terminal accessing a file being amended by another terminal.

FORMAT RATINGS

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£145.95 ■ BATH BBS ■ 0225 836182

Features **90%**
Up to 32 STs on the net, file locking and comprehensive file server utilities

Speed **45%**
It's slow! Try running a large program from one of the nodes and see how sluggish it is

Ease of Use **90%**
Simple to set up and transparent in use

Results **90%**
Performs very well, albeit slowly

FORMAT VALUE **95%**
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The Competition
At this price *SGS Net* has no competition

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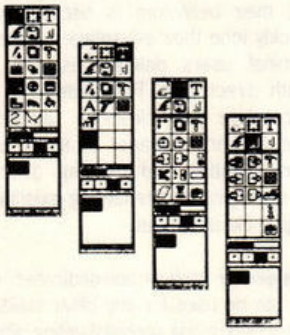

Icon Driven Menus.

- **Desktop publishing compatibility.** Touch-Up files load easily into your favourite programs, including Calamus, Page Stream, Publisher ST™ and Supercharged Easy-Draw™
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- **Versatile file formats.** Touch-Up exports monochrome images in these widely used formats:

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- **Drawing Tools galore.** You have a full selection of drawing tools at your command, including Bezier and B-Spline curves. Four writing modes let you be creative at various zoom levels.
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Touch-Up, being a full-blown image editing program has hundreds of features not contained in any of the other simple scanning packages. Features include:

- Virtual paging to hard drive for images larger than available RAM. This is the most important feature for Atari ST owners with a limited amount of RAM. It allows 1040 owners to work on the same images that only Mega 4 owners could work on in the past. (User configurable RAM usage for resident images).

NOTE: While Touch-Up does not require a hard drive, it is strongly recommended if you will be working with images that use more memory than your computer has (especially 1 Mb systems). Caching only works well with a hard drive and not a floppy based system.

- Works on ALL monitors (including Viking 1 and colour).
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- Save clip area in any of the supported formats.
- .IMG file previewer

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- Special features including, Lasso, FatBits and Airbrush.

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- Scan to full page
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Images created with Touch-Up can be loaded into Desktop Publishing programs, including Calamus, Fleet Street, PageStream, and Publisher ST, and others that support the listed file formats.

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ST FORMAT

SCREENPLAY

Welcome to another action-packed instalment of *Screenplay*, with all that's best in ST entertainment. Highlights this month include:

- the extraordinary strategy gameplay of Microprose's *MidWinter* (**page 42**);
- the tank sim world of Rainbow Arts' *Conqueror* (**page 58**);
- the cute-as-a-button platform vaulting of Ocean's *Rainbow Islands* (**page 52**);
- and the oddball addictiveness of Entertainment International's *Pipe Mania* (**page 37**) and US Gold's *E-Motion* (**page 40**).

We round off the games section with a look at what's coming soon (**page 64**) and an exclusive behind-the-scenes special on Incentive's *Castle Master* (**page 70**).

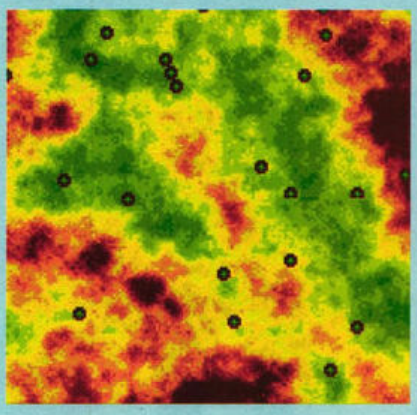
ON REVIEW THIS MONTH...

PIPE MANIA
Get addicted in seconds! Experience Pipe Mania's wild magnetic attraction. Turn the page for the definitive ST review **page 37**

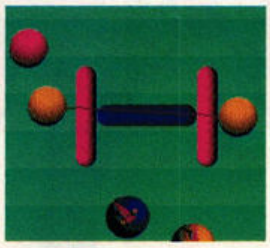
OPERATION THUNDERBOLT
The follow up to *Operation Wolf* blasts its way equally brutally onto the ST – see how it fares on **page 56**

ANARCHY
Wayne Smithson, author of *Blood Money*, unleashes his latest horizontally-scrolling shoot-'em-up. Read the first review on **page 48**

RISK
The classic war board game hits your ST: but is trying to tyrannise the whole world still as much fun? Find out on **page 50**



MIDWINTER
Microprose's highly ambitious strategy game has been due since late '89. Now it's here, has it been worth the wait? Turn to **page 42**



E-MOTION
Strange balls, colourful screens and manic gameplay. See them all come together in the Assembly Line's latest original game, reviewed on **page 40**

RAINBOW ISLANDS
At last it's here! Ocean are hoping for an even bigger success than *New Zealand Story*: see for yourself on **page 52**

SPACE HARRIER II
The original was a huge hit, but just how well does the follow-up play? Find out on **page 54**

CONQUEROR
After *Virus* and *Elite*, Braben's classic style emerges again on this tank game with a difference. See what we mean on **page 58**

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EMPIRE
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Winning formulas don't rocket onto the games scene with any regularity, but when they do they're around a long time – generating spin off after spin off. Remember *Arkanoid?* It was just a modification of *Breakout* but we've been seeing clones of it for years. There's been nothing since which gamesters could go psycho over, but programming team Assembly Line are hoping that's all about to change when *Pipe Mania* hits the shelves.

The game's history has been notoriously rocky. It was first shown to the press last February and has been lurking on the horizon ever since. In the last year it's undergone three name changes from *Pipeline* to *Pipe Dream* and now to *Pipe Mania*, but it didn't find terrafirma until American publishers Lucasfilm expressed an interest. They've now stitched up distribution of the game in the States under the name of *Pipe Dream* and much of the game's delay stems from their suggestions on how it should look.

Pipe Mania's big boast isn't incomparable graphics or ear-splitting sound, but intensely addictive gameplay. Just like *Arkanoid*, the objective is brazenly simple: to piece together sections of pipe so that water can flow through. This might not sound exciting enough to give you palpitations – but wait until you play it!

The game starts with a single piece of piping. Using sections of pipe, in the order they're displayed on the side of the screen, your task is to place them in such a way that water can flow through unhindered. You only have a one minute head start before water starts flowing, but you can continue laying pipe until it reaches the very last piece.

The game becomes complicated because you can only use the next piece of piping displayed on the side of the screen. Skill and foresight is needed to plan a route; the trick is not to necessarily lay pipe consecutively. If you're not careful you can easily end up with your plan in tatters just hoping the correct angle or strip will appear in time for you to join your pieces together.

A wealth of extra features emerge as the game proceeds: squares in which you cannot lay pipe, reservoirs that slow the flow of water and complicated one-way pipe systems that only allow water to flow in the direction of the arrow on the pipe – if you lay one piece round the wrong way, the water stops and the game is over.

There's no way of linking the pipe in a big circle and leaning back in the knowledge that you've won a level. Instead, you need to lay a certain number of pieces each time to qualify for the next level. In between every level you receive a password which saves you the tedium of replaying easy screens.

There are also extra bonus screens played in a similar vein to *Tetris*. Chunks of pipe move back and forth across the top of the screen and you drop them on top of each other, constructing a clear pipeline. This is exceptionally difficult because you're given just seconds to decide where the pipe should go and it only takes a single wrong move to make the whole level impossible to complete.

EFFECTS

This type of game has limited graphic possibilities. There's no fancy animation and horizontal-scrolling might never have been invented. The backdrops are colourful, although in some cases it's difficult to distinguish the pipe from the background.

The music only uses the ST's sound chip and would be far more appropriate providing a soporific background to a cutesy game than this heroic pipe-laying struggle. You'll soon be reaching for the cotton wool or the volume control.

GOING PIPE MANIC

Using different lengths of pipe affects your chances of survival. Here's a few of the more unusual pieces and an explanation of how they work:

■ The cross is a useful way of pulling yourself out of a tight corner and buying time. The water flows up the pipe and, with the correct pieces linking two corners, will come back and cross its original path

■ The water flows only in the direction of the arrow. If you place this length in a pipeline the wrong way round, the level will be over as soon as the water hits it

■ This piece is found on the screen. If you direct water to flow through it, not only does your score go through the roof but you also slow the flow of water, giving you extra time to position even more pipes

VERDICT

The reason for *Pipe Mania's* delayed release was Lucasfilm's insistence on changing the visual aspects of the game; even from the introductory screen you can spot their influence. *Pipe Mania* has a very polished, slick, American feel to it and this goes a long way towards convincing you that it's value for money.

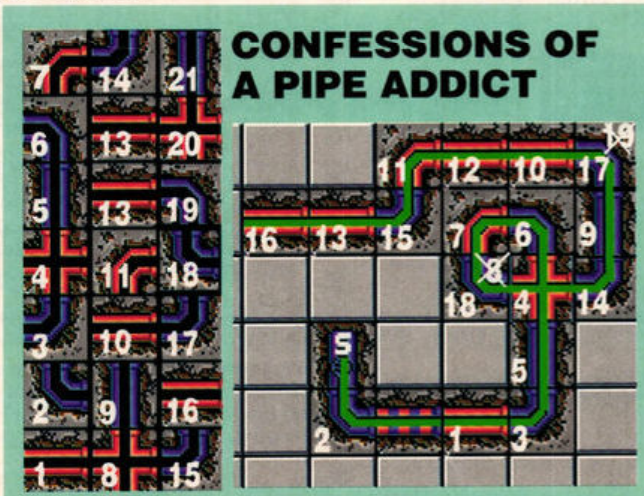
There's no escaping the game's simplicity. Let's face it, *Arkanoid* was no more than a brainless challenge and the only real difference between the two is that *Pipe Mania* has lost the shabby home-brew feel and blinds you with polish.

But however straightforward *Pipe Mania* might be, there's no denying that it's one of the most addictive games on the market. If you're not looking for something deep and thoughtful, you'll sprout roots in your chair before you stop playing this one.

MARK HIGHAM

GRAPHICS	8
SOUNDTRACK	7
INTELLIGENCE	1
INSTANT APPEAL	9
LONG TERM INTEREST	1
OVERALL	**76%**

CONFESSIONS OF A PIPE ADDICT



■ *Pipe Mania* in progress. The strip of different pipe lengths on the left came up during play. The map displayed on the right shows the order in which the pipes were laid. Note the position of the 8th piece. It was laid incorrectly at the start of the game and was later replaced by the 18th piece. Replacing lengths of pipe takes twice as long as laying onto a clear square.

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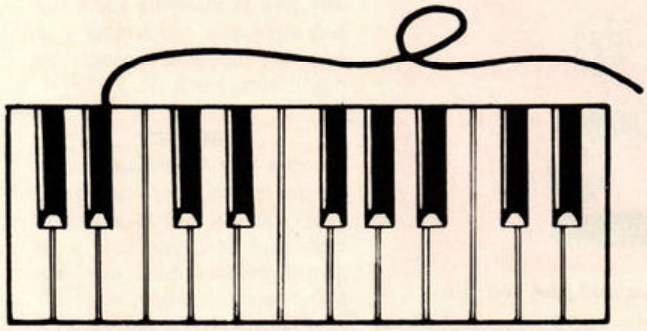

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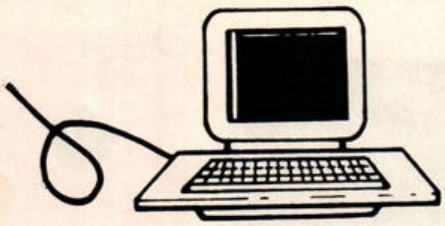

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ACCOLADE

E-MOTION

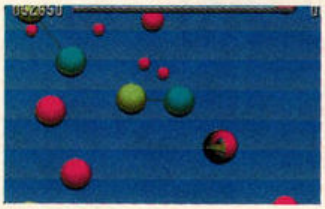
£19.99

There's been a sudden surge of strange, addictive games this month. *Pipe Mania* and *E-Motion*, both from the Assembly Line, have cornered the market in compulsive off-the-wall mindtwisters.

Whereas *Pipe Mania* involves actual objects, such as pipes and water, *E-Motion* is totally abstract. The game places you in control of a floating ball-shaped craft in a realm of other weird ball-shaped objects. The arena is a wraparound screen littered with unusual geometric obstacles and populated by coloured orbs.

The basic idea is to steer your ship around getting rid of the balls before they become overexcited and explode, removing your energy. Simple enough? Sure, but not when you neither collect nor shoot the balls it isn't.

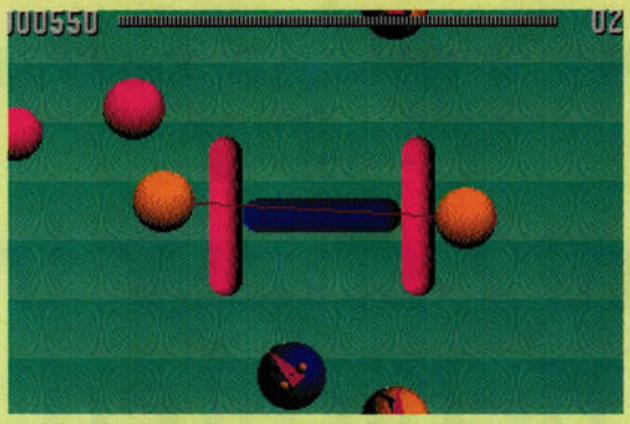
To destroy a ball it has to be forced to collide with another ball of the same colour. However, if two balls of a different colour collide they produce a ball of a third colour. The new ball is small and can be collected for extra energy, but if left to grow into a full-sized ball it has to be disposed of in the normal way.



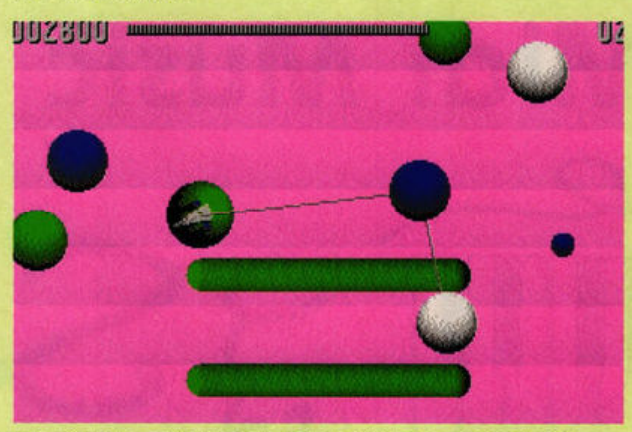
■ **Things are really getting out of control on the higher levels**

Some levels have special energy balls which allow you to destroy other balls simply by touching them, or they may instead give you bonus points.

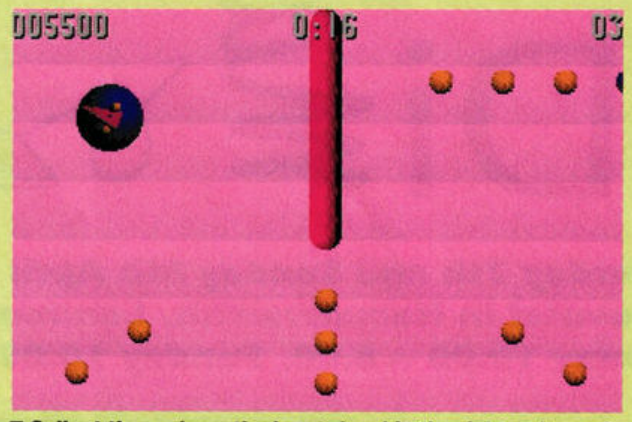
Balls are occasionally joined together by elasticated lines that both hold them together and keep them slightly apart. The repellent force can be overcome with a forceful smash in the right direction, but be careful because if one ball strays off the edge of the screen it reappears on the other side only for the line to catapult it across the screen in a most frightening manner.



■ **Things are tricky from the start with two elasticated objects to control**



■ **Level two – and you're joined to two orbs, but you still have to connect the right colours**



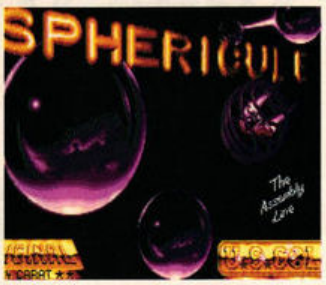
■ **Collect the pods on the bonus level in the right order and within the time limit to earn yourself extra points**

Bonus levels are played against the clock and require you to pick up specific coloured balls and avoid the rest. Some require the balls to be collected in a specific sequence and end prematurely if the wrong ball is touched.

There is a choice of control methods for people who prefer to play with one hand or two.

EFFECTS

The Assembly Line have used a nice raster-splitting effect to produce a fading backdrop (which unfortunately doesn't show up on the screengrabs) and the sprites have a strange solid effect – rather like Fruit Pastilles! The items may not look like anything you've ever seen outside some bizarre hallucination, but they're none the worse for that.



■ **Even the loading screen has rounded off edges!**

Similar care has been applied to the sound, with a bouncy sampled soundtrack and suitably ethereal spot effects.

The Assembly Line have tried very hard to make the game look both believable and surreal – an extremely difficult proposition, but they've succeeded.

VERDICT

The idea behind *E-Motion* is excellent and original. Once you've got to grips with the controls – and the method of destroying balls – the game is incredible fun to play. Frustration sets in, however, when balls start flying around erratically. It's at this stage you're severely tempted to hit the quit key instead of overcoming the problem.

Sometimes there's no option but to let a ball explode because it's the only one left. To a certain extent this is because it takes a while to understand the strategy required, but it doesn't help reduce your high irritation level.

E-Motion has all the necessary ingredients for a superb puzzle game, and is well-programmed to boot. You'll be entranced by the hypnotic movement of orbs and the ethereal special effects. Frustration generated by erratic ball movement is the only thing that stops you getting emotive about it.

MAFF EVANS

GRAPHICS	7
SOUNDTRACK	7
INTELLIGENCE	6
INSTANT APPEAL	8
LONG TERM INTEREST	6
OVERALL	**76%**

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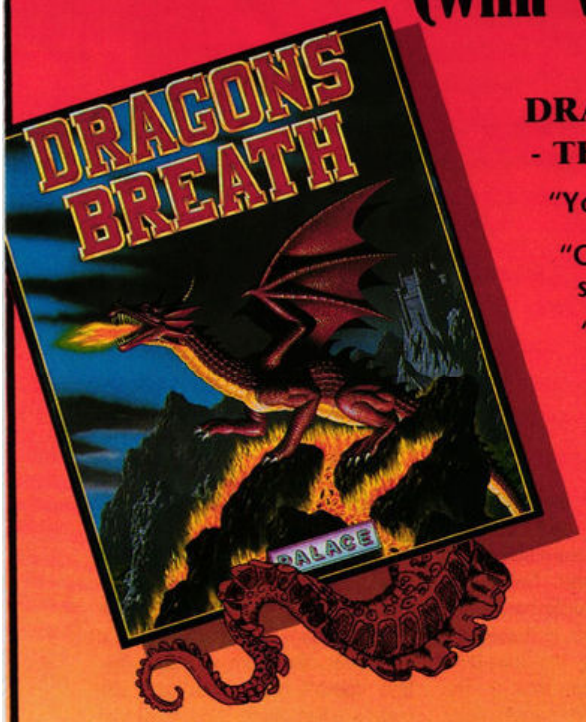
A TALE OF DRAGONS, CRUGHONS AND SPRITE CONSTRUCTION

(with very good reviews)



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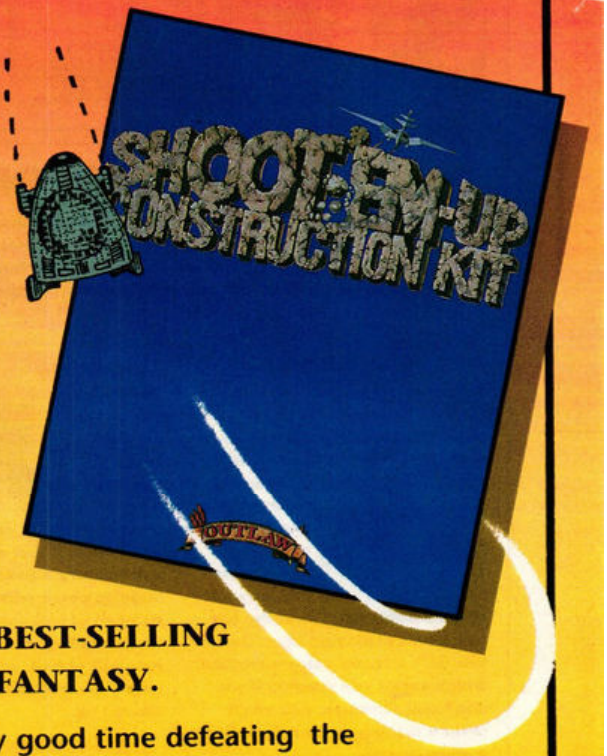

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"Plenty of fun.. highly recommended." **84% THE ONE**

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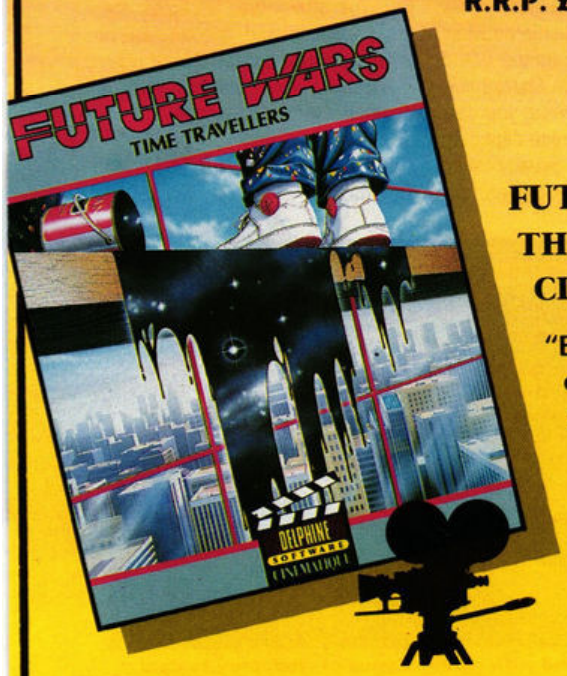

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MICROPROSE
MIDWINT

Microprose claim it's "the game of the decade." Heard that before? For once the hype might be right. A combination of intensive research and inventive programming, *MidWinter* depicts the future after a meteorite has collided with the Earth, bringing a global freeze. Pull on your snow boots and find out just why *MidWinter* conjures up memories of *Populous*...

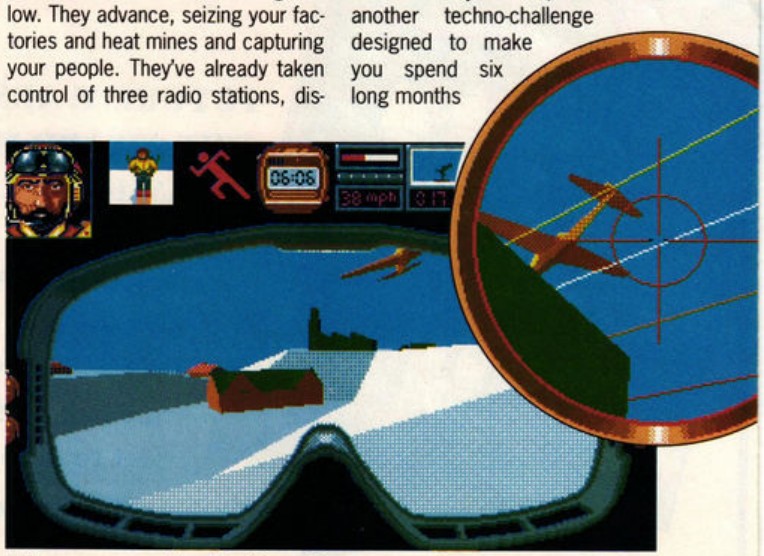
It's taken four man years of programming and research for hit-making team Maelstrom to unleash *MidWinter*. Set in the future after a meteorite has struck Earth, the scenario is based on research predicting the long-term effects of a global freeze. The impact of a meteorite causes polar wobble, shifting the North and South poles, lowering river levels and causing new land masses to rise from the sea. It's the advent of one such land mass that provides the setting for *Midwinter*.

We're in the year 2099 and in an heroic bid to stay alive despite sub-zero temperatures and daunting ice ranges, your group of 32 survivalists have constructed food factories and heat mines. This frost-bitten utopia is disrupted when a hostile band come to the island and make their base at Shining Hollow. They advance, seizing your factories and heat mines and capturing your people. They've already taken control of three radio stations, disrupting your communication with the rest of your team.

Playing the role of Captain Stark, you trek across hills and valleys searching for a team to take on the enemy. The people you encounter often turn you down but that doesn't mean you can't ultimately enlist them. You have the ability to play any character already drafted into your team, so you can send another team member to try recruiting the reluctant individual – which may or may not prove successful. As the game evolves, you begin to learn which characters communicate best with others.

Once you've established an army of approximately ten people, you can advance on Shining Hollow. You attack their factories and radio stations and release any of your team held captive during play.

Before you suspect this is another techno-challenge designed to make you spend six long months

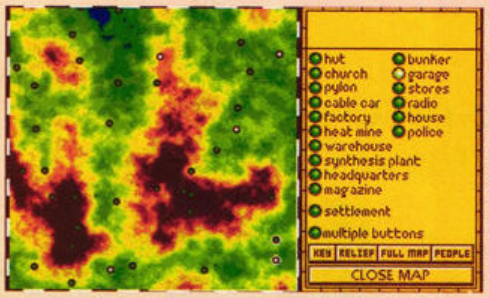


■ You come equipped with various types of weaponry to deal with the enemy. (Inset) You aim your sights on the plane as it fires at the building

1 PLANNING STRATEGIES

The objective is to build up a large team from the 32 friendly characters on the island and head towards Shining Hollow where the enemy is entrenched. Study the map and work out the proximity of other team members and the location of food and transport. Your first likely step is to head for the nearest garage and pick up a waiting snow buggy. Using the list of place types down one side of the map, you can highlight garages, cable cars or other useful places.

In this case, the garage is on flat ground and relatively close so you consider skiing there and picking up a snow buggy. But when you look closer, you see a team member who's much nearer. It's only by taking into account the heights of mountains that you realise you'd need to ski uphill to find this person, so you opt for the garage instead.



■ You select to see all the garages and plan your first steps into the icy terrain. Life only gets harder from here

2 PUBLIC TRANSPORT

It's one thing deciding where you should go but it's another finding the right mode of transport. You have two hours of playing time for each character to make his moves. When all characters have moved, the enemy takes his turn – so moving efficiently is important.

SKIS

You're kitted out with skis at the start, enabling you to skim across flat ice fields. Unfortunately they don't help much on uphill climbs! Skiing drastically

reduces your energy level, and if you tire quickly you may not last the full two hours of playing time. Couple this with a tricky control-method which sends you slipping if you don't pay attention, and you'll realise the importance of finding a snow buggy.

CABLE CAR

Cable cars are the safest form of transport. They're sprinkled on the tops of high mountains and

carry you over long distances. Spending time in the cable cars is useful since they allow you to rest and restore your energy levels. Here, you can see the cable car hut in the distance.

SNOW BUGGY

The buggy is the most common mode of transport and

can be found in any garage. It carries you up and downhill fast and even allows you to carry a passenger. Snow buggies come with varying degrees of weaponry and speed. Unfortunately, the snow buggy runs out of fuel, so you must find a neighbourhood garage to stay topped up.

HANG-GLIDING

If you yearn for a more adventurous sport, why not try hang-gliding? Get to the top of a mountain, find the hang-glider, climb in and fly away. You have to ride the thermals which makes them difficult to control. This form of transport diminishes the energy levels in your arms but with care you can hang-glide over miles of difficult terrain

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ER

£29.99

You're in for a chilling treat with *MidWinter*. The game is set in the future after a meteorite has collided with Earth and prompted changes in the climate. You lead a team across the snow-capped wastes to reclaim Shining Hollow

digesting a weighty manual just to get past the loading screen, it's time to explain *MidWinter*'s biggest asset. Despite its apparent complexity, the game is astonishingly easy to get to grips with – once you've spent a short time fathoming the controls, nothing is going to hold you back. A very logical icon set-up enables you to master the game in no time.

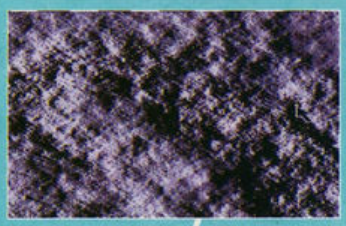
The game is played on a large map that details the contours of the land and displays useful landmarks. By clicking on a row of landmark icons on one side of the map, you can highlight anything from garages and heat mines to factories and churches. All these places are important to you: garages enable you to refill your snow buggy, churches boost your morale and factories produce food.

MidWinter is played as a series of turns. Within each turn you have two hours playing time for each

You've blasted the plane but a snow buggy comes careering round the corner. (Inset) Aim carefully and turn it to ice

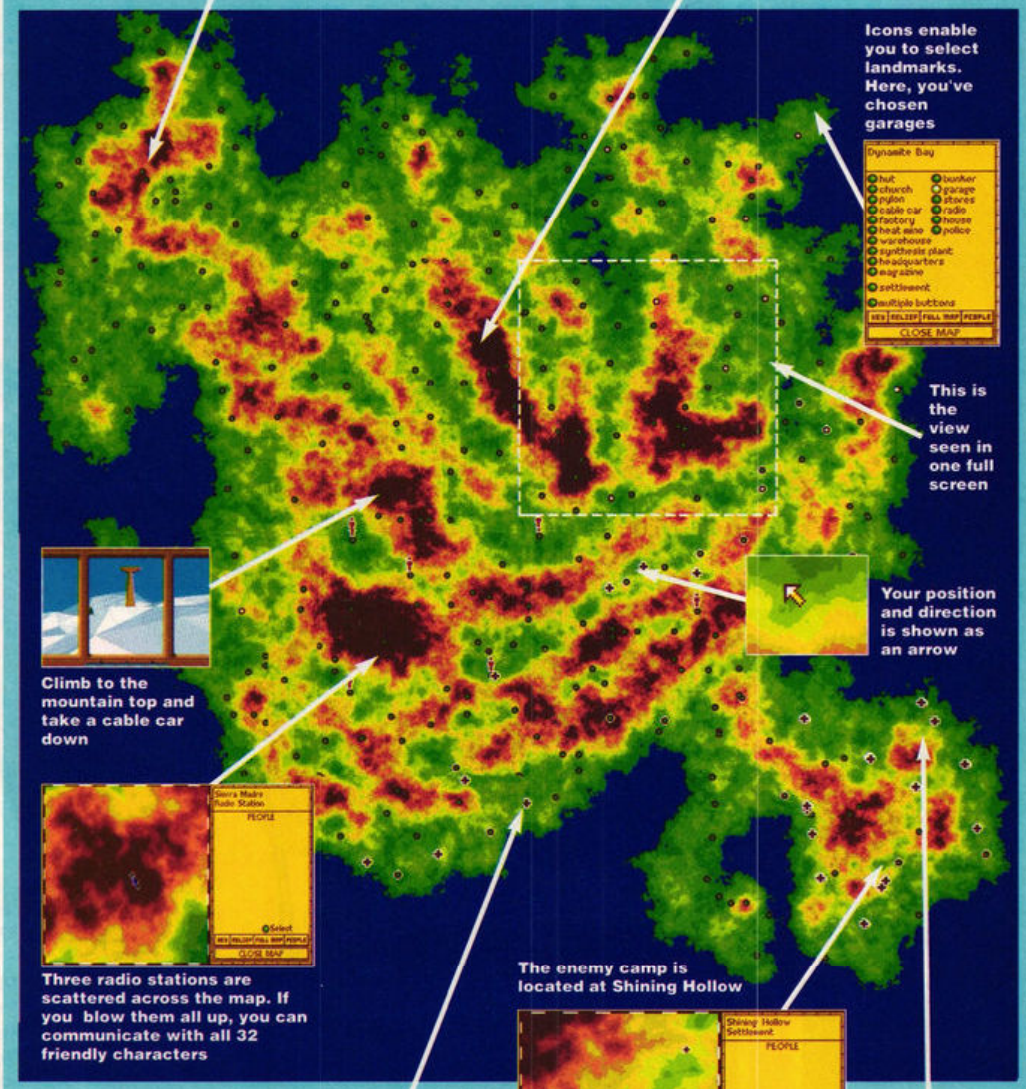
EXPLORING THE MAP

The main map, where your winning strategies are planned, lets you know the position of any important sites, your location and direction and any enemies in the vicinity. The map can be viewed at six different strengths of magnification to pinpoint specific areas. Here, 16 ST screens are linked together with the view seen in one screen denoted by the dotted box. Friendly folk are represented in MidWinter as small people icons and enemies are shown as crosses



A fractal-generated view of the landscape gives an impression of mountain heights

If you manage to ride your snow buggy to the mountian top you can pick up the hang glider. The snow buggy can carry the glider so you can have the best of both worlds



The bad guys lurk everywhere. Although they're only represented on the map as crosses, when you come across them during the game they look much more menacing. Here, you've come across an enemy plane. If you climb to the top of that tree, you can get in a better shot at the plane

The map shows the location of churches and settlements. When you ski there, you see 3D views of the buildings and can even investigate inside

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GRAVITY

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Screenshots from ST version

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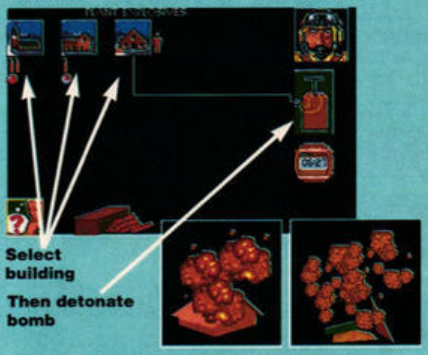
3 EXPLORING SETTLEMENTS

When you reach settlements your view is replaced with a series of new icons and small views of the buildings. If the explosion icon appears, you can turn one or more of the buildings into rubble by linking them to the detonator. This is one way to attract enemy attention but a more subtle entrance is advised. Although it's easy enough to blow up factories, they are as useful to you as they are to the enemy. With some skillful manipulation, they could provide the key to a winning strategy. For example, if you trap the enemy in one area of the map and then retreat, exploding factories as you go, you should be able to starve your adversaries into submission.



■ **Find a settlement and blow it up. Connect the exlosives and then wait for the timer to detonate them**

■ **You've found someone in the vicinty and make attempts to get him to join your team**

Click on a building and venture inside: options allow you to eat food, replenish your energy or even increase your morale by idling time away in church.

■ **The decision making icons**

character under your control. As a result, the more characters you recruit, the faster you progress. In practice, however, you won't get the full benefit of two hours of play, because when a character performs an activity, his energy levels sink. If they drop low enough he starts blacking out and his decision-making skills are affected to such an extent that important icons (such as the detonator) no longer appear. In this case your only option is to put him to sleep for the remainder of his two hours and move on to another character. During this time the enemy may advance and capture your factories and heat mines.

As you obtain more characters your options expand and you can develop some cut-throat strategies, such as starving out the enemy by blowing up his food plants or going for a head-on attack and storming into Shining Hollow guns ablazing. You can also try controlling the full team of 32 characters by destroying the three radio stations blocking your broadcasts and then lead your team to the enemy base together.

EFFECTS

Strong and exciting visuals are an important part of *MidWinter's* appeal. The main map effectively represents hills and valleys by shading and if you want a more realistic view, there's a fractal-generated satellite-type photograph of the map that gives a striking impression of heights.

Moving around the landscape on skis, in snow buggies or hang-gliding introduces exciting 3D views of the ice ranges as they zoom towards you. These are constructed as a set of polygons similar to those in Freescape challenges, but they've rarely been used so smoothly or effectively.

Sound effects consist of atmospheric skiing and snow buggy noises. There are also warning noises that increase or decrease in volume when the enemy is nearby but out of sight. Although undramatic themselves, you find yourself listening out for them with some trepidation.

■ **Your snow buggy comes equipped with missiles. You dispatch a few well-timed torpedoes at the plane but miss hopelessly**

VERDICT

A lot of classic games capture our imagination but the last time a genuine master appeared was when *Populous* stormed onto the scene. It was addictive, unique, had enormous long-term value, and, best of all, it could be quickly understood. *MidWinter* has all these essential ingredients and they should ensure it's as successful as *Populous*.

What keeps *MidWinter* addictive is the strategies you can employ to win. Depending on your position on the map, all sorts of possibilities present themselves – do you rescue another team member, do you go for the buggy instead, or do you blow up the factory? The choice is yours and any option may lead to success.

If any criticism is to be levelled at the game, it's only that repeated disk accesses can become frustrating, but this is a small price to pay for what is certainly going to be one of the big hits of the year. If you miss any other game in 1990, don't miss *MidWinter*.

MARK HIGHAM

GRAPHICS	9
SOUNDTRACK	7
INTELLIGENCE	6
INSTANT APPEAL	8
LONG TERM INTEREST	9
OVERALL	**96%**

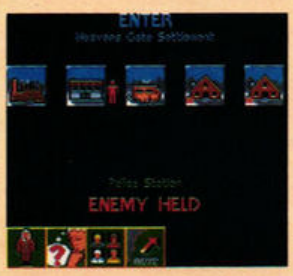
4 WINNING FORMULAS

The objective is to reach Shining Hollow and there are an unlimited number of routes to achieve this. One of the most unlikely options is to take a hang-glider all the way to Shining Hollow and stall it so you crash land on the top of the enemy base. This is a desperate option requiring tremendous amounts of skill and luck – so don't expect to succeed first time!

A more likely plan is to gather a band of five to ten people and march them down to the enemy base. As you draw near, enemies come out with daggers drawn. With much effort and care you can fend off attacks on your team.

Another option is to blow up the three radio stations. Since they're jamming your signals to the rest of your team (the full 32 characters), by putting them out of action you can take control of the entire team and march to victory. Unfortunately, the enemy realises their strategic importance and quickly tries to regain control of them, so you don't have long to move the characters.

The winning options are unlimited, which goes a long way towards keeping *MidWinter* challenging and addictive. In no time at all you develop your own strategies for keeping the bad guys at bay.



■ **One of your team is held by the enemy at the Police Station. Good job you don't need all 32 characters to win the game!**

■ **You need to watch your energy levels. If they diminish your character has to rest through the remainder of his two-hours playing time. Here is Captain Stark with a broken arm (red) and various sprained parts (brown)**

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RAF Pilot Officer Stevenson.

"There isn't much time to muck about in a head on attack. I gave a short burst then slid underneath his big black belly with only feet to spare, and flashed through the rest of the formation. I hadn't meant to cut it so close, and instinctively ducked as I saw wings, engines, cockpits and black crosses go streaking through my hood. I had reached about 450 mph in my dive, and heaved back on the stick. I blacked out completely as I went up and over in an enormous loop."
RAF Pilot Officer Boggle Bodie

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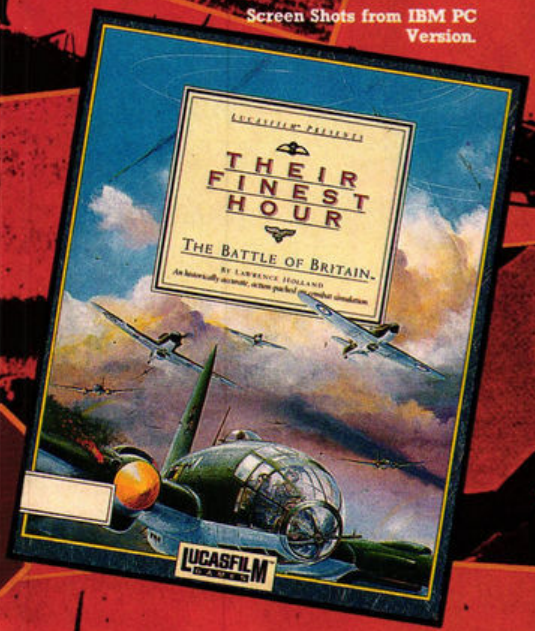

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AN ONSLAUGHT OF BULLE
YOU'D BETTER BE QUICK... T

WATER'S RISING

THERE MAY ON
BE ONE WAY
DEFEAT THE VICIO
CREATURES

INSECT ISLAN

... FIND THE CUP
DESTRUCTION ... YOU
HAVE TO BE PRET
SLICK WITH YOU
RAINBOWS SO AS
OVERCOME THE BE
LADYBIRDS, SPIDE
CATERPILLARS AN
YIKES!! ... THE BEEHIVE

OH NO

NOW I WISH I'D STAY
WITH THE BEES! THEY
JUST BUZZING BA
COMPARED TO THESE TAN
PLANES AND 'COPTERS

COMBAT ISLAN

YES, IT'S TIME TO B
THESE GUYS AT THE
OWN GAME AND TA
TO THE AIR
NOW WHERE'S
BOX OF WING

NEXT STOP
MONSTE
ISLAN

—WELL YOU CAN JUST
OUT FOR YOURSEL
WHEN GHOSTS, TRO
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Last year Wayne Smithson astounded ST games players and programmers alike by succeeding in the impossible: an ST conversion of Amiga *Blood Money*. The resulting game was phenomenal, and is still held up as masterpiece of programming excellence and gameplaying grandeur.

Wayne's latest release *Anarchy* was started before *Blood Money*, but shelved during the conversion work and was only picked up again six months ago.

Picture full-screen four-plane horizontal parallax scrolling, 48 colours on screen and countless tiny enemy craft attacking as though their world depended on it. While it's easy to get carried away by *Anarchy*'s technical brilliance, it's the gameplay you're here for. Rest assured, it's hugely playable.

The game is all about speed. You won't have seen anything move as fast on your ST screen before; Jeff Minter's *Andes Attack* is about the closest you'll get, but even that is several parsecs behind.

Anarchy wins zero points for originality – it is, after all, a finely tuned 1990s version of *Defendor*. The idea is to blast just about everything that moves while protecting canisters at the bottom of the screen. Aliens appear in waves so there are periods of relative calm followed by stretches of unbelievable anarchic action guaranteed to numb your trigger finger.

Various types of aliens exist and each has its own flight pattern and characteristics. Some aliens when shot release a token that slowly drifts towards the bottom of the screen. Picking up a token provides you with either rapid fire, an outrider, double lasers, a smart bomb, Nackem power, six side shots, energy top up or force field.

The whole objective of the game is to protect the canisters, so it's imperative you stop the nasty aliens called Stealers from flying off with your goods. If a Stealer manages to get to the top of the screen, you'll soon know about it because he turns into a mutant and buzzes around you until either you've destroyed him or he's destroyed you.

You've got ten canisters to protect from Stealers. Unfortunately you can't mow everything in sight because your bullets destroy the canisters too. However, by covering canisters with force fields collected from tokens, it's possible to prevent the Stealers from lifting off with the goods.

A canister falls to the ground if you shoot the Stealer carrying it. If the Stealer is only just airborne, the canister lands safely. But if the distance is too great, the canister ruptures and explodes. You can pick up falling canisters and deposit them on the ground for a bonus.

There are eight progressively tougher levels to complete. Every alien must be destroyed before you can move onto the next stage. If all ten canisters are destroyed during a round you're transported to hyper space where you have to deal with swarms of incredibly unpleasant mutants.

WHO'S THAT MAN?

A year ago Wayne Smithson made history by converting *Blood Money* onto the ST. The task was thought impossible by Amiga programmer Dave Jones.

Since *Blood Money*, Wayne (pictured below in the pink shirt) has set up a development team in Leeds called WJS Design. The team includes (from left to right) Paul Hoggart (coding), Chris Warren (animation and graphics) and Kevin Oxland (graphics). They are currently working on two projects, *Witchcraft* and the nearly completed *Firestorm* – a horizontally-scrolling cutesy search and shoot game which promises to be one of the best releases of the year.

■ **Shooting the green alien gives you a surprise, but...**

■ **– nobody said it was going to be a nice surprise!**

■ **This is one scene you don't want to see too often. Lose a life and this becomes your final resting place**

■ **Good shot! But catch the falling canister before it ruptures on impact with the ground**

■ **You've just encountered a column of stationary aliens. Running into them won't do you any good, but judging by all the debris on screen you've taken care of something else very efficiently**

EFFECTS

The speed at which everything moves means you have little time to appreciate what's happening in the background. It's precisely for this reason that the background graphics (all four levels of them) are drab. Having beautifully detailed and colourful graphics in the background would make the game impossible to play.

Your craft and the aliens are both small – perhaps a bit too small – but perfectly formed, coloured and animated. On occasions there is so much happening on the screen that it looks like bonfire night all over again. It's this that gives the feeling of bloody battle and makes the adrenalin flow.

VERDICT

Whether you liked or loathed *Defendor*, you'll love *Anarchy*. It's the perfect way to lose yourself for several hours as you waste the galaxy several times over.

The speed at which the screen scrolls is frightening and the number of aliens, bullets and other miscellaneous objects that are animated simultaneously is absolutely remarkable. *Anarchy* is the best version of *Defendor* ever.

RICHARD MONTEIRO

GRAPHICS	8
SOUNDTRACK	4
INTELLIGENCE	1
INSTANT APPEAL	8
LONG TERM INTEREST	8
OVERALL	**77%**

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■ ***Risk*** **is a conversion of the classic board game. The roll of dice and luck of cards decides the outcome of battle, but it's up to you how the armies are positioned. The complete map (left) is made up of a total of six screens – and wouldn't do you any favours in a geography exam**

Translating a board game into a half-decent computer romp is one of the hardest challenges for any programmer: not necessarily in terms of skill but in the sheer tenacity required to hang on to the coat-tails of the predecessor and retain its addictiveness.

The majority of board games rely exclusively on the interaction between you and your mates for interest. Throw in the added allure of luck, in the form of tossing a dice, and you have a game that doesn't take kindly to computer clones. When the opponent is your ST and also throws the dice, it's like playing against your worst enemy and letting him decide what the score on the dice should be.

Despite the odds, Leisure Genius have undertaken the task of converting the classic board game *Risk* from its cardboard original to the pixel-packed monitor of your ST. But can the computer version be as challenging as the original?

Intended to be a game of strategy, *Risk* is a megalomaniac's wet dream. It involves eliminating your opponents by smashing your way through territories on the path to world domination. To achieve this awesome feat, you have a number of armies to position across the 42 countries on the map. By concentrating your power in localized zones, you can march forward tyrannizing neighbouring countries.

How you position your armies at the start has a major influence on the outcome. The game can be played with up to six opponents, any of which may be played by computer or human. Depending on the number of opponents you choose, you'll receive different sized armies: two players get a handout of 40 armies, six receive half as many. Positioning them all takes aeons, but once finished, you're into the game proper.

Using armies from one territory to attack those in an adjacent territory you gradually attempt to extend your dominance over the entire world. You can perform many such attacks within each turn, earning one RISK card each time you conquer new ground. As you build up sets of RISK cards, these are traded for extra armies that can be placed in any territory under your command.

If you've planned your strategies well, you should end up wiping an opponent off the map – in which case you're bestowed with all the RISK cards in his or her possession.

At the end of your turn you can fortify your position by moving armies from one territory into an adjacent territory. This tactical redeployment can only be performed once in each turn.

The game ends only when you've taken control of the entire map. The computer version has the added bonus of a neutral player who occupies areas of land but only plays a defensive role. If the land comes under attack, the computer fights hard to hold onto its territory.

EFFECTS

The playing screen faithfully reproduces the famous *Risk* map. Since it's impossible to cram the whole map onto one screen, you use the mouse to bring different areas into view. It's responsive, but there's little detail on the map to rave over. Sound effects are even more limited, consisting solely of the occasional beep to let you know how your land is shaping up.

VERDICT

Risk might have been about global conflict but it was never an earth-shattering board game. Its only real claim to excitement was the way you could play with half a dozen friends and bully each other into submission. Can you imagine six friends trying to cram round the computer screen? The thrill of the board game is lost because it's physically awkward to play on the monitor. Combine this with the ST tossing the dice and you can kiss goodbye to the last remnant of laughter.

Costing twice as much as the board game, the computer version plays as a simple strategic wargame with cards and rolling dice deciding territorial gain. If you found the board game a thrill, this version is still going to excite, but wargame strategists and board game addicts should play safe and steer well clear.

MARK HIGHAM

GRAPHICS	5
SOUNDTRACK	1
INTELLIGENCE	4
INSTANT APPEAL	7
LONG TERM INTEREST	6
OVERALL	**68%**

■ **You look at the land and contemplate plunging headlong into battle**

■ **It was an easy victory. Your armies have taken over Western Europe**

■ **You collect the prize of war – the RISK cards are exchanged for armies**

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KID GLOVES

Somewhere deep in the heart of the Amazonian jungle there beats a drum. Softly at first and then louder, the insistent beating awakens our hero, Kid, from a deep sleep. Last thing he can remember he was pulling on an old pair of boxing gloves he'd found in his uncle's study... now, here he is, surrounded by trees and shrieking parrots. There's something weird going on round here.

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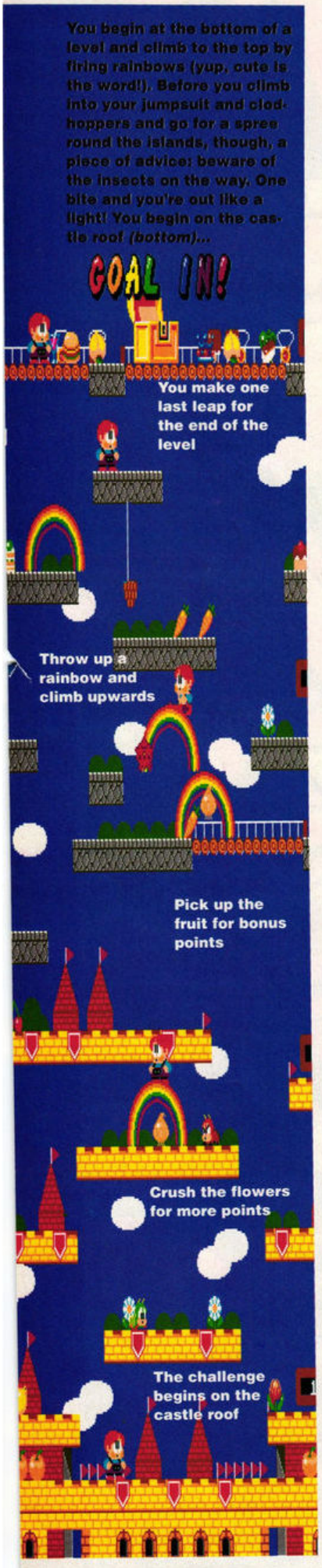

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RAINBOW ISLANDS

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Months of controversy about ownership of the licence have served only to enhance *Rainbow Islands'* reputation. For a while back there it even looked as if we'd never see it at all, but at last Ocean have unleashed on the world a game every bit as addictive and entertaining as its predecessor, *Bubble Bobble*. Cuter than a button...

Five years ago anything that dared to be "cute and cuddly" would be exiled instantly to the furthest dark reaches of the software shelves. Taito changed all that by releasing the extremely "cute and cuddly" *Bubble Bobble*, which had an extra trump card up its sleeve – sheer simple addictiveness.

The game became an instant success and had an almost religious following with badges, caps and T-shirts being worn by ardent fans. Firebird had similar high praise heaped upon them when they superbly converted the game to home computers – virtually producing an exact replica of the brilliant coin-op.

The inevitable follow-up game soon appeared in the arcades in the shape of *Rainbow Islands* and Firebird quickly snapped up the license, commissioning Graftgold to carry out the conversion. When Microprose bought out Telecomsoft and their subsidiary labels they failed to secure the rights to the conversion, leaving the project hanging after whetting the appetite of the software world with endless previews. Now, at long last, the licence has been tied up by Ocean, so Bub and Bob fans can breathe a collective sigh of relief – *Bubble Bobble II: The Revenge* is here!

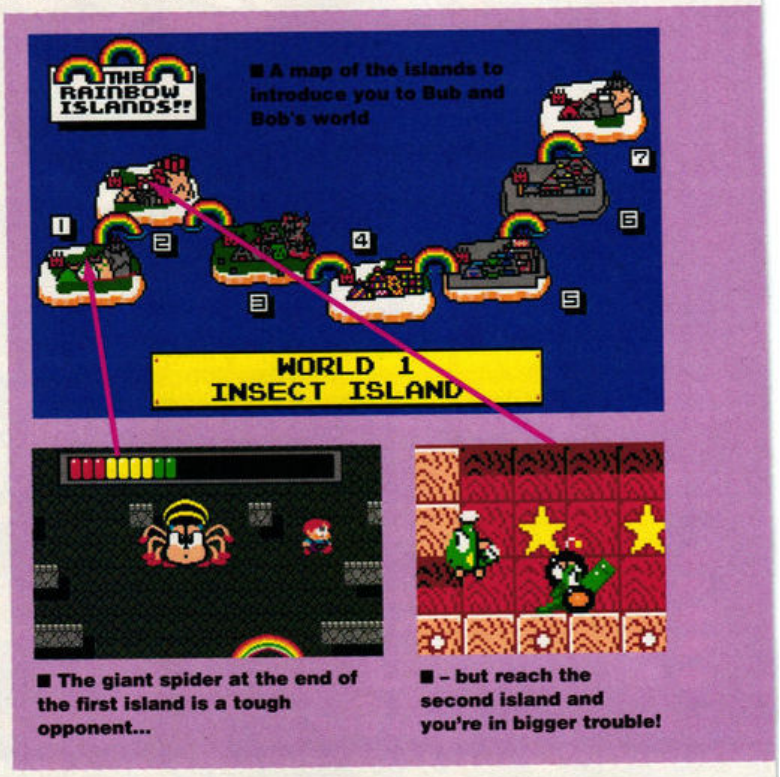
In *Bubble Bobble*, the two heroes Bub and Bob had been turned into cute little dinosaurs by an evil wizard monster. The brontosaurii were then placed in a castle containing 100 rooms inhabited by strange creatures like rotor-heads and clock-jaws. Bub and Bob had to kill all the creatures in each room to progress through the screens, until the final confrontation with the monster himself in room 100.

Of course, everything being nice in the world of cute and cuddly computer games, they managed to escape and return to their human form. Now they're ready to plunge headlong into danger once again, because another nasty creature has turned their homeland – the Rainbow Islands – from a friendly paradise into a dangerous and frightening realm.

The once peaceful inhabitants of the islands have been enslaved by hordes of creatures controlled by the evil oppressor. All the monsters are matched to their surroundings. The Insect Island, for instance, is terrorised by caterpillars and bees, while vampires and Frankenstein-like creatures roam the Monster Island.

Bub and Bob have to make their way from the bottom area of each island to a goal platform at the top. Once the last area of the island has been completed, a helicopter or a spider-like creature must be overcome.

Fortunately the little heroes are not totally defenceless. They have a magic star that leaves a rainbow in its wake when thrown, and is



■ A map of the islands to introduce you to Bub and Bob's world

■ The giant spider at the end of the first island is a tough opponent...

■ – but reach the second island and you're in bigger trouble!

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used as a bridge or stepping stone to reach higher platforms. It also doubles as a weapon for tackling monsters. If a rainbow traps a monster beneath its arch, the monster becomes very agitated, turns red and tries to escape. Leave him alone and he breaks free to hound you until you drop, but stamp on the rainbow and it falls, crushing him to death. Every dead enemy drops bonus pieces of fruit which can be picked up for points.

At first, Bub and Bob can only fire one rainbow at a time and move around rather slowly, but by picking up objects like pots and trainers they can run faster and fire up to three rainbows at once. Other icons such as sweets, diamonds and emeralds may be collected to boost the players score.

One thing that must be stressed is that there is no time to hang around. Take too long on a screen, and the island slips into the sea, gradually filling the playing area with water. Be warned, Bub and Bob aren't the world's greatest swimmers, so as the game says – hurry up!

EFFECTS

Not surprisingly, the style of *Rainbow Islands* is reminiscent of *Bubble Bobble* – with cute sprites, bright colours and a bounce-along soundtrack. The flat objects and black backdrops of the original have been replaced by even cuter creatures (Bub looks particularly neat in his blue dungarees and red trainers) and pretty backgrounds, complete with clouds.

It has to be said that firing rainbows looks much prettier than those piffling little bubbles! The game kicks up with a superb loading screen, which it's difficult to believe was drawn in 16 colours, and things certainly don't deteriorate from there! Real care has been taken to create an exact copy of the arcade version and all the elements have been brought flawlessly onto the ST, even down to the "Over the Rainbow" backing tune.

VERDICT

Until you've played the game it's a good idea to withold judgment on an arcade conversion, but with Graftgold's track record it's hard not to be a touch excited. That excitement is entirely justified. Graftgold's version of *Rainbow Islands* is one of the best ST coin-op conversions to have appeared.

Once you get past the cute and cuddly appeal of the graphics and actually start playing, it soon becomes apparent how immensely addictive and playable the game is. I found it hard to drag myself away from the machine to write the review! Not only is the addiction instant, it will have you playing for weeks to come. In fact the only way to stop is either to finish all the levels or be forcibly dragged away from your joystick. But don't take *ST FORMAT'S* word for it: have a go at *Rainbow Islands* yourself – then just try and stop playing!

MAFF EVANS

GRAPHICS	8
SOUNDTRACK	6
INTELLIGENCE	3
INSTANT APPEAL	9
LONG TERM INTEREST	8
OVERALL	**93%**

GRAFTGOLD PROFILE

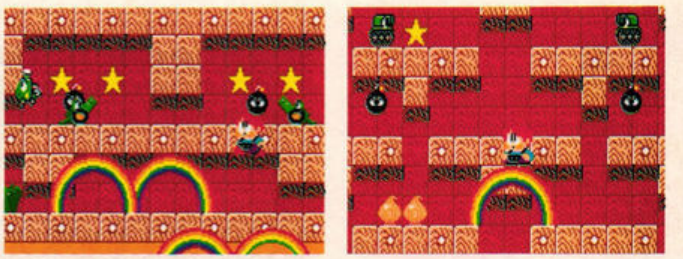
So who are the people responsible for bringing us this absolutely brilliant conversion? The answer is Graftgold – a team fast becoming a major force in the programming world.

Initially the team consisted of C64 programmer Andrew Braybrook and Spectrum coder Steve Turner – working for Hewson Consultants. After working individually on a number of projects, the two came together to produce *Paradroid* on the C64, which became a huge success. Not content to rest on their laurels, they went on to produce the frantic shoot-'em-up *Uridium*, which set the tone for many blasters to follow.

The team grew to involve programmers working on projects independently and produced games like the medieval arcade adventure *Soldier of Fortune*, while Braybrook concentrated on more diverse ideas like the surreal *Morpheus* and the very original *Intensity* – which didn't appeal to as many people as his earlier work.

Rainbow Islands set the team quite a challenge, since not only was it the team's first arcade conversion, but it was also their first full-blown 16-bit product. Extensive research was done to both arcade appearance and the coin-ops program code (Andrew Braybrook is a stickler for details) to produce one of the finest conversions on the ST to date.

Graftgold are currently working on 16-bit versions of *Paradroid*, which should prove to be something worth waiting for!



■ (above) Under attack from cute war machines

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SPACE HARRIER II

GRANDSLAM
£19.99

■ Space Harrier waits in the teleport chamber before choosing a mission

■ Under attack from angry hover ships in the Stuna Area

■ Agh! Mega space turtle attack! Shoot all three heads to defeat him

There can't be many games players who haven't heard of *Space Harrier*. Released four years ago, the game pioneered the use of hydraulic motion to add extra realism – a technique that was adopted by coin-op designers to produce those huge monstrosities we see in the arcades.

Space Harrier II closely follows the format of its predecessor. The plot tells of a renegade member of the Harrier fleet, the Dark Harrier, who terrorises Fantasy Land with his evil guardians. You play the Space Harrier, the last remaining hope of the innocent inhabitants of Fantasy Land, who must conquer 12 zones filled with all manner of outlandish creatures and tricky obstacles before reaching the final zone and confronting the nasty Dark Harrier himself.

Play starts in the teleport station where you begin your travels to the 12 zones. Your brave warrior is armed with a jet-powered photon cannon allowing him to not only blast the enemies but avoid danger when flying across the Fantasy zones.

Once the Harrier has battled through the demons in the zone, he comes face to face with the Dark Harrier's guardians who appear in a variety of guises including a three-headed turtle, a ghostly monk, a devil-headed serpent and even a winged sphinx. Each one requires a different method of attack and soaks up a good few blasts before it's destroyed. When you reach the twelfth level you fight against all the guardians from the previous zones before confronting the Dark Harrier himself in the ultimate battle to liberate Fantasy Land.

At various points throughout the game bonus levels appear enabling you to gain extra points and additional lives by destroying as many objects as possible while riding your hoverboard.

EFFECTS

Things get off to a shaky start graphically with an incredibly dodgy loading screen to introduce the game. The 3D effects leave a lot to be desired, especially the way objects such as columns and trees appear to jerk and shuffle from side to side instead of smoothly approaching the player. Things improve with some nifty use of raster splitting stretching the horizon's colours off the edges of the screen and the end-of-level guardians are well-designed, with impressive shading and colouring.

The sound consists solely of a series of annoying tunes. If only the same care taken to produce the impressive border effects had been applied to other aspects of the game then *Space Harrier II* would really be something to shout about.

■ Blimey! What kind of diet is he on?

VERDICT

When a sequel is released it's a good idea to make enough changes to the original format to warrant buying the title again. Unfortunately, *Space Harrier II* has almost exactly the same gameplay and appearance as its predecessor. Granted the aliens have changed and the screen format has been altered, but 20 quid for what amounts to virtually the same game is a bit steep. It wouldn't matter if the game wasn't so repetitive that you lost interest in shooting wave after wave of aliens in about 15 minutes.

Dedicated fans of the coin-op are the only ones who stand to gain anything from *Space Harrier II* because the "updated" version only offers a new set of levels instead of standing up as a game in its own right – a fact which won't attract much interest from the casual shoot-'em-up player and which will almost certainly condemn the game to the obscurity it so richly deserves.

MAFF EVANS

GRAPHICS	5
SOUNDTRACK	4
INTELLIGENCE	2
INSTANT APPEAL	5
LONG TERM INTEREST	2
OVERALL	**51%**

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OCEAN

OPERATION THUNDERBOLT

£19.99

Think back a couple of years and try to remember what it was that brought Uzi sub-machine guns back in fashion. Was it Arnold Schwartzenegger? No. Was it Public Enemy? No. Was it the phenomenally successful arcade game *Operation Wolf*? Could be...

Operation Wolf placed the player in the role of Uzi-toting mercenary and all round hard man Roy Adams as he set out to liberate land occupied by rebel forces. After a well-earned rest, Roy is back to solve yet another tricky situation. A DC-10 bound for Boston has been hijacked by terrorists and flown to the Middle East. The hijackers demand that their comrades languishing in jail be released or the hostages will die. The government refuses to succumb to the terrorists and the only option left is to send a rescue team to release the hostages by force.

Roy Adams is just the man to take such a mission, but even he's not tough enough to carry out the rescue alone. This time it's to be a two-man operation, with Roy's old friend and comrade in arms Hardy Jones along to help.

The game begins with Hardy and Roy in enemy territory ready to meet their intelligence contact. To reach the rendezvous point they must run down a street fighting off terrorist attackers. Next they battle to appropriate ammunition and transport in preparation for a jeep attack on the enemy hide-out. The two heroes free the hostages by shooting the locks on their cell doors – which isn't easy when enemy forces are shooting at you!

Once the hostages are free, they catch a boat back to the airport where a passenger plane is waiting to take survivors home. Unfortunately the ubiquitous terrorists have seized the plane, so Hardy and Roy must overcome them once again while taking care not to shoot innocent passengers.

The last barrier to freedom is a particularly nasty terrorist who blocks the cockpit by using the captain of the plane as a shield. You better aim very carefully or there'll be no-one to fly the plane home!

■ You've finally got a jeep – but there's still a long way to go!

■ Well, you've... er... arrived at the enemy hide-out...

■ but not exactly unexpected it seems

EFFECTS

The original coin-op of *Operation Thunderbolt* was renowned for its large sprites and digitised gunfire effects. Thankfully the ST version has both of these in abundance – it even includes the sampled speech between levels. Unfortunately, the effect of locks being shot off and animals being hit is the same tinny "ping" we've heard a thousand times in lesser games. Why not use sampled effects for these?

Fortunately this slight deficiency doesn't seriously detract from a superbly designed game. The graphics are extremely close to the arcade version in terms of the speed, colour and detail of animation and much of the sound has been taken directly from the original. It just goes to show what can be achieved on the ST if you tap the full power of the machine.

VERDICT

Operation Thunderbolt's gameplay is very similar to its predecessor, but the addition of two-player action means double the fun. Unfortunately only one person can use a mouse which could cause a few arguments, but with the opportunity for two people to spray bullets at the enemy they shouldn't last for long.

The disk system employed means that sometimes not all three disks have to be used to play to the end. The reduced disk swapping prevents unnecessary interruption of the action.

It's a tough game, but so was the original and Ocean's conversion is very close to its arcade counterpart. The uninitiated may not take to the frantic action, but Roy Adams fans shouldn't miss this at any cost.

MAFF EVANS

GRAPHICS	8
SOUNDTRACK	6
INTELLIGENCE	2
INSTANT APPEAL	7
LONG TERM INTEREST	5
OVERALL	**73%**

GETTING SUPPLIES

Hardy and Roy collect bonus items by shooting crates that fall by parachute. The crates contain additional pieces of hardware:

Ammunition: extra magazines and rockets

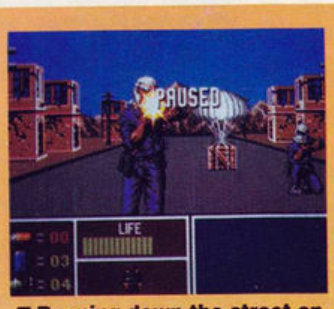
Body Armour: deflects terrorist bullets

Laser Sight: for zeroing in on targets – saves ammunition because a single shot can be used instead of a spray

Medical supplies: tops up Hardy and Roy's dwindling energy.

Another way of obtaining additional supplies is to give stray animals a quick burst of gunfire until they reveal hidden objects. A bit idealogically unsound, but when you're fighting gun-toting terrorists you have to use everything at your disposal.

■ Roy and Hardy - ready for action!



■ Running down the street on level one. Get that case!

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ARCADE · ACTION · ADVENTURE

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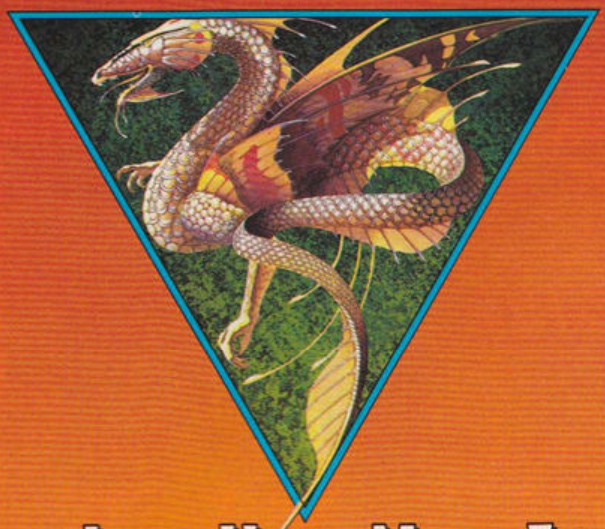

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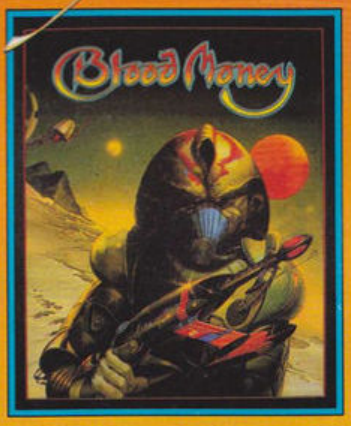

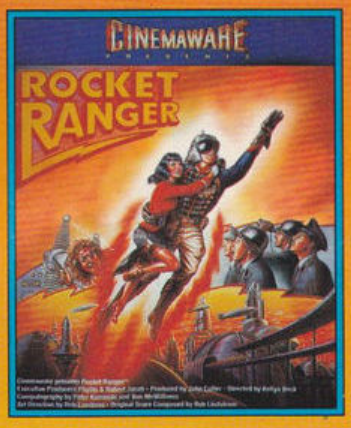

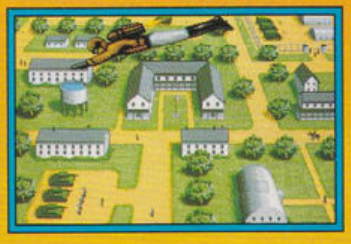

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RAINBOW ARTS

CONQUER

Hyper-realism – slavish attention to detail at the expense of gameplay – has killed many a promising simulation stone dead. Now comes *Conqueror*, a tank sim unlike any other, making little concession to the limitations of harsh reality and with the emphasis instead on hair-raising action and speed

Somewhere in between *Grand Monster Slam* and *Revenge of the Mummy* Rainbow Arts just lost it. For a while back there they came perilously close to tumbling into that twilight zone of home-brew software houses churning out half a game once a year. Setting eyes on *Conqueror* for the first time is a real slap in the face if you were expecting that trend to continue.

Old finger-on-the-pulse games hacks, who would admit to remembering back as far as the days of *Virus* and *Elite*, will see something familiar in the *Conqueror* screens. They bear a noticeable resemblance to the unique graphic environment invented by David Braben in the classic space-trading game *Elite*. Braben was brought into the *Conqueror* project to write the movement and landscape routines and much of the game's appeal can be attributed to his unusual playing area.

ST FORMAT GOLD

Conqueror doesn't try to be a straight tank simulation, concentrating instead on addictive gameplay. Three modes of play combine action with strategy, enabling you to adjust the game as your playing skills develop.

In the action game, the easiest of the three, you control just one tank and use it to blast others on the map. As you smash more and more enemy tanks, your own tank develops into a Herculean monster. Unfortunately the enemy is also growing in strength. It's not possible to track other tanks because of the size of the battlefield, so call up a map which displays the location of enemy tanks.

Attrition mode is an alliance of action and strategy. You're decked out with a standard selection of tanks consisting of one light, two medium and two heavy-duty machines. The computer begins the game with an inferior selection but these steadily increase until they outnumber your own. You can only control one tank at a time, but you can program other tanks from the map to head straight for certain locations. Should the programmed tanks encounter an enemy presence, they'll go into battle mode and fight until one ends up as scrap metal.

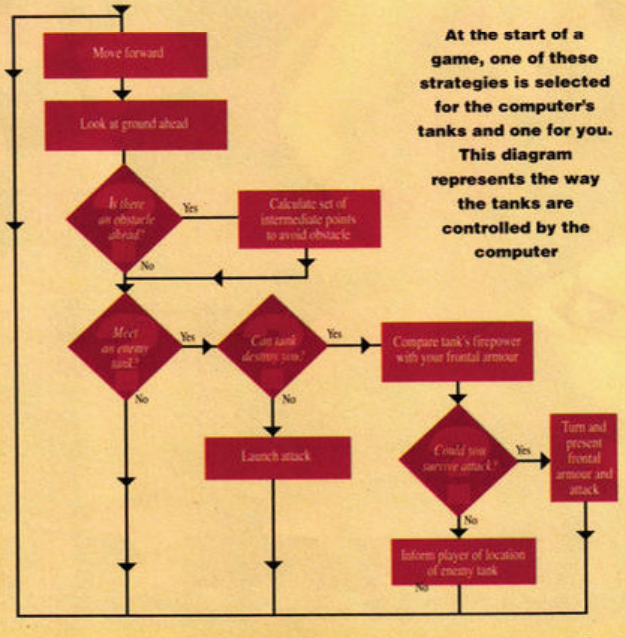
Strategy mode is the top level and the objective is to hold an area of ground for one minute. Victory depends on spending a considerable amount of time studying the map where the area of ground you're defending is represented by a large circle. You must move your tank into the designated area and then keep all enemy tanks out of it.

FORMULATING STRATEGIES

To survive in *Conqueror* you need to formulate some decent strategies. It's a good idea to group your tanks together. Any group only moves as fast as the slowest tank, so it's worth grouping tanks with similar mobility together. You can then move quickly round the battlefield blasting the enemy and using your superior speed to your advantage.

The game can be played in automatic or manual strategy mode. This determines whether the computer moves tanks not directly under your control. In automatic mode the computer employs three types of strategy:

- **Defensive: all the tanks act on their own and head for middle ground on the map.**
- **Offensive: groups of up to three tanks are sent to random locations on the map.**
- **Reconnaisance: light tanks are grouped to run round the map on low ground and bigger tanks patrol high ground.**



At the start of a game, one of these strategies is selected for the computer's tanks and one for you. This diagram represents the way the tanks are controlled by the computer

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■ *Conqueror* is a fast moving action/strategy game. By linking screens together like this, you can see exactly how the terrain is arranged

As in the attrition mode, you have other tanks which can be programmed to move to various locations on the map. If your situation looks irredeemable, you also have the opportunity to fire on the map – providing you've amassed enough points (see the "Groovy Moves" panel).

In other games points are little more than an ego-boost but in the attrition and strategy modes they serve an important purpose. In these modes you cannot see enemy tanks on the map, but with enough points at your disposal you can dispatch a spotter plane to relay details of the enemy's location. Points also give you the opportunity to buy more tanks from a selection of light to heavy-duty machines and allow you to build up teams to patrol the map.

GROOVY MOVES

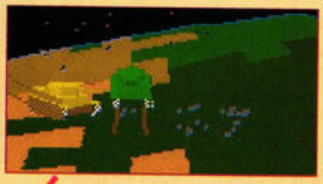
The contours of the map are displayed as different shades of colour; the darker the shade, the higher the land. Landmarks such as villages, woods and rivers are shown and although you can crash straight through these, they slow you down to such a degree that you'd be advised to find an alternative route. Travelling along roads sends your tank speeding to its destination, so it's well worth sticking to tarmac.

The tank under your direct control is represented as a cyan dot on the map; your other tanks appear as yellow dots. A similarly coloured X can be positioned on the map by you and denotes where the selected tank is being sent. Any tanks not directly under your control are moved by the computer. If selected to CHARGE, they head straight for the indicated destination ignoring alternative routes.

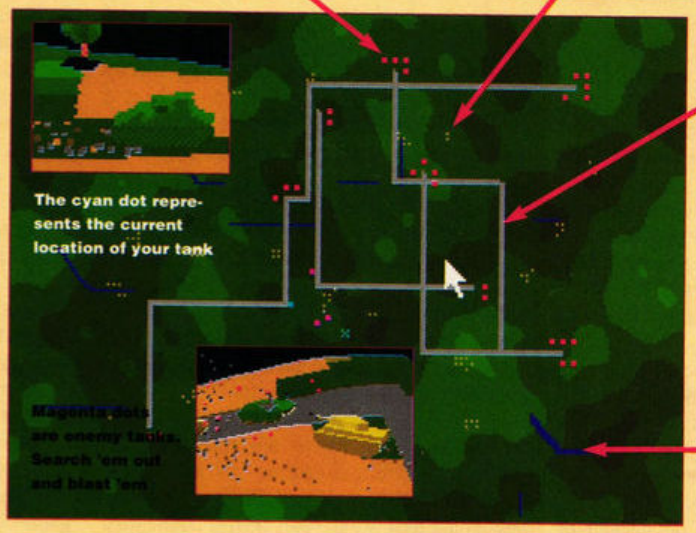
Since the action freezes while you stare at the map, you're given plenty of time to cultivate sophisticated attack plans. This is particularly important in the strategy mode where planning dictates whether or not you win the game. In this mode, you can't see the location of other tanks. For 500 points, however, you can dispatch a spotter plane over the area and the enemy tanks are displayed. When you return to the map these tanks are removed and you need to send a new plane to reconnoitre for up to date information.

In strategy mode you can call artillery stationed off the battlefield to fire on the map. This bombardment costs a valuable 1500 points and causes between 16 and 31 shells to land near the selected spot. With sledgehammer features like this, who needs a nuke button?

Villages can be blasted to shreds if they get in your way

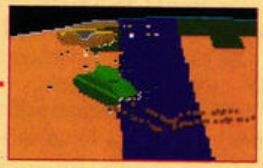


Yellow dots represent the other tanks under your control



(above) Keep your tank on the tarmac and you whizz across the battlefield in record time

(below) Drive the tank into a river and you chug along at a snail's pace



EFFECTS

The unique Braben environment sets *Conqueror* apart from other games. If you're not familiar with it already, be prepared for some serious entertainment. The ground looks like a rolling sheet with bullets and track marks represented by small squares. Sprites such as tanks, trees and houses are shown as solid 3D objects. The resulting presentation gives the game its own unique Braben-style.

Explosions and fire noises make up the bulk of the sound effects. They aren't particularly boisterous and don't occur in any great profusion, but effectively reinforce the atmosphere of combat.

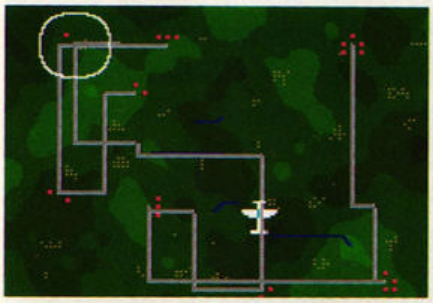
VERDICT

Outstanding games don't often just come out of the blue but that's how *Conqueror* made its dramatic entrance. If a game can succeed without receiving masses of hype and six months advance release publicity, you know it's got to be something special – and *Conqueror* certainly falls into that category.

With everyone else struggling to make games more and more realistic and super-fast, finding something both unremittingly addictive and graphically original is rare. *Conqueror* has both these qualities in abundance and deserves immense success because of them.

MARK HIGHAM

GRAPHICS	8
SOUNDTRACK	2
INTELLIGENCE	5
INSTANT APPEAL	7
LONG TERM INTEREST	8
OVERALL	**91%**



■ In the strategy level you must hold an area of land for one minute. The land in question is represented by a circle

■ You drive your tank into the area but there's someone there. Get that turret moving and turn him into scrap metal

■ The circle is clear but it won't stay that way for long. Buy extra tanks and group them to fend off the enemy

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Chancellor John Major isn't the only one thinking budget – Mastertronic and Codemasters add their £4.99 worth

STORY *Maff Evans*

BUDGET SPECIAL

The advent of the super 16-bit machines coincided with a marked rise in the average cost of games. To begin with this wasn't a problem since only those with a lot of money could afford the machines in the first place, but now more (and younger) people have access to machines like the ST, the price question has become a bone of contention.

The past year has seen the arrival of the budget ST game. How do they do it? **Codemasters** spokesman Mike Clarke reveals some facts: "We obviously don't develop £35 Psygnosis-type games, but we try to develop simpler titles with a lot of raw playability. Basically, we decide the costs for every area of production, from development to advertising, and we stick to them. If a programmer is late coming up with a product, then we introduce a penalty. This sounds worse than it turns out, since most of our products at the moment are conversions of our 8-bit titles and the programming isn't that difficult. Also, at this price big sales don't necessarily mean big money returns, but we've been doing fine and we're happy with the money we make."

One view of the budget market scene is that releasing a game that wouldn't necessarily sell at a full price for around a fiver is certainly not a good thing. This is an opinion shared by Mertin Moth, PR man for **Microprose.** "We feel that if a game turns out not to be up to scratch, it's a better idea to write the game off instead of releasing it as a budget title. People go into a shop and buy a Microprose product simply because they know that they get a good product with attention to detail and gameplay. We value our reputation as a quality software publisher. It would be very difficult to rebuild that reputation if we started to release budget titles."

■ ***Treasure Island Dizzy*** **at a cute £4.99**

But where on earth does all the money from a full price game go? "If you look at a product like *Midwinter,*" explains Moth, "the manual alone is something like 200 pages, so that's six months wages just for the bloke writing it. A lot of money can also go into developing the game itself. When we were originally approached with the game that became *RVF Honda,* it was just another racing game, but with videos and data from Honda and a manual written by the editor of *Superbike,* we turned it into a highly successful simulation that people are willing to pay good money for."

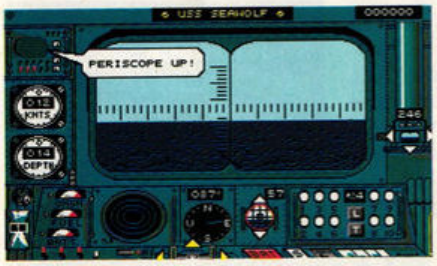
So what kind of games are available at the amazing all-singing-all-dancing £4.99? **Codemasters'** ***Treasure Island Dizzy,*** a big success in the 8-bit world, relies heavily on the tried and trusted "cute" factor. You star as the eggy hero of the title on a cruise with a rather rum-looking bunch of seafaring gentlemen now marooned on an island. You search the island for treasure and objects to help you escape. The graphics have a nice cartoon-style atmosphere and the game is extremely playable. If sales of the 8-bit versions are anything to go by, the ST version should sell phenomenally well.

Mastertronic's first releases seem to be veering towards the strategist end of the market, with the Maelstrom-designed ***Grimblood*** and ***Hunter Killer.*** The first places you as the young heir of the *Grimblood* estate, forced into solving the murder of one of the castle's inhabitants. The game unfolds with a series of *Cleudo*-type clues as you move around the castle via doors and passages, all drawn in colourful 3D perspective.

Hunter Killer is a submarine simulation, with the kind of presentation you don't often see in budget games. All the aspects of undersea warfare have been included, from the choice of engines, through torpedo-arming prodedure to control of the periscope. *Hunter Killer* doesn't quite match up to the quality of *Grimblood,* but having said that it has more content than many budget games.

Things aren't all hunky-dory though: there are also games like **Codemasters'** ***Advanced Rugby Simulator.*** The 8-bit version was quite a success, but it has to be said that the only thing in favour of the ST version is the price. Presentation and control aren't up to much and playability is severely lacking. It just goes to show you aren't necessarily getting a bargain.

The general standard of 16-bit budget games varies at least as much as full-price. There are games well worth a fiver, and others not worth loading. The danger is that people's critical faculties may be so distorted by the low price point that they lose sight of the fact that a bad budget game is still a bad game. ■



■ ***Hunter Killer:*** **realistic sub warfare**

■ ***Grimblood:*** **a *Cleudo*-like murder hunt**

■ **The snappily titled *Advanced Rugby Simulator,* at the bum end of the budget market**

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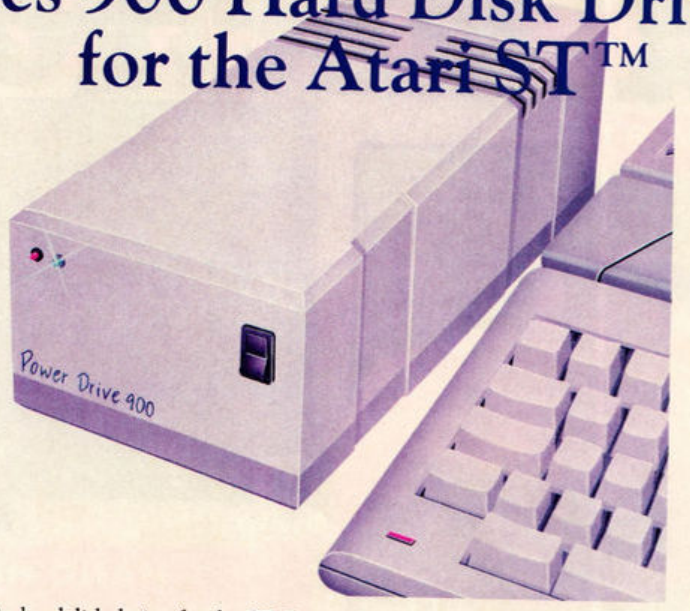

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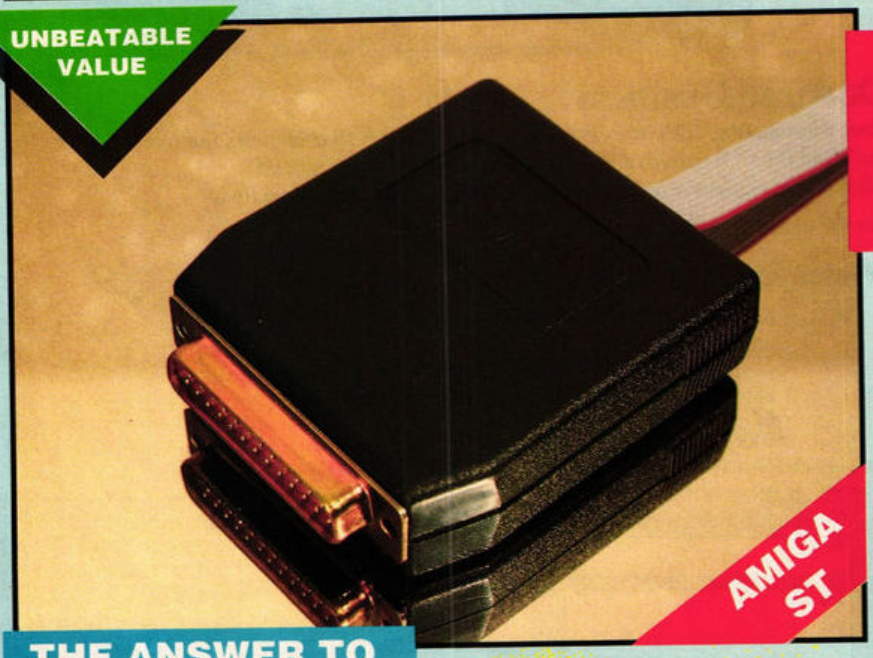

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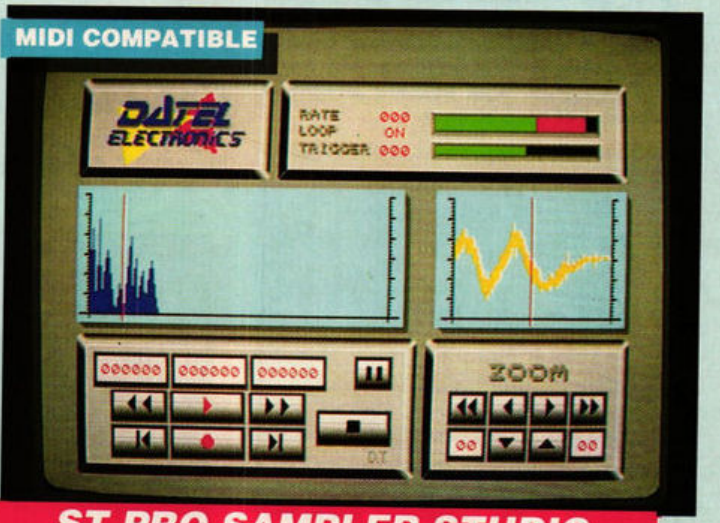

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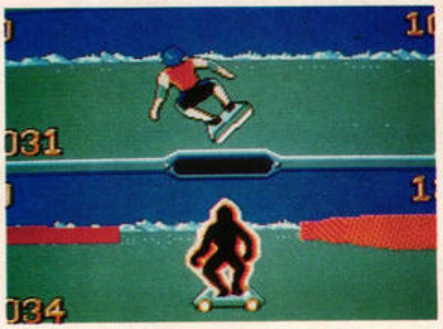
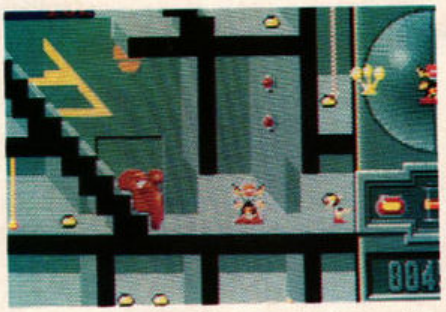
PREVIEW EXPECT

Time to take a brief look at another bumper crop of games about to hit the software shelves. From Palace's action-packed Colorado to Domark's infectious Klax, there's plenty of new life for the ST this spring!



■ **(Above) WIPE OUT (Gonzo Games): if the game is half as wacky as the publicity, you're in for a delightful experience. Proclaiming messianic intentions, Gonzo games have arrived to "deliver us from boring software"! Take on aliens in an intergalactic hoverboard race to the centre of the universe. Billed as "a great excuse to stay by your machine instead of going to the pub at lunchtime," it scuppers the longheld notion (especially round here) that your local hostelry already is the centre of the universe**



■ **(Above) TOYOTEES (Infogrames): enjoy scurrying through dark tunnels? Consider camembert a life sustaining necessity? Able to work up the enthusiasm to chase a retarded purple rat called Barnaby through a 3D labyrinth full of monsters? This could be the one for you! Based on a Belgian comic strip, *Toyotees* is a post apocalypse, subterranean rodent rescue operation that's sure to give you fresh nightmares about sewers, rats, atomic annihilation and (worst of all) reading Belgian comic books**

■ **(Above) EAST VS WEST (Rainbow Arts): winner of the "Missed The Boat 1990" award, *East vs West* is an agent simulation set in Berlin at the height of Cold War tension. Including a 15 minute animated sequence on the historical background to the divided city and the US airlift, the game ignores the march of time and effectively recreates the atmosphere of 1948, centring on a city full of double agents, atomic paranoia and Superpower distrust. Let's face it, Glasnost ain't good for gameplay: if you like Len Deighton and miss the chill in the air over Eastern Europe, *East vs West* could be right up your bloc!**

COLORADO (Palace)

Set in a riotous 19th Century Colorado and billed as a "*Barbarian* goes West" adventure, *Colorado* is the result of a new distributing deal with Simaril – programmers of *Manhattan Dealers*. Featuring trappers, Indians, wolves, gold mines and a whole Wild West pentathalon of trapping, shooting, canoeing, running and jumping (though not necessarily in that order) *Colorado* evokes the rich tradition of mythic Western imagery by following the adventures of a beaver hunter armed only with his skinning knife and trusty old maplewood rifle as he searches for gold in the hostile Colorado wilderness. A cross between National Geographic and James Fenimore Cooper, it looks like it could strike gold. Read next month's *ST FORMAT* review and stake your claim to a piece of Colorado!

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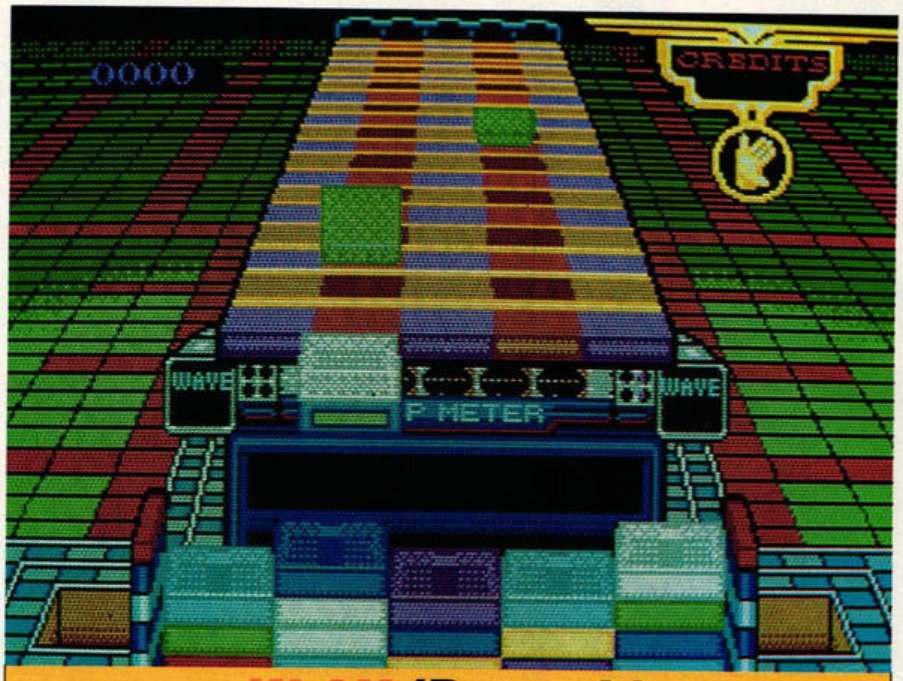
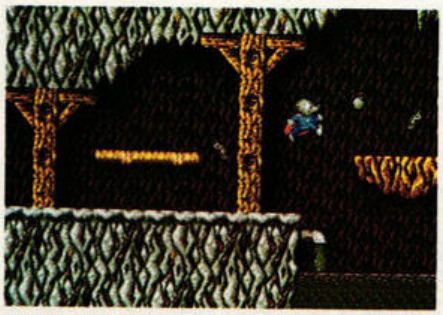
S: GREAT ATIONS

■ **(Above) PINBALL (Loriciel): Fancy yourself as a bit of wiz with the flippers? Use the keyboard to activate the paddles and test yourself on Loriciel's new pinball sim. It offers designs of varying complexity and eventually emerges in an *Arkanoid*-style environment. Thumping your keyboard in the half-light may not have the same hypnotising effect as playing the neon original in a bar, but you can always blast old Roger Daltry from the tape deck**



KLAX (Domark)

(Above) Billed as the "first ever software development in parallel with the coin-op development," *Klax* is simply a sophisticated colour co-ordinated extension of noughts and crosses. Basic in concept and easy to play, its attraction is its sheer head-numbing addictiveness. Featuring two-player simultaneous action it looks a must for anyone not suffering from severe colour blindness or a sudden attack of profundity. Read the full absorbing review in next month's *ST FORMAT*



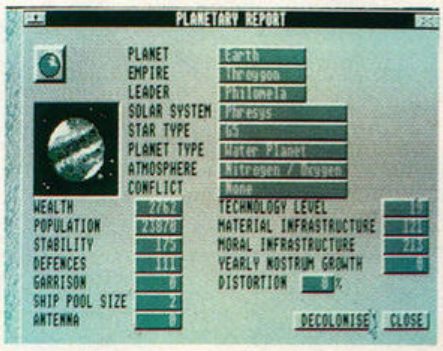
■ **(Above) IMPOSSAMOLE(Gremlin): *Monty Mole* – star of the 80s, more popular than Bros, sexier than Madonna and even more interesting than an episode of *Neighbours* – is back! (And you thought *Auf Wiedersehen Monty* was the last goodbye.) Gremlin say they intend to make Monty the most merchandised character of the new decade, appearing on T-shirts, mugs, posters, duvets and even *boxer shorts*. You can even catch Monty discussing his underground lifestyle with Melvyn Bragg. So enthusiastic about their marketing strategy were Gremlin that they forgot (or was it "forgot"?) to tell us anything about the game itself. One question: would *you* stuff a mole down your boxer shorts?**

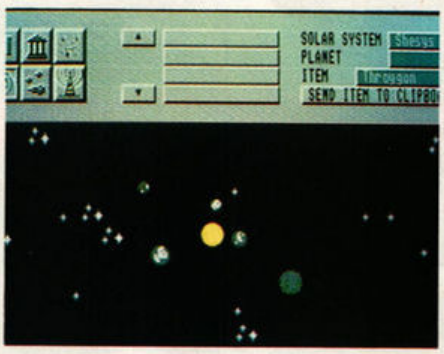
IMPERIUM (Electronic Arts)

(Below) Hyped as a space strategy simulating the next 1,000 years of human development, *Imperium* is another of those intergalactic imperialist sprees. Travel through space, meet interesting aliens and kill them in the search for the life-preserving drug Nostrum.

Featuring Holstian classical music and a map of the galaxy, the game relies on news reports and a fast window environment for interaction.

***Buy* your subordinate's loyalty with gifts and selective promotions, *contest* elections once every fifty years, and *invest* all your resources in military might, Nostrum trade and self perpetuation – sounds like a pretty dismal next millenium to me**





■ **(Above) WORLD CUP SOCCER 90 (Virgin): Just in time to take advantage of the shinkicking taking place in Italy this summer, Virgin's new release features two-player simultaneous action and will delight anyone who enjoys seeing injured players stretchered off, or balls whistling into the net from the hapless goalie's perspective. Converted from the coin-op by Andromeda Software in Hungary, the game must stand a fractionally higher chance of success than does its country of origin (or England, for that matter)**

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GAMEBUSTERS

***This month Gamesbusters plumbs new depths of double-dealing charlatanism and chicanery and delivers the complete solution to that most devilish of teasers,* Future Wars**

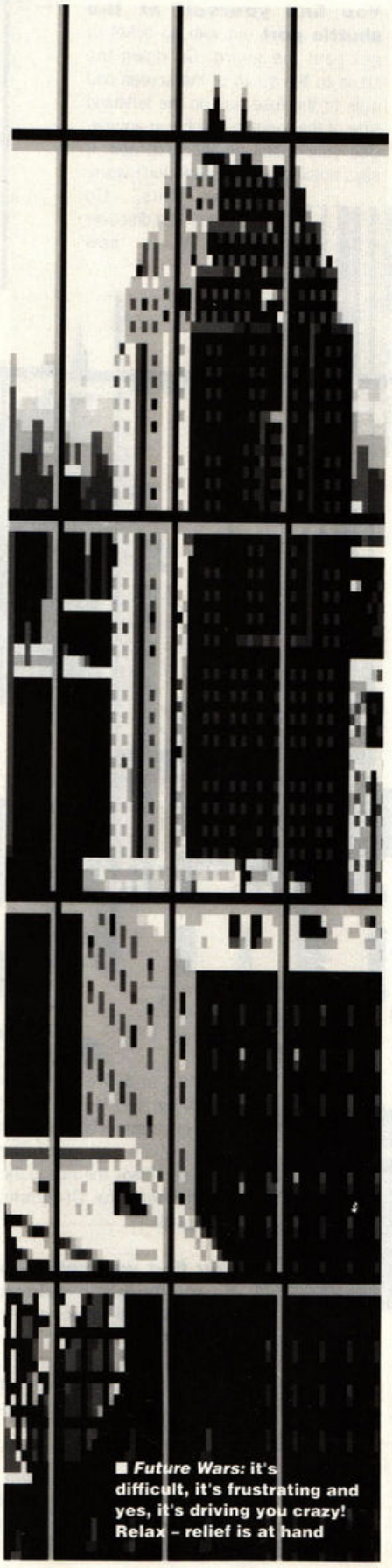
Hey everybody! Stop what you're doing and gather round because this month Gamebusters offers you a cheating pearl beyond price – the complete solution to that most fiendish of futuristic fumblings, *Future Wars*. The funkily named Lucien Oppler has stomped on all-comers to provide you with the definitive winning guide to the game. Strut it Luc...

You begin on the scaffold. After the boss has given you a little lesson in window cleaning pick up the split bucket and examine the scaffold. Operate the "up" button which appears and your scaffold travels upwards. Walk to the window the boss was leaning out of and operate it to enter.

When you enter the office lobby, walk to the dustbin and take the plastic bag. Go to the WC and operate the cupboard in it. Take the insecticide and go to the WC door. Operate it to open it. There is a litle red dot on the floor on the inside of the WC. Take this and you find that it's a red flag. Go to the sink and use the bucket there to fill it up.

Go back to the office lobby and walk to the bottom right-hand corner looking for a bump in the carpet. Go off the carpet, operate the carpet and find the key. Now go to the door on the north wall and use the bucket on the door. Then go to the door on the east wall and operate it. Not only can you enjoy the little joke you've played but you get to automatically walk through the east door.

Now you're in an office. Go to the cupboards under the library of books and use the key on the cupboard second from the left. Find the typewriter, examine it and note the number it gives you. Go to the desk and operate the drawer. Take the sheaf of paper you find in it and then walk to the map. Examine the map and you get a close up of it. On the close up look for a small black spot. Use the little red flag on this spot and a secret passage is revealed! Save the game and go into the passage.



■ ***Future Wars:*** **it's difficult, it's frustrating and yes, it's driving you crazy! Relax – relief is at hand**

You're in a small room whose walls and ceilings are closing in! Quickly examine the keypad on the wall to get a close up of it. Now operate the numbers on the keypad in accordance with the number you got from the typewriter (40315). The room stops shrinking and you can go through the newly appeared door.

You're now in a high-tech room. Go to the thing which looks like a photocopier. Use the sheaf of paper on the front and collect the documents that are returned. Save the game. Operate the red button on the photocopier and, as quickly as possible, operate the green button. Run to the round light patch on the floor to your right and you're transported back in time!

You find yourself in a swamp. Save the game. On the brown part of the swamp you see some dark patches. Walk to the left along the patches and go onto the grass as soon as you can. When you're close to the mosquitoes, use the insecticide on them. Continue walking left and just before you exit the picture notice the gleam of light on the floor. Examine the floor where the light was and get the pendant which is revealed. Go left. Walk to the tree next to the lake. Examine the foot of the tree and find the rope. Use the rope on the prominent branch of the tree and let yourself snooze up there for a while. A man enters and goes skinny-dipping in the lake. Get the clothes and continue on left.

You find yourself in a village. Go to the guard in front of the castle and use the pendant on him. Go left behind the castle (passing the chickens) and enter the little clearing. Go to the big tree and operate it. Pick up the coin and go right, returning to the village. Go to the inn and hand the coin to the innkeeper. After finishing your meal, exit the inn and go back to the guard and use the pendant on him. Have your little chat with the lord and you find yourself outside the castle again. The guard is sleeping so take his lance. Go behind the castle to the left and get to the clearing. Walk up to the tree and use the lance on the monk's cassock. After a quick change of clothes, go to the village.

You are next to an abbey guarded by a wolf. Examine the little blue thing on his behind. Now go back to where the lake is and fill the plastic bag with water. Hurry back to the wolf as quickly as possible, walk up to him until his head clicks down and use the bag on the wolf to destroy him. This bit may seem impossible because the bag is leaking but it can be done – you must be fast though!

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Save the game and enter the abbey. You see three monks walking around a box-shaped trail. If you follow them as exactly as possible, they don't suspect you. Save the game frequently during this phase. Walk with them to the west door, operate the door and enter. Walk boldly into the room and the monk tells you to go to the superior. Exit the room and, walking along the trail clockwise only, walk to the east door and operate it. The monk in here tells you to get him a cup of scorzuum. Exit and follow the trail to the west door. Enter and get the cup. Exit and follow the trail to the north. Enter, go to the ladder and use the cup on the barrel furthest right. Exit this room and go to the east door again (use the trail). Walk in and the superior drinks from the cup and falls down drunk. Search him and get the device. Walk to the book shelf and use the device on the piece of furniture below the books. Get the magnetic card and exit the room. Following the trail one last time, go to the north door. Climb the ladder and use the device on the barrel directly in front of you.

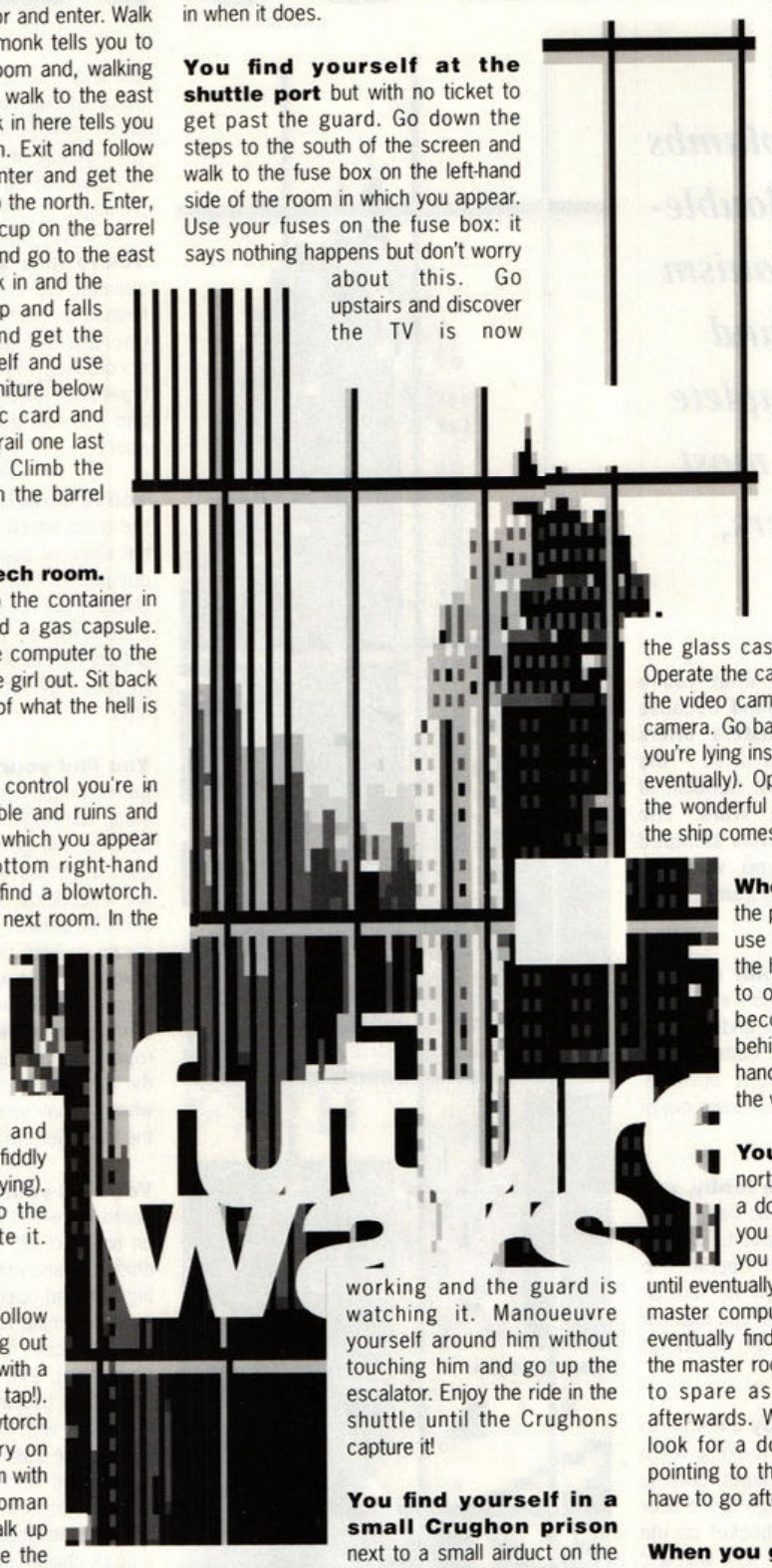
You're in another high-tech room. Before doing anything, go to the container in which the girl is held and find a gas capsule. Use the magnetic card on the computer to the left of the container and let the girl out. Sit back and enjoy a nice explanation of what the hell is going on!

The next time you have control you're in the future. You're among rubble and ruins and without Lo'ann. In the room in which you appear go to the rubble at the bottom right-hand corner and examine it. You find a blowtorch. Take this and go right, to the next room. In the centre of this room there is a prominent piece of rubble on its own. Operate this to find a manhole cover. Just to the north-west of this manhole is another load of rubble with a white spot in the middle. Move to this and examine the white spot (a bit fiddly so if you find nothing keep trying). You find some fuses. Go to the manhole cover and operate it. Enter the sewers.

Once in the sewers, follow the only path you can looking out for a pipe on one of the walls with a little black nodule on it (it's a tap!). When you find it, use the blowtorch on the tap to fill it up. Carry on going until you come to a room with a monster threatening a woman and child. Save the game, walk up close to the monster and use the newly filled blow torch on it. The woman thanks you and provides a way for you to get out of the sewers.

You're in front of a metro station. There's a door with a sensor (looks like a camera) above it. Use the lance on this to get the door open. You find yourself in the station. Walk to the newspaper vending machine on the left-hand wall. Examine its coin slot (a small black dot on the left-hand side of the machine) and use the coin in the slot. It doesn't work so get the coin from the slot again and try this once more (use coin on slot) and you get a newspaper. Wait for the train to arrive and get in when it does.

You find yourself at the shuttle port but with no ticket to get past the guard. Go down the steps to the south of the screen and walk to the fuse box on the left-hand side of the room in which you appear. Use your fuses on the fuse box: it says nothing happens but don't worry about this. Go upstairs and discover the TV is now working and the guard is watching it. Manoeuvre yourself around him without touching him and go up the escalator. Enjoy the ride in the shuttle until the Crughons capture it!



You find yourself in a small Crughon prison next to a small airduct on the north wall. Use the key on the airduct to undo its screws. Use the gas capsule on the airduct. Very quickly use the newspaper on the airduct to block the backflow of gas. The door opens and you can go through.

Soon after entering the next room, humans capture the Crughon ship. They think you're a Crughon and nearly kill you but Lo'Ann saves the day – so enjoy this little spectacle.

Go back in time with Lo'Ann to complete the final part of the game. You appear in a cave. Walk to where Lo'Ann is and save the game. Go left, following her. Have another battle with the Crughons. Kill the Crughons which are marked with a red danger sign before you go for any others. Then concentrate on killing all Crughons that get close to the centre of the screen. Watch out for the Crughon on the platform and when you see him, kill him. At the end, Lo'Ann is shot but not killed. Examine Lo'Ann and get the pills from her. Examine her again and get the pendant from her. Use the pendant on Lo'Ann to transport her back to safety. I

After a little walk you find yourself at the ship. There is a Crughon lying there. Examine him. Take the magnetic card and enter the ship. You've entered a small compartment. Walk to the right of the door where there is a card reader. Use the magnetic card on the reader. Then walk to the glass case at the bottom of the screen. Operate the case and take the garment. Walk to the video camera and use the garment on the camera. Go back to the case and click on it until you're lying inside it (a bit fiddly but you do get in eventually). Operate the case again and watch the wonderful graphics. Save the game before the ship comes to rest.

When you wake up again, use the pill but don't say what you want to use it on yet. Position the pointer on the hero and wait until the door starts to open. Click on the hero and you become invisible. Walk immediately behind the boxes at the bottom left-hand corner. Operate the big box at the very bottom left-hand corner.

You're in a dark place. Walk north to the red and green lights and a door opens. Save the game before you go out. The next bit is tricky but you must go up and down the ladders until eventually you come to the entrance to the master computer room. By trial and error you eventually find how to get there. Aim to get to the master room with at least 150 seconds left to spare as you have to go somewhere afterwards. While trying to find the entrance look for a door with arrows on either side pointing to the door itself. This is where you have to go after the master room.

When you get to the master room, go to the control console on the left-hand side of the room and use the magnetic card on it. Re-program the computer and leave immediately the same way you came in. Go to the room with arrows on either side. Now, sit back and enjoy the end! ■

Lucien fully deserves this month's fabby prize. Keep those thoroughly nasty cheats rolling in – next month's prime sneak could be you!

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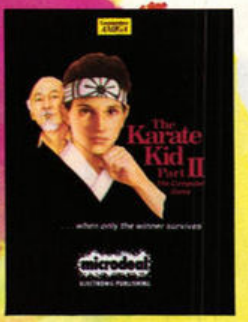

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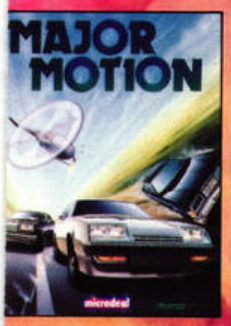

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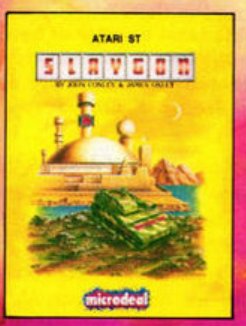

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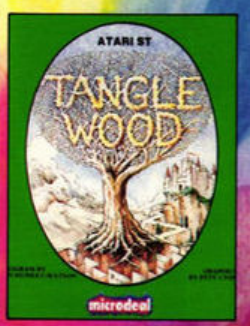

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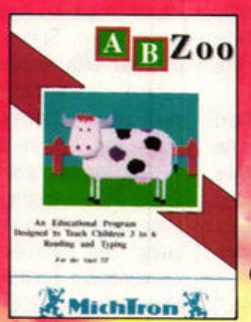

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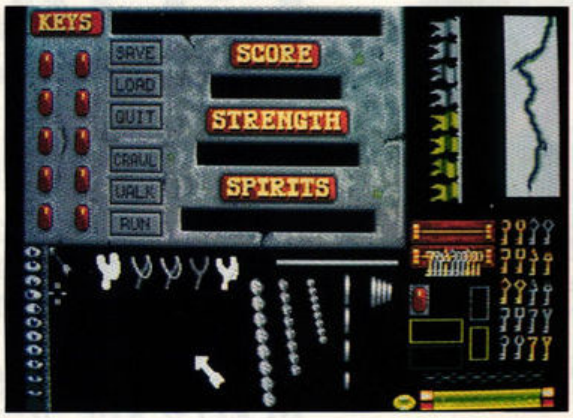
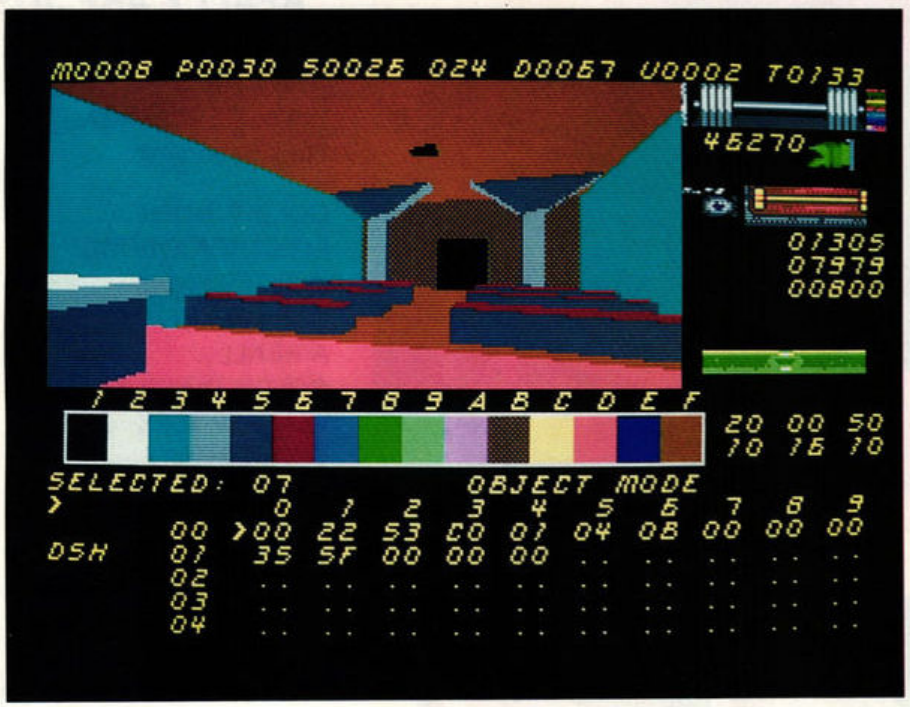


■ **Various bits and pieces of *CM* graphics artwork, including, among other things, the information screen; the flag which flutters in the top right of the screen as you play; the lightning which flashes over the mountains; the keys you collect as you go along; the "spirit level," which indicates how many spirits you've conquered; the eye that looks left when you look left; and the catapult, which in fact never made it into the final game**

■ **The first clue you encounter (all clues courtesy Mel Croucher – "deathless prose a speciality")**



■ **The chapel, with the PC editor visible, enabling colours to be attributed and mixed onscreen. Note the information at the top of the screen, which refers to the following: M=movement; P=processing; S=sorting; N=number of objects on screen; D=drawing; U=update; T=total. Down the right-hand side the figures refer to the total number of bytes used so far; the X,Y and Z co-ordinates; (bottom) the selected object; the X,Y and Z position and the X,Y and Z size**

■ **The full-screen version of the ST editor, considerably updated from *Total Eclipse*, but with the same Ye Olde Font**

Ask any independent programming team what they think of the way their work is packaged, distributed, marketed and promoted, and the answer is likely to be less than wholly complimentary. The implication, of course, is that if they weren't so busy programming they could do that job much better than anyone else as well. After all, it's their baby, they understand it inside out and are committed to it both emotionally and economically in a way no-one else could be.

But Incentive Software have been there, done that and had enough. With games going back as far as 1984 *(Splat!)*, work such as the *Games Adventure Creator* and more recently the three Freescape games *Driller*, *Dark Side* and *Total Eclipse*, Ian Andrew and company are not short of marketing experience.

Last year, however, Andrew decided he'd had enough. A creator of games at heart, he found himself sucked into the 1,001 tasks required to sell a game – duplicating disks and manuals, arranging packaging and distribution, booking advertising, getting magazines interested, and so on, and so on.

"We've become a 'development house,'" Andrews says, "which is where we wanted to go. We found a lot of our time taken up with publishing and marketing and stock control and accounts and production and all that stuff. And really what we're best at is the programming. So we decided to specialise in that and leave it to someone with a lot more marketing power." Accordingly in summer 1989 Incentive handed over the business end of things to Microprose. Now Incentive have joined forces with Domark for their fourth and latest Freescape release, *Castle Master*.

So why didn't Incentive stay with Microprose? Andrew has a nice line in long pauses, and the longest of all comes when you ask him this simple, obvious, but nonetheless awkward question. Neither will he admit that the purchase by Microprose of the Rainbird labels from Telecomsoft may have resulted in the overlooking of Incentive. Nevertheless, that relationship is no more. Suffice it to say Andrew is well pleased with Domark: "They're really getting behind *Castle Master*, and we're getting an input into what goes into the packaging and the marketing. They're doing a really good job."

As for the game itself, *CM*, set in some vague Merrie England past, is a conventional-as-they-come adventure scenario that has you rescuing the princess (with the now equally conventional nod to equality in that you can choose to rescue the prince). Andrew describes it as "a three dimensional action adventure." It will appeal to traditional adventurers, he hopes, because of the scenario and the extra features: you can drink, read clues, throw switches. "There's a lot more depth, which is what I think adventurers like. And I think the intrigue and discovery will appeal to non-adventurers as well."

There are clues and spells (a cut above the usual illiterate nonsense, courtesy of wordsmith Mel Croucher, fresh from penning the deathless prose for *Rockstar Ate My Hamster* and the *Sam Coupé*). In fact, *CM* is the sort of hocus pocus adventurers have been obsessively unravelling for years now.

Except that it isn't. For instead of acres of text illustrated by a few neat graphics, it's an adventure in which you explore, real-time, in three dimensions, cracking your shins on chapel pews and bumping into awkwardly situated barriers.

Freescape veterans will need no convincing. Incentive's games may have plots that make an average episode of *Neighbours* look like *War and Peace*, and a greater dependency on straight lines and flat surfaces than a Rubik's cube, but that's to miss the point by a very wide margin indeed. For Freescape games grip, in the same way that *Tetris* grips and *Kick Off* grips. Incentive have a whole file of letters from Freescape junkies – one even sent in a three dimensional balsawood model of the *Total Eclipse* world!

And I have seen *Castle Master*, and it works.

It works not least because *CM* is the first Freescape game to be written on 16-bit

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Incentive's long awaited successor to **Total Eclipse** *is about to hit your screen. ST FORMAT takes an exclusive look behind the scenes as the finishing touches are applied to this mighty "three dimensional action adventure"*

■ **The loading screen: the lettering went through several versions – some that looked decidedly Nazi – before everyone was happy**

CASTLE MASTER

Freescape goes 16-bit

STORY *Steve Carey*
PHOTOGRAPHY *Ashton James*

machines, and thus contains some four and a half times as much data as the previous game, *Total Eclipse*. There are over 100 rooms and many, many more objects than appeared previously. A further enhancement is the presence of living, moving objects with which the player can skirmish: besides the moat's sharks (freshwater sharks, obviously), there are rats, spirits and a hulking great monster called Igor. Clearly the extra memory, power and speed of the 16-bit machines have opened up a whole new world of possibilities.

"The previous games we developed on 8-bit machines and then converted to 16-bit machines," says Andrew, "but this game has been written for 16-bit machines, and although we're doing *CM* in 8-bit it will be a completely different game."

Isn't the move long overdue? Why wasn't *Total Eclipse* written on 16-bit machines? "The demand now is for bigger and better games, with more detail and more involvement. We reached the limit on 8-bit machines, and found we couldn't really go a great deal further. But then, it was nearly two years ago when we started *Total Eclipse*, and since then the market has changed a lot, and we've discovered a lot more advancements to the Freescape system."

Freescape's claim has always been that it's "the closest yet to being there," and Andrew believes very firmly that three dimensional software is the future. But it's clear that Freescape is severely limited by its mathematical basis. It's impossible, for instance, to imagine anyone being able to combine it with sprite movement and scrolling – at least for the forseeable future. "If you're doing mathematical solid 3D you have restrictions," Andrew says, "so that everything has to be calculated. There's no just taking something and putting it on the screen or scrolling something: every single point or line has to be calculated, so the more detail you put on, the slower it gets. So although it's acceptable now, the more detail you put in and the more rounded you make things – the more speed you're losing."

■ **Incentive's main man Ian Andrew: *"Castle Master* is out of this world!"**

The major obstacle to this impossible dream is that, while a 3D system offers flexibility – you can alter height and point of view, look up and down, turn around and get behind things – a program that incorporated independently moving sprites would need to have views of an object stored in several hundred different ways, so the user could look at it in different positions. And that fills up memory so rapidly that the result would not justify the effort – even assuming it were possible.

Indeed, even Freescape as we see it now is possible because of a bit of optical sleight of hand: you only see objects in certain stages of animation, only from the front, only from the side. And when you enter a new room you're doing nothing more than re-entering the room you just left: "There's a scaling factor in the header to each room, so that while it looks like you're going into something, really you're just moving into the same data set each time – it's just a big illusion.

"Each header has its own scale, its own colour information, number of items, whether ➢

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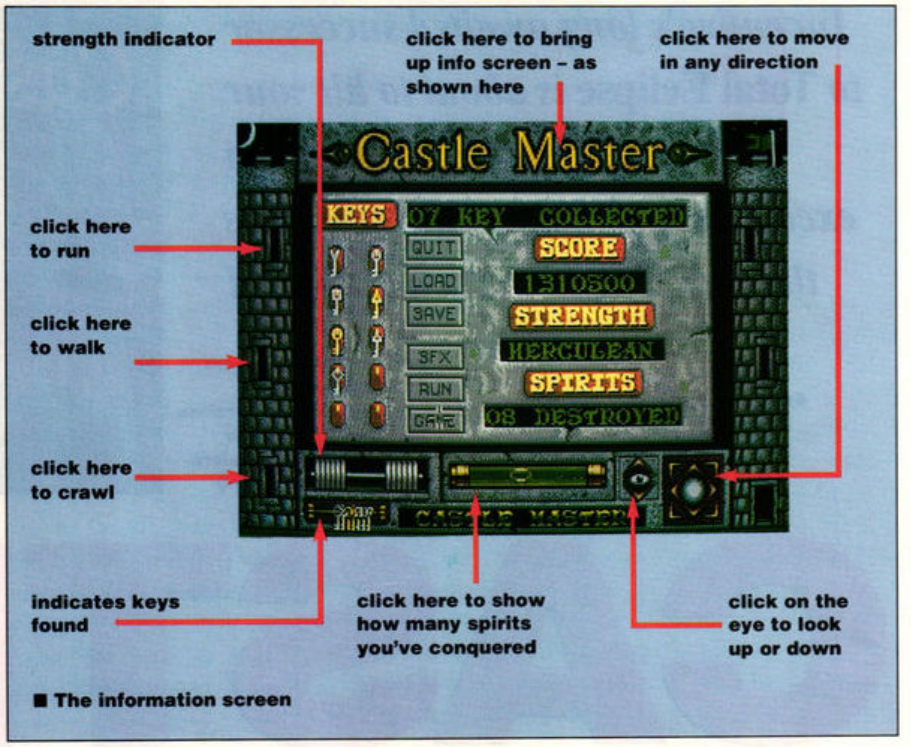
■ **Paul Gregory, Incentive's ST programmer: "I've been with Incentive for two years – before that I was at college. On the ST I've written all the front end, all the control system and so on.**

"We had some music on the ST using the sound chip, but we weren't happy with it so myself and Sean [Ellis] wrote a Fortran sample player, which plays the music on the ST so it's almost identical to the music on the Amiga.

"Really there wasn't a lot of problem programming *CM* for the ST because the ST runs faster than the Amiga, and so it's much better at this sort of game than the Amiga – at 8Mhz as against the Amiga's 7.1Mhz.

"At the moment most of the ST version is finished, except the colours aren't right and there are still some sounds to put in."



■ **The information screen**

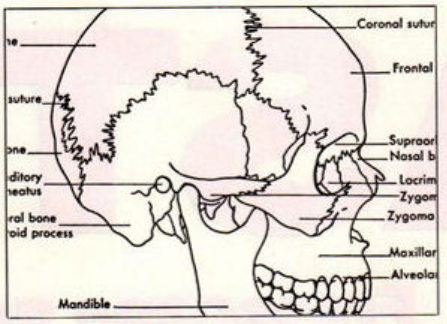
it's got a sky and a landscape, all the different types of objects – entrances, cubes, rectangles." Even the wilderness where you start, like the desert at the beginning of *Total Eclipse*, is nothing more than the same room greatly expanded and with darkened walls and ceiling to represent sky. Not that such knowledge, when the lightning starts flashing and the sharks swim around the moat, spoils the illusion of "being there."

The program editor used for *Total Eclipse* was completely updated so that it's far faster and even enables you to change things while you're within the game. Using the editor it's possible to take an object – the drawbridge, say – and alter its dimensions, location or its attendant conditions, while it is onscreen. To pull it away from the castle, change its shape completely and alter its conditions so that a hit from a rock makes a very odd noise – all this takes no longer than it took you to read this paragraph.

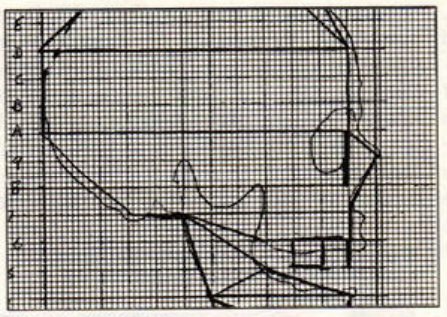
This has enabled the programmers to be more generous with their data, so that many of the objects are present purely for their own sake. There is a washroom, for instance, that plays no part I could discover in the game's plot: and there are even ladies' and gents' loos, complete with flushing toilet and loo-roll. "The 'frivolous' elements are there to add to the overall entertainment and effect," says Andrew. "Not everything has a purpose, just as in real life not everything has a purpose."

It's this very redundancy of some of the objects that makes the game so much more entertaining and convincing than previous Freescape ventures. With *Driller*, *Dark Side* and *Total Eclipse* you knew if you kept looking that behind every object was a clue, a corridor or something worth discovering. Now, however, you find yourself spending ages exploring, and clues and progress come more unpredictably, making them all the more welcome when they arrive.

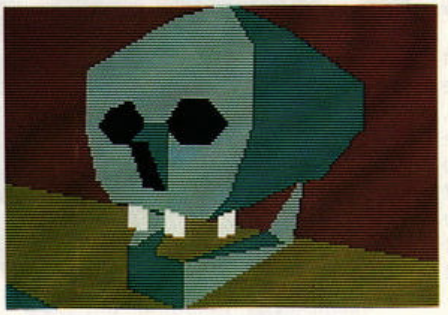
In fact this aspect of writing a game, gauging how well to hide the clues and deciding how hard to make them is a very tricky task – the trickiest part of all, some might say. *CM* was playtested on three sets of people: those within the company who weren't directly involved with the game, but knew about Freescape games – programmer Sean Ellis and marketing manager Andy Tait; two customers of the Reading Computer Cavern, known only as André and Kev; and finally Andrew's wife and her sister. The involvement of different levels of games playing competence is important, since non-games players in particular look at things in a way very different from hardened gamesters, and catch bugs and problems because they do things you wouldn't expect people to do.



This sequence shows how a skull photocopied from a book...



provided the source for the programmer's plan...



and how the finished version looks in the game

"After playtesting you get lists like this one," says Andrew, explaining a rather untidy and semi-illegible piece of paper, dated 26/1/90 and consisting of about 20 items. "This is an example of a playtest done by Chris. There are data change lists and code change lists. This is a code change list: you see there, the clue for the key in the haystack includes the phrase 'Gold within gold,' and Chris has noticed that that particular key is silver, so we change the clue to read silver within gold.

"And at the end game sequence he's written 'cycle through the score.' Until he spotted that, when the game ended you didn't know how well you'd done, you didn't get to see your score, so now the game cycles through your score, your strength, how you died, that kind of thing."

Although the demo version I spent several hours playing on the ST was not finished – the colours needed a good deal of work, and some sounds had yet to be sampled – *CM* was already a brilliantly absorbing game.

No doubt there will be those who dismiss *CM* as not original enough: *Freescape*, they will say, has had its day. But now, with its arrival at the development stage on 16-bit, its day may just be dawning. ■

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Hitman

MACHINE: ALL STs

PRICE: £199

BY: DR T

CONTACT: MCM 01 258 3453

LIGHTS, SOUND, ACTION!

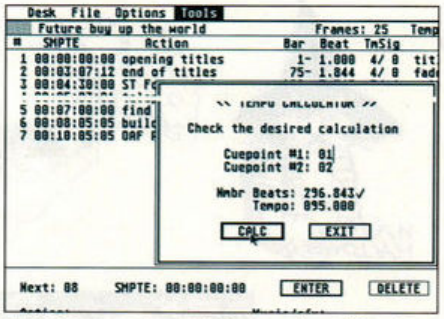
STORY *Jon Bates*

If you have a sequencer and the urge to become a budding film composer* – Hitman *gets rid of your co-ordination problems

Hitman is an accessory program for musicians working with video or film. When doing this there's a need to link the sequencer directly to the video and the generic term for the communications code is SMPTE, which stand for the Society of Motion Picture and Television Engineers.

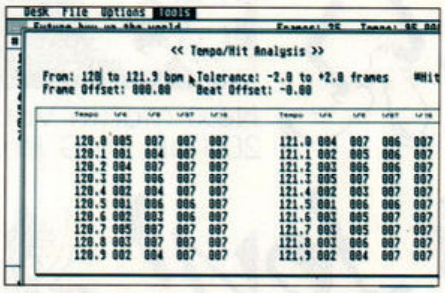
The concept is that a stereo video has a time code put onto one track – this in reality is usually put on by the company wanting the music done. You, as the budding composer, connect a time code reader to this signal which in turn converts the code to a pulsed code that the sequencer can read.

The fixed point is always the time elapsed from the start of the video. Against this you can put in tempo changes and all the things that a decent sequencer enables you to do. The nice thing about using SMPTE is that if you start the video at any point the sequencer lines itself up at the same point in time and runs synchronously. Usually the other audio track on the video has the atmospheric sounds and dialogue. The mix of the two is done in a studio that uses SMPTE to line up your sequencer and the video time code or, as is more often the case, your master tape that is "striped" with the same code.



■ ***Hitman* works out the number of beats or speed required between any two cue points**

There are, however, lots of boring, fiddly calculations to be done to co-ordinate music cues at a particular tempo to a certain number of seconds and film frames. Enter *Hitman* which works out the calculations for you. You enter each cue on a list with a specific time, tempo and time signature – plus the title and any comments you may wish to make – and *Hitman* works out the exact timing of the cue or indeed the tempo required for a particular length accurate to fractions of a second, as is required when using SMPTE.



■ **The calculations needed to speed up between two given points in the soundtrack**

The cues can also be displayed graphically on a tempo map. It can remember and insert the exact MIDI details required for sound effects. If you already run Dr T's *KCS* sequencing package then *Hitman* converses fully with it and exists at the same time. However it also converses with most sensible sequencers by saving all its data to MIDI file.

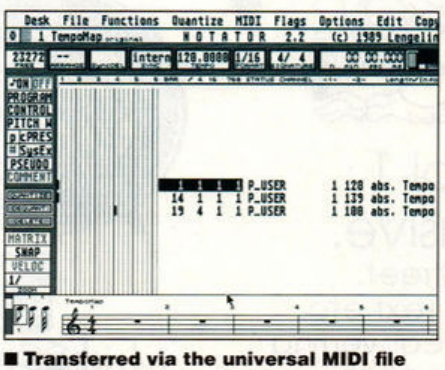
Now while this may not be a package that appeals to everyone – after all we're not all scoring for video! – for anyone working or thinking of working in this field, *Hitman* is a useful tool and a great timesaving device.

Several upmarket sequencers like *Steinberg* and *C Lab* have their own SMPTE time code generators and readers, and if you use these already then *Hitman* may well be a luxury – a sort of advanced specialised calculator. But if you have a different program and have worn the buttons out on your calculator working out cue points only to find that the tempo is wrong and you need to adjust things, this program sorts out your problems.

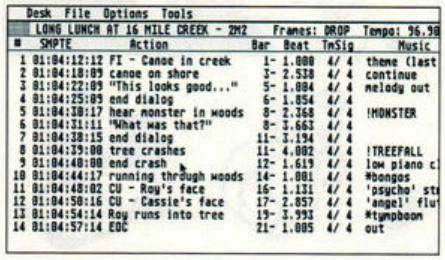
Hitman works with all variations of SMPTE, both American and European, and fully adjusts to any offset – that is the time elapsed before the first SMPTE code is read.

An additional disk accessory that calculates delay times for digital delay units relative to a tempo or note value is thrown in for good measure. This ensures sudden cues don't overstay their welcome if the delay time is set incorrectly when the track is mixed.

Hitman is excellently documented with lots of helpful hints for beginners. If you're thinking of composing for video, it's an extremely useful tool to have around. ■



■ **Transferred via the universal MIDI file into C Lab's *Notator*, the tempo changes and cues await the music to be added**



■ ***Hitman's* list of cues: SMPTE time code on the left and the action and other relevant information next to it**

FORMAT RATINGS

HITMAN

£199 ■ Dr T ■ 01 258 3454

Features **90%**
Very comprehensive with full SMPTE compatibility and an easy way of listing all the cues needed

Speed **87%**
A bit pedestrian when it comes to entering actual figures

Ease of Use **80%**
Not too difficult, but you need to know something about time code to get around it quickly

Results **95%**
Very good and accurate. Becomes faster if you use the Multi Program Environment with *KCS*

FORMAT VALUE **88%**
Not a cheap program, and a rather a specialist one, but if you have a sequencer and want to move into SMPTE then it's money well spent

The Competition
Not much competition, but you should be aware that both C-Lab and Steinberg software contain SMPTE software and hardware that performs all the functions of *Hitman*

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STORY
Mark Pickavance

PIXEL PREFERENCE

In the first of a two part investigation into art software our resident graphics guru looks at the best available in the public domain

There is no definitive art package for the ST: each has its own strengths and weaknesses. The results of last month's questionnaire indicate that many readers are new ST owners or just breaking into graphics, so this month we take a critical look at art software available in the public domain – a good place to begin any software collection.

The choice of PD art packages is overwhelming – every ST programmer in the universe seems to have written an art package at some time. All the software listed is available from the major PD libraries and the whole lot, including postage, the disks and the software, cost £22 – about the same as the cheapest commercial product.

Each package is rated in the final table on various criteria, including basic tools such as zoom, flood fill and file compatibility. Other factors like the availability of screen modes and the ability to print are also taken into account.

NEOCHROME

Originally given away with STMs, this was the first art package most ST users owned. The features depend on exactly which version you have, but most have a "lasso"" cut and paste, colour cycling and even some animation.

Some artists still find that only working on half the screen at any one time is a limitation, but all the features are easy to use and understand. I would have preferred it to run in high resolution, but it only works in low. Written in 1986, it's still a useful bug-free product and for the price of a disk you just can't go wrong.

PICWORKS

Strictly speaking this is not a paint package but a picture modifier. It enables you to load a variety of graphic formats and manipulate them.

For the first-time user a mini-manual can be accessed from within the software which makes getting into *Picworks* a breeze. One disadvantage is that it only works in mono – and suggests you "go play games" if you attempt to load it in colour. Some of the options are a little strange, like being able to import C64 images via a cable – which they very helpfully show you how to make! I'm sure there are people in the world who are crying out for such facilities, but I don't know any of them.

The best feature of *Picworks* is its save and load options. You can save in five formats enabling you to use it as a conversion tool. It ➤

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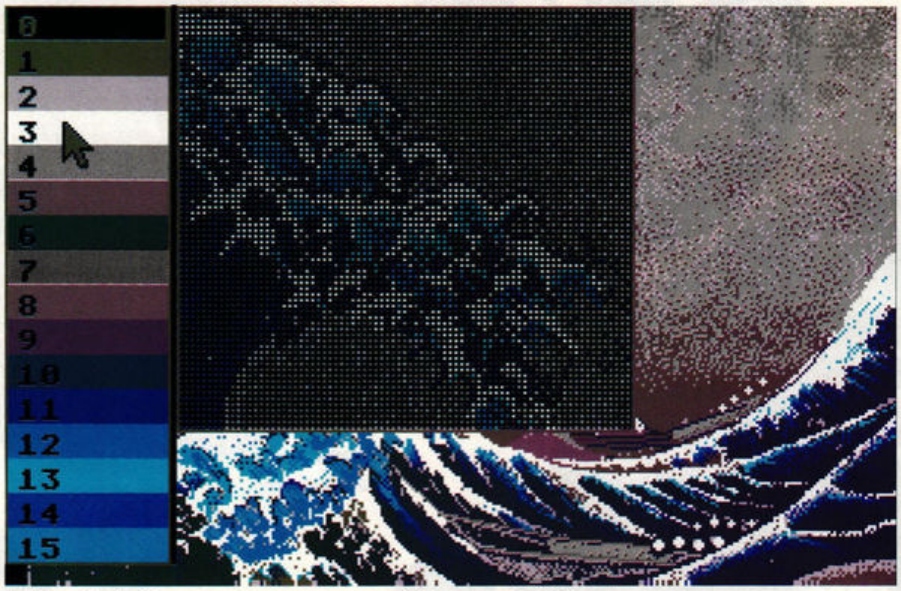
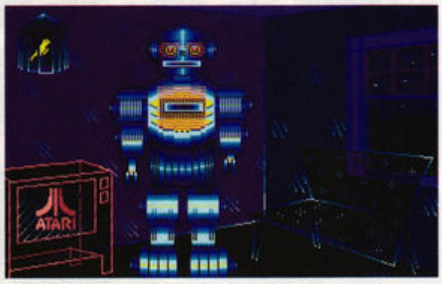


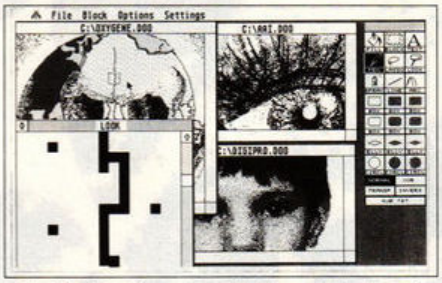
■ *Van Gogh:* **the zoom is as easy as cutting your ear off**

■ *NeoChrome's* **main screen**

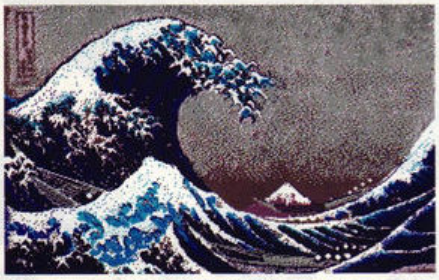


■ *NeoChrome* **is a user friendly art package**

■ *Palette Master* **offers an impressive range of 30-50 colours**



■ *Public Painter* **can edit four pictures at any one time**



■ **Over four years old, but *Neochrome* is still a good 16 colour art package**

also has excellent printing facilities which can turn your pictures into poster size prints.

PUBLIC PAINTER

A very neat monochrome pixel editor. Its special features include a colour to mono converter and some nicely implemented block move/flip/enlarge code. It edits a maximum of four pictures at any time and each is allocated its own GEM window.

You can load lots of formats, including IMG, but not compressed IMG – as I discovered when I tried editing an image from *Flair*. I couldn't find any software that produced IMG files that weren't compressed, but apart from this one niggle the software is first-rate and had no destructive bugs.

The lack of documentation is not a major problem. The functions are easy to understand and I suspect that few people would need to read the document even if there was one.

STUDIO

Studio is certainly no inspiration to PD software authors. It has many of the features that would normally have made me recommend it unreservedly, but these are embedded in a messy, complicated program.

The situation is not improved by a number of screen destructive bugs which leave menus over your precious work. This may be due to my machine, but I suspect that *Studio's* problems are more deep-rooted.

Backing up this theory is its requirement for 1MByte, which is totally unreasonable for a screen paint program. Not a high point for German PD software.

VAN GOGH

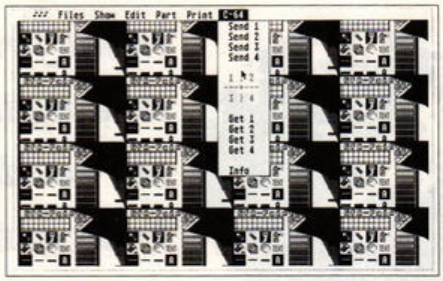
Van Gogh is the only software reviewed that supports medium resolution. Having gone to the effort of making it work in low and medium the author seems to have decided that mono was beyond him. This is a pity because *Van Gogh* has almost every other feature you might need. A good range of file formats are supported for screens and blocks. In addition you can also save sprites (SPR), patterns, brushes and so on.

The control is via a text menu which appears down the left-hand side of the screen. Unfortunately the menu is in German, which makes for some interesting accidental experimentation. More thought about the user interface could have easily elevated this good package into the excellent category.

PALETTE MASTER

This brilliant little program is a colour paint system giving you more than the usual 16 colours on offer. Using a palette switching interrupt you're limited to 16 colours per two horizontal lines. In practice this enables pictures of 30–50 colours to be created without much problem.

The picture altering tools are comprehensive, though a "smooth" option would have been useful. It loads *Degas* and *NeoChrome* pictures as well as its own ART format. It saves as ART and PRG – which combines the graphic with code and displays them from the desktop. Sadly, you're limited to just looking at the pictures because *Palette Master* has no printer dump. Then again, neither has *Spectrum 512* which is a commercial product.



■ *Picworks* **in action. This is not an art package, but can load five formats**

DR DOODLE-PLUS

A very simple package for "doodling." Young children might find it interesting – especially if they can speak German. It has so few features that being in German is hardly its biggest problem: its use of the doodle format is more of a limitation, and it only works in mono, making it unsuitable for those users – kids – who would get the most out of it. Not exactly an inspiring effort.

VIC-SOFT PAINT

This is a German product that's worth considering, though yet again it only works in mono. It has a simple but effective user interface which avoids most of the problems relating to language and has lots of features including an effective zoom.

Although in Basic it's definitely a well-programmed package. The Basic is executed with GFA run-time version 1.0. The files are encrypted, otherwise I would have been tempted to edit the text into English and compile the Basic. If you could get hold of

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the unencrypted source then this would be a worthwhile project.

It only saves and loads its own .PIC format – which is just a 32K data block. This is the only mistake in an otherwise flawless package.

MASTER PAINT

I had lots of problems with *Master Paint* – especially with the way it erased every mark I made on the screen. This was a shame because potentially the software seems to have a lot of good features. The options are accessed from a block of icons or a set of pull-down menus. However it's difficult to relate to these when you can't stop the software erasing every line.

My conclusion is that *Master Paint* either doesn't like a UK machine or the 1.09 version of TOS in my Mega. I tested the program on a friend's machine and it works fine – which is confusing because he has the same version TOS as me. In an attempt to solve this enigma I disabled the blitter, and *Master Paint* then refused to run at all.

For those of you who don't have these snags, this is a good mono paint program with an easy to follow menu/icon system. This is just as well, because the documentation isn't very helpful – or perhaps I should say that my command of the Germany language isn't.

In conclusion, the Germans deserve a trophy for the sheer numbers of PD packages – they're attempting to do for PD software what the Japanese did for the personal stereo. Having said that, neither of my favourite packages have a Teutonic origin. For simple colour painting *NeoChrome* is a sound addition to any software collection. It's been around a long time but is simple to use and very reliable. If 16 colours are just not enough then *Palette Master* is a good alternative to *Spectrum 512* and *Quantum Paint*.

Of the mono paint software *Picworks* and *Public Painter* are definitely worth having. The Monochrome Turkey Award goes to *DR Doodle Plus*, which is heading towards the trashcan at warp speed. ■

Next month *ST FORMAT* puts the spotlight on the major commercial art packages available

	High-Res (Mono)	Medium-Res	Low-Res (16 Colour)	Magnify	Flood Filling	Block Move – Cut and Paste	Minimum Memory in k	Printouts	File Formats Loaded	File Formats Saved	Score as a Percentage
NeoChrome	No	No	Yes	Yes	Yes	Yes	512	Yes	NEO	NEO	**85%**
Palette Master	No	No	Yes	Yes	Yes	Yes	512	Yes	NEO PI1 ART	PRG ART	**83%**
PicWorks	Yes	No	No	No	No	Yes	512	No	PI3 PC3 DOO ART JACK	PI3 PC3 DOO ART JACK	**77%**
Public Painter	Yes	No	No	Yes	Yes	Yes	512	Yes	DOO IMG CMP	DOO IMG CMP	**76%**
Master Paint	Yes	No	No	Yes	Yes	Yes	512	Yes	NEO PI3 DOO	NEO PI3 DOO	**75%**
Vic-Soft Paint	Yes	No	No	Yes	Yes	Yes	512	Yes	PIC	PIC	**70%**
Van Gogh	No	Yes	Yes	Yes	Yes	Yes	512	Yes	PI1 PI2 NEO B_1 B_2	PI1 PI2 NEO B_1 B_2	**66%**
Studio	Yes	No	No	Yes	Yes	Yes	1024	Yes	*	*	**48%**
DR Doodle Plus	Yes	No	No	No	Yes	No	512	Yes	DOO	DOO	**28%**

*There does not seem to be any standard extension for Studio files – call them what you like

■ **Features offered by PD art packages under review**

These are brief descriptions, disks may contain much more

»»»»»»»»» Sonix Songs, with player/graphic screen
USON1 Duelling, Electric Dream, Wonderful +
USON10 Human Power, Mindbreaker, Robocop +

»»»»»»»»» Slideshows with background music
USLID1 'Heroes' tune + 16 hi-res pictures
USLID4 Fantasy pictures by The Dark Lord

»»»»»»»»» Music at it's best, with graphix
UMUS1 Ten original tunes, brilliant!
UMUS13 Metromania, Sahara, Lonely + 3 others

»»»»»»»»» Intro's and Demo's, some of the best
UINT1 O.G.D, PARTY!, EUROPE + 7 others
UINT4 TEARDROPS, MAGIC FIELD + 5 others
UINT14 COMBINATION, SUBWAY, WEAPON + 4

»»»»»»»»» Great GAMES for you to play at home!
UGAM1 COSMOROIDS, ROLLERBALL, LADYB
UGAM2 FLASCHIBER - The game, brilliant
UGAM3 LINGO, BALLY, NIGHTWORKS & YOUPI

»»»»»»»»» Some of the best ANIMATIONS around
UANIM1 SPACE animation - needs 1meg RAM
UANIM2 UGA and STAMP animations, good!
UANIM3 RUNNING MAN, TURNING MAN, UGA
UANIM5 HAPPY GUY, WINDOW, F15 MIRROR

»»»»»»»»» SPECIAL disks in a special collection
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USPEC4 GHOSTWRITER, make your own screens
USPEC11 GAME MUSIC CREATOR, brilliant!
USPEC13 QL EMULATOR, just what it says!
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UUTIL3 Tetrapack, Showfont, Bootback, Disksalv, TrackerX, Iconizer, SceneryMaker etc. etc.
UUTIL9 KickSaver, Terrainsculpt, StarEditor, Bootext, Sonixpeek, Flowripper, Linkiller etc. etc.

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Star SS15DM cut sheet feeder for XB24-15 or FR-15	£170.00
Star LC24-10 24pin multifont printer, amazing low price	£239.00
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Star LC10 Mk.II faster version of above LC10, 180/45cps	£199.00
Star LC15 wide carriage version of LC10 model 180/45cps	£329.00
Star LC24-15 wide carriage version of LC24-10, 200/67cps	£409.00
Star SF-15DJ cut sheet feeder for LC15/LC24-15	£139.00
Star NR-10 professional 9pin 240/60cps inc. cut sheet feeder	£449.00
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Star SF-10DJ cut sheet feeder for LC-10	£64.95
Star SF-10DK cut sheet feeder for LC24-10	£64.95

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Olivetti automatic cut sheet feeder for DM100S printer	£79.95

NEC P2+ multifont 24 pin 192/64cps	£299.00
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STORY *Richard Monteiro*

SEEING IS BELIEVING

Two creative art packages, each costing less than £20, have just hit the shelves. There's never been a better time to get into graphics!

Paintpot

MACHINE: ALL STs
PRICE: £19.95
FROM: SWITCHSOFT
CONTACT: 0325 482454

Canvas

MACHINE: ALL STs/STEs
PRICE: £14.95
FROM: MICRODEAL
CONTACT: 0726 68020

There are so many packages to pummel pixels with that new ones have to work twice as hard to survive in an already swollen marketplace. But these two new programs have one big advantage over the rest of the competition: a very small price.

Both *Paintpot* and *Canvas* give golden oldies like *Neochrome* and *Degas Elite* a run for their money. But then you wouldn't expect anything less since *Neochrome* and *Degas* have been available almost from the ST's inception and are starting to show their age.

Pay little, expect little. While this holds true for the documentation – you get a photocopied 32-page A6 manual with *Paintpot* and nothing with *Canvas* – the programs offer an awful lot.

Paintpot uses GEM drop-down menus and a panel of icons from which additional options are chosen. The menu bar and panel of icons are overlaid on the screen image. Like *Degas*, *Canvas* uses one screen simply for picking options and another for drawing. *Paintpot* allows you to work on nine different screens assuming you've got the memory while *Canvas* lets you work on as many screens as memory permits. On a 4MByte machine there's room to edit over 100 screens simultaneously and have a 1MByte RAM disk!

Degas, Neochrome and IMG file support are offered by both packages. *Canvas* supports a further 11 formats on top of this for storing 3D objects, colour fill patterns, grid information, HBL data, line patterns, colour palettes, sequence data and sprite data.

In addition to ordinary screen resolutions, *Canvas* lets you use many more colours on screen than the standard 16. Up to 512 colours can be displayed at once using an ordinary ST, and an astounding 4096 are available using an STE! Unfortunately you can only see the usual 16 while you draw your picture.

Although you can create and display 512 pictures, there is no facility to load or save *Spectrum 512* images, which is insane since *Spectrum 512* has been available for ages.

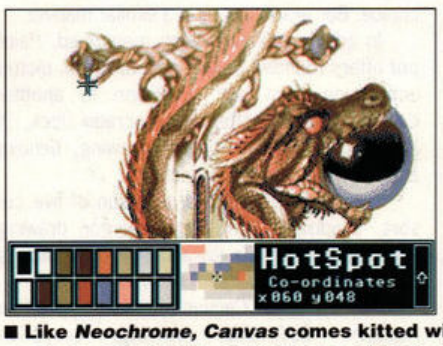
Standard items like line and shape drawing are present in both packages, so there's no point in dwelling on them. Along with expected features, both graphic programs offer a smattering of the unusual.

Object drawing can be performed alongside bit-image drawing. Objects are sequences of lines held in memory which can be rotated, resized and moved far more easily than normal images. *Canvas* has a lot more in this department as all manner of animation and 3D design is possible. For instance, up to eight 3D wire frame objects can be designed, animated and plonked on the main editing screen.

Numerous block operations exist in both packages for doing things like cutting, copying and pasting. Other options like horizontal and vertical transformations together with horizontal and vertical sin/cosine ripples can be found in *Paintpot*. *Canvas* features transformations together with right-angle mapping. These features are very impressive and can be performed on small areas of the screen or the whole screen. It's a pity further texture mapping and object mapping facilities aren't present.

Block rotations and resizing are also possible. All except rotate and resize cause a slow- ➢

■ **You'd look shattered too if you'd been skewed by *Paintpot***



■ **Like *Neochrome*, *Canvas* comes kitted with a hotspot zoom. Nine zoom levels are available and simple editing is possible in zoom mode**

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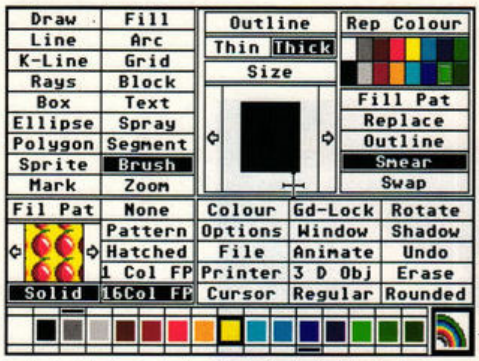
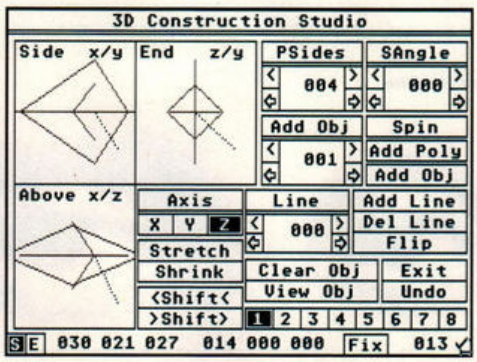


■ **The main *Canvas* option screen looks, and operates, much like *Degas Elite***



■ ***Canvas'* 3D construction studio lets you build wire frame objects for animation**

■ ***Paintpot* offers a facility to convert screens from low to medium and from medium to high resolution, enabling you to view pictures in all modes**

■ **Just some of the things possible using block transformations and mapping in *Canvas***

■ **Annoyingly *Paintpot* insists on returning to the default colours when an option is selected**

down. In *Paintpot* the rotate operation is embarrassingly slow; as bad, if not worse, than that found in *Degas Elite*.

Besides spraying dots, *Paintpot* lets you spray lines, boxes, filled boxes, ellipses and filled ellipses. You can change the size of the spray and the size of the lines, boxes or ellipses that are being sprayed. *Canvas* also allows you to plant sprites and animate them.

ASCII and *First Word Plus* files can be imported directly into *Paintpot*. A variety of GEM fonts are supplied if the system fonts don't take your fancy. *Canvas* won't allow you to import text, but supports GEM fonts in a multitude of sizes and offers the usual selection of font styles.

Nine levels of magnification are available in *Canvas* together with a hotspot feature. *Neochrome* magnifies the area directly under the cursor when work is being carried out; the hotspot feature in *Canvas* allows for a similar style of operation. *Paintpot* only offers two levels of magnification, times five and times 10 – in high resolution this is restricted to just times 10.

Paintpot can be customised and a configuration file saved. This file is automatically read when *Paintpot* loads. The data stored includes brush size, spray size, spray speed, spray spot size, shatter size, graphics mode, bend number, character spacing, printer configuration codes, toolbox elevation, position of clock and so on. Such a simple thing to implement, yet overlooked so often.

Paintpot features a couple of bizarre items: pie charts and bar graphs. Choosing pie charts results in a requester appearing asking you to enter the size of a slice in percentage terms. The program continues doing this until you've completed the pie. Each slice can be automatically filled with a random pattern or one of your choice. Bar graphs work in a similar manner.

In addition to everything mentioned, *Paintpot* offers rounded boxes, IMG brushes, picture conversion from one resolution to another, extended undo, shattering, on-screen clock, 36 system fills, 12 line styles, skewing, bending and dot matrix printer output.

Canvas also boasts a selection of five cursors, shadowing, grid lock, polygon drawing, masking, grid lock, x-ray and EOR draw modes, and colour cycling.

Without doubt *Canvas* offers far more than *Paintpot:* 512-colour painting, animation, sprites, STE compatibility and so on. Features are more plentiful and more powerful in Microdeal's package. For example, there's more you can do with the zoom and line drawing modes in *Canvas*. *Paintpot's* features tend to be restricting and cause you to do more of the mundane work. While *Paintpot* does have features not found in other art packages, they tend to be obscure like bar and pie chart drawing. On the plus side, *Paintpot* is very friendly.

Even if *Canvas* and *Paintpot* were equally good it would be very difficult to forget the £5 difference between the two. ■

FORMAT RATINGS

PAINTPOT

£19.95 ■ Switchsoft ■ 0325 482454

Features 79%
Comprehensive, but many features are esoteric and could be replaced by better ones

Speed 72%
Generally fast but block rotations are ridiculously slow

Ease of Use 90%
On-line help always available and additional help can be called up

Results 77%
Does what it claims to do, but since many features aren't as extensive as other paint packages you have to work harder

FORMAT VALUE 76%
It would have scored much higher, but *Canvas* is £5 cheaper. Good value nonetheless

The Competition
Art Director, Art Studio, Athena II, Canvas, Cyber Paint, Degas Elite, Flair Paint, GFA Artist, GFA Raytrace, Hyperdraw, Hyperpaint, Neochrome, Paint Pro, Paintworks, Quantum Paint, Spectrum 512...

FORMAT RATINGS

CANVAS

£14.95 ■ Microdeal ■ 0726 68020

Features 91%
For such a cheapie it's amazing: 512-colour mode, sprites, 3D objects, multiple screens, nine-stage zoom...

Speed 84%
Good all-round performance – though block rotations aren't as fast as they could be

Ease of Use 81%
Very like *Degas*. Help can be called up within program. No manual

Results 89%
Comprehensive and powerful features mean you can get on with drawing and not worry about simple things like how to produce an arc

FORMAT VALUE 94%
At £15 it's a steal!

The Competition
Art Director, Art Studio, Athena II, Cyber Paint, Degas Elite, Flair Paint, GFA Artist, GFA Raytrace, Hyperdraw, Hyperpaint, Neochrome, Paint Pro, Paintpot, Paintworks, Quantum Paint, Spectrum 512...

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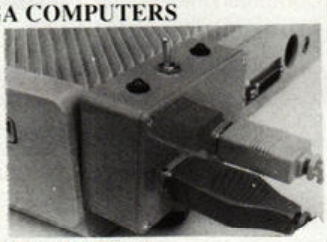

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STYLE COUNCIL

STORY *Simon Williams*

When you add more pages to your DTP document the layout starts to become more complex. This month, learn how to simplify multi-page documents with paragraph styles, taking* Timeworks DTP *as an example

When putting together the advertising flyer in last month's DTP tutorial, the typeface, size and style of the text was altered by hand. Each word or phrase had to be highlighted with changes made by selecting options from various menus. For a single page document this is fine and probably the most efficient way of working, but for longer documents you're better off using paragraph styles.

A paragraph style is a set of attributes assigned a name and available from the *Timeworks* browser with a couple of clicks. You select a paragraph and click on the style name to apply all the attributes set in that style to the text. Whenever text is typed into a *Timeworks* frame, it is automatically given the default style, called body text. For many purposes this is fine and won't need to be altered. If you intend to print the bulk of the text in one style, you should alter the body text style to reflect this, because it minimises the number of new styles you have to create and apply.

The attributes available in a paragraph style vary from DTP program to program, but *Timeworks* enables you to set the font, character size, justification, preceding bullet, auto-hyphenation, leading and indents. You can also assign a paragraph style to a particular function key, which you may find quicker in use than clicking around the screen.

As well as building paragraph styles from scratch, you can base one style on another, or edit the attributes of an existing one. Double-clicking on a paragraph to which a style has been applied calls up the style window so you can alter any of the attributes, including the style's name. If you want to change the indent at the beginning of a paragraph, for instance, call up the style menu for the current style. You can then create a new style which takes on all the attributes of the current one and changes the indent figure under the Dimensions sub-menu.

When the document you're creating runs to more than a page, it's better to create the text before starting to lay out the pages. You can then flow it into the frames from the text file. This way you have the advantages of a word processor's speed and editing functions, rather than having to work with the more limited functions of the DTP – which can be sluggish.

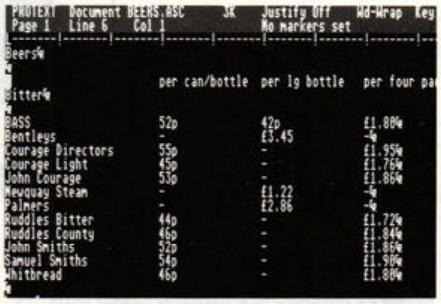
Timeworks can import text directly from *Word Perfect, WordStar, 1st Word Plus* and *WordWriter ST*, though unfortunately not *Protext*. It can also import straight ASCII text, but this won't include any formatting. To import text you follow much the same procedure used to import clip-art that we covered last month. The text file name appears in the browser and the text can be flowed by selecting a frame and clicking on the filename.

If there's more text than available space in the selected frame, the remainder is held in memory and you can select further frames to take the overflow. Remember when designing page frames that *Timeworks* flows text into frames in the order in which they were created.

If you need to create tables and want to put rules around the items, you can repeat any rule or box by copying it to the *Timeworks* clipboard and pasting it back as many times as you like. If you switch on the grid tool, you can automatically snap rules to the grid to ensure even spacing. You can also position any frame accurately by double-clicking on it and entering the required dimensions.

Design of documents with two or three pages is mainly an extension of the techniques used on a single page. It's best to produce a master and to copy from there. As an example, here's the construction of a two page, A5 price-list for an off-licence. Again there are only two fonts in the design, though in several sizes and weights.

Start by preparing the bulk of the text in a word processor. In this case it's *Protext*, though



■ **To speed things up it helps to prepare the bulk of the text in the word processor**

this isn't a particularly good choice for working with *Timeworks DTP* because it doesn't support *Protext's* file format. It can import text from other word processors and maintain some formatting, including tabs. Since much of the material in this price list is tabulated, it would be easier to produce a text file in something like *1st Word Plus*. As it is, the text from *Protext* is saved as an ASCII file and fed into *Timeworks* through the ASCII text import option.

The next step is to set up the paragraph styles. There are five different styles in this document and all can be defined from the Paragraph Style option of the Text menu. When you select this option a separate sub-menu opens. You need to select most of the options from this menu to set up a new paragraph style. The current style is automatically used as the basis for any new one.

TIMEWORKS DTP

For consistency, this series will refer to *Timeworks DTP* screens and facilities. If you're using another DTP you may find that the method of operation differs from that shown here. However, the principles involved can be applied to any DTP program.

Timeworks DTP was designed as a budget rival to high-priced DTP packages and provides a dazzling array of features for only £99.95. It's available from Electric/GST 0954 61258.

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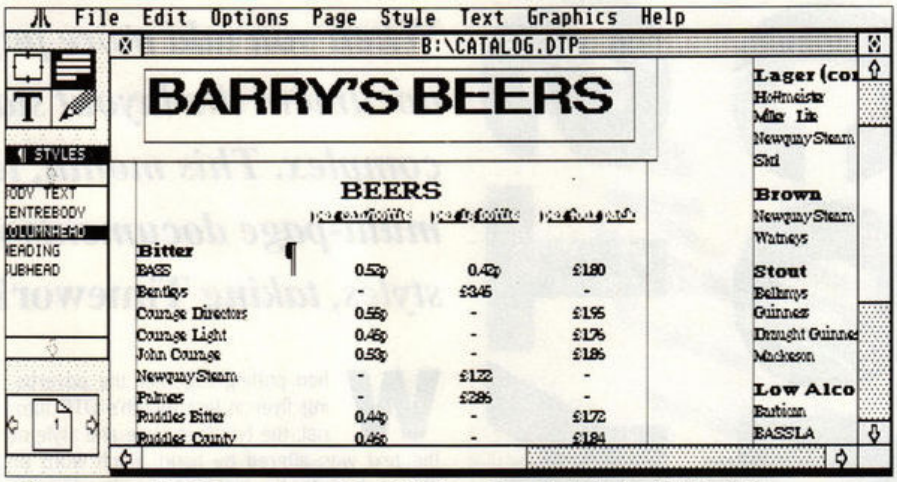
■ **Alter the design of text in the Paragraph Style option of the Text menu**



■ **The paragraph styles are named and displayed on the left-hand side of the screen**

The NEW STYLE option enables you to name the style and assign it to a function key, while OPTIONS governs justification, a selection of bullets, auto-hyphenation and letter spacing. WORD SPACING covers the "hot-zone" for hyphenation and FONT & SIZE enables selection of typeface and point size.

Down the right-hand side of the menu, DELETE STYLE removes an existing style when it's no longer needed, DIMENSIONS sets leading and paragraph indents, and SET TABS let you define types of tab and their positions in the text. This last option is only available when you select "Table" justification in the OPTIONS menu.

The names of all the paragraph styles you create are shown in the browser on the left-hand side of the *Timeworks* screen. When in paragraph mode (with the top right icon in the tool box highlighted) you can apply a paragraph style by clicking anywhere in the paragraph and then on the style name in the browser. *Timeworks* considers a paragraph to be any piece of text ending with a hard return.

One aspect of typography which is not covered directly by paragraph styles is text effect. Attributes like bold and italic are applied through *Timeworks'* text mode, though if you apply an effect like this to text assigned a style, all text in that style is changed.

Once the styles have been applied, the price list is well on the way to print-out – though it could be sharpened up by boxing in the text.

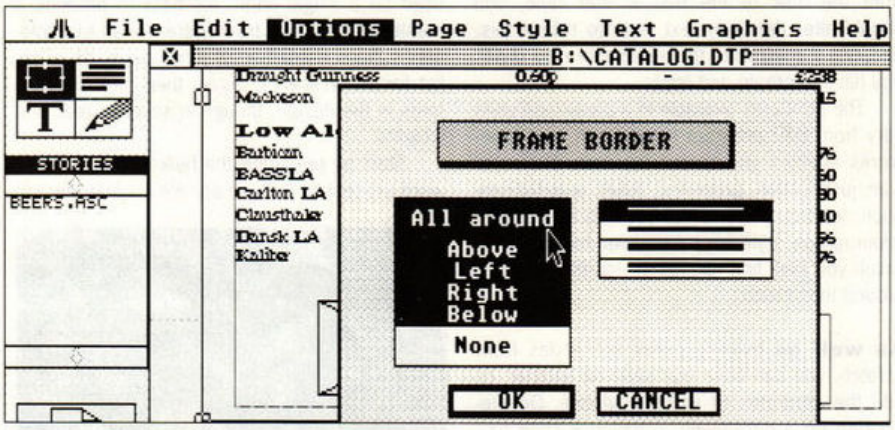
When placing boxes, remember that any frame can be given an outline rule. This is often more convenient than creating an external frame and putting a graphic rectangle into it. There is a snag here: *Timeworks* normally butts text up to the left-hand edge of the frame which encloses it, and to the right-hand edge if the text is justified. This can lead to ugly effects when one border is spaced away from the text while the other runs straight alongside it.

The easiest way round this is to place one frame within another. The outer frame can then provide the border, while the inner one, left unprinted, contains the text.

The finished price list is shown below with a a clip-art graphic added from GST's *Draw Art* package. You'll note from the screendump that the image is not centred on the page and is foreshortened along its right-hand edge. This is because the HP LaserJet GDOS driver insists on telling the printer that the page size is US Letter, even though *Timeworks* and the printer itself know it's really A4! GST can supply an alternative driver if you have this particular set-up – at a cost. ■

Now we've mastered paragraph styles, stay tuned for next month's penultimate instalment, when more DTP secrets are revealed!

■ **(below) Boxes can add impact and clarity to the design of text**



JARGON KILLERS

FONT: a typeface in a particular point size and style
FRAME: a normally non-printing rectangular box used to hold text or graphics. Can be easily moved around and resized by the use of a series of small square handles
INDENT: the space between the left margin and the start of the first word in a line of text
LEADING: the spacing between lines of text
PARAGRAPH STYLE: the attributes which effect the typography and layout of a paragraph of text
POINT: unit of measurement in typesetting, equivalent to 1/72nd of an inch. Primarily used to measure the height of text characters
RULE: a horizontal or vertical line dividing sections of a page
TYPEFACE: a particular design of text characters

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Newquay Steam	-	£1.22	-
Palmers	-	£2.86	-
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Ruddles County	0.46p	-	£1.84
John Smiths	0.52p	-	£1.86
Samuel Smiths	0.54p	-	£1.90
Whitbread	0.46p	-	£1.80
Lager			
Black Label	0.48p	-	£1.90
Budweiser	0.63p	-	£2.48
Carlsberg	0.60p	-	£2.30
Heineken	0.46p	-	£1.86

	per can/bottle	per lg bottle	per four pack
Lager (contd)			
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Miller Lite	0.62p	-	£2.40
Newquay Steam	-	£1.22	-
Skol	0.48p	-	£1.90
Brown			
Newquay Steam	-	£1.20	-
Watneys	0.42p	-	£1.69
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■ **(right) The end result with a clip-art graphic (the beer cans) added for impact**

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● A95 - Publishing Partner disk 3. 6 fonts: Artist, Broadway, Letter Gothic, Oriental, Ultra Block and Wilkes-Barres.
● A127 - Publishing Partner/PageStream disk 4. 1 PP font: Creative. 5 PS fonts: Futura, HLVB, Lubalin, Script and HAL.
● A110 - 8 Calamus fonts.
● A137 - OVER 40 GEM GDOS FONTS: 8X8, 9X14, COMPUTER, DEVILLE, EDITOR, HAMPTON, OFFICE, SCRIBE, SPECTRUM,TIMES, UTOPIA, WESTERN, DLAN1, FAT, TEST, COMPUT, NORMAL, THIN, BOECKEL,BRUSH, CHICAGO, DOUBLE, ENGLISH, EVIDENCE, FUTURBIG, GRANDE, INTEL, MAGNETIC,MEISTER, MINIPOOL, MODERN, ROTONORM, STENCIL, XANTHUS, BLUB, ROT, INTEL16,GOTH22, GOTH22SH, NEWSTAND, MONICA, PC1500, SERIF30, AKASHI12, CAIRO,CHICAGO, COURIER, GENEVA9, LONDON, MOBILE, NEWYORCK, PREMIERE, TIMES09,TIMES10, TIMES12, TIMES14, TIMES18, TIMES24, DUTCH10E, DUTCH10N,DUTCH12E, DUTCH12N, DUTCH18E.
● A135 - Font Master GDOS font editor.
● A63 and A64 - FontKit V3.31 Epson, Degas and ST font editor.

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The following disks contain the programs and files described in the book 'Your Second Atari ST Manual'.
● Y2M1 - Acache, Auto Select, DK Taste, Folder100, FSelect, Screen Dump, Cat.ACC, Disk recover, Input, Kalendar, Keyedit, Monoware, Speed, Ddp.ACC, Snapshot, Speedmus, Spotmenu and VDU2.
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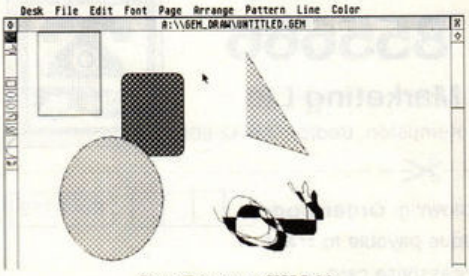
● Y2M9 - 360K file for Aladin.
● Y2M10 - Baller, MacPan, MineField, Missile and Othello.
● Y2M11 - GEM Dr aw, Pictures, Pic Tools, and Public Painter.
● Y2M12 - Library, MonoMon2, Protect and Sagrotan.

APPLICATION DISKS

●A87 - Not STE. Electronic Bank Statement the excellent accounts package from Budgie UK.
● A96 - DOUBLE SIDED DISK. Sheet v2.0. powerful all features spreadsheet, includes documentation and tutorial.
● A121 - POOLS - Expert Results Predictor v2.2 by B.Campbell very good. Programmer claims it to be more intelligent than the commercial ones.
● W5 - Micro-Emacs editor V3.925 full screen editor includes tutorial and manual files.
● W13 - DOUBLE SIDED DISK. STWriter Elite V3.0, English, German and Spanish versions. Includes document files etc.
● MP21 - 6 DOUBLE SIDED DISKS. TEX the document processor and typesetting system.TEX has its own programming language, handles equations and diagrams, and has a large set of typefaces. This is a very powerful piece of software. Also includes Meta Fonts and utilities to include graphics in your printed document. TEX is not a wordprocessor, you will need a text editor such as Micro EMACS (disk W5).Requires 1Mb RAM and comes on 6 double sided disks with a Mega Pack price of u15.00!
● A125 - DOUBLE SIDED DISK. REQUIRES 1MB. Opus V2.10 of the spreadsheet and charting program. This package is incredible! Requires GDOS which is not PD.
● A138 - Double Sentry V0.00 the accounting program by Graham R Hutcheon. This is a fully working version that does all aspects of accounts accept VAT, although a VAT version is available from the author. Excellent.UTILITY DISKS
● A31 - This disk contains the following 1st Word printer driver files: SG10STAR, KXP1091C, PR1215, PROWRT, EPHEBREW, ST130, ESFX80, PAN109B,OLYMPIA, EPS_RX80, LQ800_G, PAN109,GEMINI, LQ800, SG10_GPH, EPS_LX80,OKI192, LX80_G, BRO10P, BRO12P, BRO15P, BRO_HR15, T321SLF, QUME,SG10TEWF, PROWR1ST, SG10IBM, OKI92,ASCII, 1STNX1, SG10-1ST, SLMM804,SMM804_G, NEC_P6, SLM804, CITOH.
● A40 - Hard Disk disk 1: Directory counter, Gem Soft a 40 folder fix, Hard Auto, SBackup, Turtle backup v3.01 and UNTurtle restore v1.1.
● A52 - Hard Disk disk 2: FolderXXX allows you to specify upto 999 folders - a 40 folders fix, an excellent directory lister, Hard Disk Install, Hard Disk Auto boot, and other HD utilities.
● A41 - Monochrome emulator version 5. Run monochrome programs on a colour monitor. TOS 1.09 compatible.CMFonts converts Macintosh fonts to ST GDOS format.
● A51 - This disk is packed full of Comms programs. They have all been ARChived down to save space. The following is a list of the .ARC files: Gas Term, BMODEM, Solar Term, Terminal, My Term, STerm, Con_ST, STar Term, Term_c, Jam Term, GEM Term and XMODEM Term. Also on the disk a program to unARC them.
● A88 - Double Click Format v3.03 THE ST disk formatter 9/10 sector, 80/82 tracks, regular/fast format. Can format Spectre 128 disks,



Gem Draw on Y2M 11

place MSDOS boot sector, it can write an executable bootsector to do things like bypass HD autoboot, setime time, run a program that you write and call COMMAND.PRG and loads of other things.Meg A Minute Elite v2.1, TOS 1.09 compatible 1Mb a minute HD backup.
● A90 - Superboot v5.5 THE ST Boot program - choose: desktop accessories,AUTO programs to run, DESKTOP.INF, GDOS ASSIGN.SYS, display a welcome screen, date/time setter, inforce a password on booting and loads more including even stopping Super Boot from running with a 'key hold' includes a 50K document file, excellent.
● A97 - Sticker III. THE disk label program full GEM includes dozens oficon graphics that can be included in label. Monochrome monitor required.
● A109 - Quick Disk. Quick Find v1.5 is a program developed for locating files. it allows any number of drives to be searched, producing output which can be printed to screen, printer or file. Quick Index v1.5 - the ST System Performance Evaluation Program, Quick ST v1.2 - the screen accelerator for all Atari ST computers, Quick View v1.3 excellent document browser. Quick Inf V1.3 is a program developed primarily to allow the user to change thedesktop window directory search masks. Quick Label V1.1 the label utility, Quick Print.
● A111 - Head Start v1.1 allows you to auto-boot any type of program from your AUTO folder, including GEMprograms. you can choose from among a list of up to 128 programs to auto-boot, using the mouse.
● A124 - ARChiver: ARC V5.21b, ARCShell V2.0 and V2.05 and a utility to switch back and forth between LHARC and ARC.DAYS2 reads in the computer's time and date, and then presents you with various alternate versions of that date: The Julian Date, the Star Date, the Earth Date, the number of days left in the year, and whether or not this is a leap year. You will also be shown what time it is in Greenwich Mean Time (GMT) in Daylight Savings Time, and in Standard Time.
● STW41 - FSelect v3.89, ICone.Acc and ACache. As featured in Issue 41 of STWorld.
● A126 - Desk Manager V2.6 will auto select the correctDESKTOP.INF depending on the resolution and select AUTO programs,The Little Green Selector V1.6 is another alternative file selector that includes a FIND option and is excellent. Pack and UNPack will compress a program file and still make it executable! Pin Head V1.4 is a program that speeds up file loading.
● A128 - Recover is a program that copies any number of specified sectors on a disk to a named file on another disk, this is very useful if you have garbaged you directory or part of your disk. BootInfo allows you to put any text on screen at boot up.
● A134 - Boot Drive Select allows you to select a drive to boot from when you reset your ST. GrafTool allows you to type in mathematical functions of one variable and graph them. ChartMaker allows you to input data and it will draw a graph.

● A136 - The British Telecom Inland Call Calculator v1.02 is a telephone call cost calculator.
● DA9 - DOSACC V2.8 the desktop accessory that basically it displays just about everything the user needs to know, and allows the setting of most ST and printer configurations.
● A157 - Custom Formattor by Stuart Coates allows you to enter the capacity requiredand it will calculate the tracks and sectors etc. required to format; will also test which track your A drive goes upto. BSS: Boot Sector Storage by Stuart Coates allows you to store many boot sectors in a database on 1 disk.

GAME DISKS

Budgie UK P.D. Licenseware games:
● G17 - Damonoid - arcade. ● G18 - Football - speculation game.
● G19 - Blitz III - arcade.● G20 - Othello - board game.
● G33 - Doctor Boris and Puzzler - TNT. ● G36 - Tycoon - Adventure/simulation.
● G38 - MoneySpinner - slot machine. ● G39 - Ace Invaders - arcade.
● G40 - Zenith - arcade. ● G41 - MaelStrom - arcade.
● G42 - Speculator - simulation. ● G45 - Zephod and Gold Rush - labyrinth.
● G54 - Line of Four - connect. ● G55 - Word Puzzle generator.
● G56 - Make a Break - Quizz. ● G57 - Parabellum - platform.
● G58 - Tri-heli - Arcade. ● G59 - Perils of Penfold - Arcade.
● G60 - Operation Angelica - Battle. ● G64 - Bandit - One armed bandit.
● G65 - Impulse - shoot 'em up. ● G66 - Carrier Attack - Battleships type.
● G68 - Slippery Sid. ● G69 - Psicotic - Shoot 'Em Up.
● G70 - Space Blob - Platform type. ● G71 - Scary - Platform type.
● G72 - Death Camp - graphic adventure ● G73 - A Quest for Galaxia - Shoot 'em up.
● G74 - Sub Hunt and Sea Fisherman - Battleships and a shoot 'em up.
● G75 - Inferno.
● BUDGIE1 - Budgie UK's 6800 Assembler library of routines.

NOTE: Only G20 and G18 work in colour and monochrome. All the other Budgie games are colour only.We always have the latest Budgie games as soon as they are released.

GRAPHICS DISKS

● GR3 - MASTER Painter - excellent graphics program works in ALL resolutions in NEO Degas and Doodle formats. Has multiple screens 6 on 1/2 Mb, upto 24 if you have enough RAM, animate between these multiple screens, all the usual tools plus rotate to any angle, skivle- horizontal and vertical, zoom, twist, built in converter, very well laid out and designed- full GEM this is a truely brilliant program. Fill option is a bit dodgy.
● GR6 - Degas disk - 155 fills, 10 brushes, 7 fonts, 20 printer drivers including NECP3 and P6, Epson JX80 colour (you should be able to use this for STAR LC-10),plus programs to manipulate Degas Elite.
● GR11 - Disk full of picture utilites: Tiny Stuff v3.4 and Tiny View v4.21, Pic Switch v0.7, NEO2Mono, Convert, Mono2Medium, NEO2Degas, plus 3 screen to disk savers.
● GR15 - JIL2D CAD drafting program from Jesus Is Lord corp. Looks good and is very complicated.This disk is double sided and requires 1Mb RAM and monochrome monitor.
● GR17 - Picture convertors. Print Master/Degas convertor, NEO/Degas/Tiny/IFF/SPEC512 to NEO/Degas/IFF convertor. IMG/AIM convertor IMG/AIM to Postscript, Mac GIF stripper, Spectrum 512 .SPC/.SPU to GIF convertor and Spectrum 512 SPC, SPS and SPU slide show.
● GR19 - Fractal Zoom V0.7 is the most comprehensive fractal generation program available on PD.
● GR20 - .IMG utilities. Convert2IMG V0.9 converts any Degas format, Tiny, NEOchrome, MACPaint, Spectrum compressed and uncompressed to a monochrome .IMG format.IMG Quick View an .IMG file Viewer. The .IMG slide show V1.1 and IMGCAT V1.0 the .IMG cataloguer and printer.
● GR21 - ANI ST formerly Aegis Animator for u80.00 now PD as ANI ST!

LANGUAGE DISKS

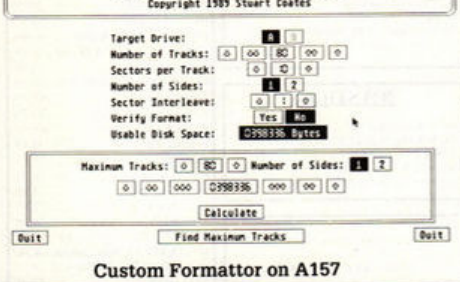
● L13 and L14 Modula 2 development system V1.0 from Ana systems. Consists of the M2/68 compiler, linker, libraries, development shell and Micro-Emacs editor. Requires minimum 520St with 2 drives OR a 1040ST.This is a 2 disk set. Both disks are needed.
● L15 - Sozobon C Compiler. A complete implementation of the Clanguage as defined by Kernighan & Ritchie and prevailing practice. The package includes a compiler, optimizer,assembler, and linker, as well as several other associated,utilities. L15 is a double sided disk, Sozobon C is available on 2asingle sided disks @ u3.00 each called L15a and L15b. This disk is NOT for the beginner as it is poorly documented, but it is still an excellent disk.

MUSIC DISKS

● M15 - The COSH 16 Voice MIDI Sequencer. A fully working MIDI sequencer by Henry Cosh, includes: Multi-Voice recording using seperate MIDI channels or programs, split MIDI keyboards and/or velocity ranges. Variable resolution Map of 8 Voices on Desktop continuously. Mouse click sampling of any music in the Map. Simple editing using mouse and MIDI keyboard on blocks down to hemi-demi-semi-quavers, with no MIDI event lists! Sections for naming passages plus setting Time signature, tempo, and local quantization.Variable resolution metronome on any MIDI channel, program, note, velocity. May be driven by external MIDI clock. Full Voice/Block copy,move, quantize, randomize, transpose, velocity update. Filtering of controllers, note ranges and velocity ranges on input, output or by direct manipulation.Undo/Redo on all operations that change the music and Through channel specification for each voice. All MIDI notes/channels/programs may be input from a MIDI keyboard, or typed on the computer keyboard. MIDI channels and progam numbers base may be selected to be 0 or 1.

DEMO DISKS

● D144 - The official Atari STE demo! Only works on an STE, uses all the features of the new machine!
● D145 - The Batman Remix.
● D146 - The Delerious mega mega demo from France. Excellent 2 disk demo. Requires 1MB RAM and disk D147.
● D147 - see D146 for details.
● D122 - DOUBLE SIDED DISK. NOT STE. The Union demo! Demos from TEX, TCB, TNT crew, Delta Force, The Replicants and Level 16. This demo is absolutely brilliant! It requires a colour screen and a joystick.
● D123 - DOUBLE SIDED DISK. Snow Man demo. Great Digitised sound and picture demo of the snowman story. The song 'Walking on the air' and ditigised pictures telling the whole story. Excellent. Requires colour screen, and 1Mb RAM.
● D125 - DOUBLE SIDED DISK. NOT STE. The CareBears Cuddly demos. The CareBears did some demos on the Mega Union demo. Here they have created the best demos on the ST to date! you must move a jet propelled man about the screen landing infront on the entrances to the demos. The quality of the demos is amazing and we would go as far in saying better than the Union demo! This is a mega mega demo disk that requires a colour screen.



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TAKE CONTROL WITH CYBER

STORY
Mark Pickavance

This month we introduce related objects to the hierarchical tree and with a little legwork create a running robot with a grip of steel

The concept of a hierarchical tree structure is at the very heart of the ST. Each disk is set up with a pattern of directories and sub-directories. These form the branches of a tree which begins at the "root" directory – a simple but powerful idea which enables us to organise our files in an effective way. You may be wondering what this has to do with *Cyber* animation. Read on.

The *Cyber Control* animation language has the ability to set up a series of objects in the form of a tree. We can imagine that these individual objects are linked via a series of hinges. Moving one object therefore has a knock-on effect.

Using these characteristics it's possible to produce code which connects a chain in a complex way. This could be extended to make an accurate simulation of moving human limbs. The *Cyber Series* has a *Human Design* disk that starts to explore these opportunities by giving you complete human skeletons to experiment with. These can be manipulated by *Cyber Control* to make life-like movements. If you're interested in simulating "natural" motion, this is your route.

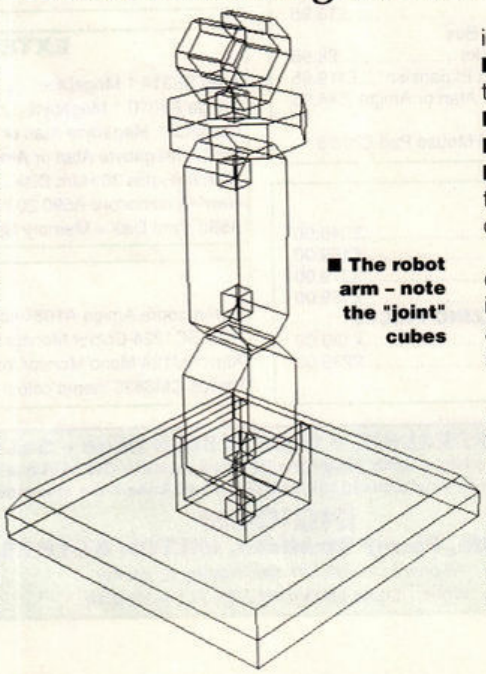
Like many of the examples shown in previous *Cyber* tutorials the success of the animation is dependent on two factors: the creation of a 3D object and the writing of a *Cyber Control* routine. The quality of the finished piece often reflects how much time you allocate planning each section and how well they are combined.

In order to use hierarchical objects, you first need to make a model that contains all the necessary elements. As well as the standard parts, you also need additional spare cubes to make "joints" at the point two objects connect, thereby allowing them to pivot. Once the object is finished and all joints are in position you can set up the tree which links and controls the elements. This is a standard procedure:

- Clear the *Cyber Control* object tree structure
- Add all the objects to be shown in the tree
- Limit the angle that objects can move – this is optional
- Relate all the objects to each other
- Specify the order of axis rotation – also optional.

If these actions are performed satisfactorily, you can begin the animation. This involves four further phases:

- Load the object – this must be done each time you position the tree
- Position the joints that you wish to change
- Deselect all the "joints"
- Command *Cyber Control* to set the tree – this (you hope) moves all the objects to their correct positions.



■ The robot arm – note the "joint" cubes

To help us understand what is quite a complicated procedure the *Cyber Control* disk includes several examples of trees and animates them. The best of these moves a simple robot arm.

The simple code on the following page sets up all the relevant information and then rotates the claw at the end of the arm. Let's see exactly how it works.

TREECLR obviously clears the tree structure from memory – not a bad idea. Then the **TREEADD** command starts adding all the objects, except the joints. If you were adding a leg in two parts with an associated foot, you

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would use:

```
TREEADD upperleg,lowerleg,foot
```

The next stage, limiting the movement of each part, is optional. This becomes useful when you consider how – with limitations – the human leg can move. As an example, the lower leg is restricted by the knee joint to movement of about 130 degrees in one plane – front to back. The side to side and rotation "in plane" are, unless you're John Cleese, almost zero. Assuming that the body the leg is connected to is facing the front of the CAD universe you would use the LIMIT command:

```
LIMIT lowerleg,-130,0,0,0,0,0
```

The parameters are in pairs: x min,x max,y min,y max,z main,z max. Although it's not crucial that this part is included, it does guarantee that limbs cannot travel beyond the normal physical limitations of their joints.

The key command within the hierarchical tree is RELATE. In one instruction we relate two objects and define the joint that connects them. The form is:

```
RELATE child,parent,joint
```

In our example this would be:

```
RELATE lowerleg,upperleg,knee
```

To make the whole leg, other RELATES are required defining the relationship between all elements. Using the RELATE command creates a logical association between all parts of a body. This must have a "root" object – such as the pelvis or torso. This object is always a parent and never a child. It is the object that all others are attached to – indirectly or directly – and so when it moves the rest must follow.

As LIMIT was optional so is ORDER. It was not needed in the above example but it's an important command to understand. It specifies the order in which the three axis are rotated to get the desired effect. You might use it like this:

```
ORDER Pelvis Z,X,Y
```

This is necessary with parts that can revolve in all planes. Our lower leg doesn't need ORDERing because it moves in a single plane.

To move the object it's not necessary to use a group or name each one. They are all bonded through the tree structure. To move each part the POSITION command rotates each element within the limits already imposed. It's used like this:

```
POSITION name,10,10,10
```

The parameter name is the name of the object to move and the numbers that follow are the rotation values for X,Y and Z. You don't need to set its location in the "universe" because that is defined by the objects that are connected to it.

So let's put all this theory into practice. The objective is simply to produce a pair of animated legs that will form part of a larger animation next month – when we'll add the body, arms and other features. I won't bore you with the details of construction. Needless to say I used *Cyber Sculpt*. The object requirement was as follows:

Right toes, right foot, lower leg and upper leg.
Left toes, left foot, lower leg and upper leg.
And finally a "root" object – the pelvis.
The joints needed:
Right arch, left arch, right ankle, left ankle, right knee, left knee, right hip and left hip.
All these were simple cubes.

I wanted to keep the legs very basic – my intention was not to be anatomically accurate but to get the motion right. The simpler the object, the quicker the creating of the animation file, allowing more time to achieve accurate movement.

I suggest you get a friend to walk slowly and watch the cycle performed by one leg. If we start at "crossover" (that is, the point when one leg is almost straight and the other bent and off the ground) the leg off the ground executes the following steps as a loop.

1. The top part of the leg moves forward with the rest of the leg swinging underneath.
2. When the lower leg is almost straight the whole leg starts to descend.
3. The entire leg straightens in time to take the impact as the weight is transferred to that leg.
4. Now in contact with the ground the lower leg bends as the upper leg muscles drive the body forward.
5. The trailing leg now bends further in preparation to be lifted up.
6. The foot comes clear of the ground and the leg swings forward into "crossover."

Rather than just animate a walk, I thought a running sequence would be more challenging.

ARMED AND MOVABLE!

■ **Using *Cyber Control* Code you can move the arm**

■ **Each joint has a limited range of movements**

■ **Empty handed now, but you could even pick up an object**

Here's the code Tom Hudson wrote to do this:

```
load3d "a:robotarm.3d2"
; Reset internal tree structure
treeclr
; Add arm parts to tree
treeadd BASE,LOWARM,UPARM,CLAW
; Build tree!
relate LOWARM,BASE,shoulder
relate UPARM,LOWARM,elbow
relate CLAW,UPARM,wrist
; Set joint restrictions
limit LOWARM,-45,45,0,0,-180,180
limit UPARM,-90,90,0,0,0,0
limit CLAW,0,0,0,0,-180,180
; Now let's watch the action!
mono:draft:perspec 999:zoom 100:cam1
40,30,0:view wire
watch on
for clawz=0 to 90 step 10
load3d "a:robotarm.3d2"
position CLAW,0,0,clawz
treeset BASE
superview
next clawz
watch off:end
```

```
; Legs by Mark Pickavance

INPUT "Watch (0) or Record
(1)?",option

LOAD3d "C:\CAD\LEGS.3D2"
GOSUB DEFINELEGS
GOSUB DEFSPLINES

ZOOM 300:PERSPEC 999:CAM1 60,45,0
DRAFT:VIEW SOLID:MONO

IF option THEN RSTART "C:\CAD\LEGS",
m:GOTO runit
WATCH ON

@runit
FOR frame=0 to 36
frame2 = frame + 18
IF frame2 > 36 THEN frame2 = frame2-36
LOAD3d "C:\CAD\LEGS.3D2"
position L_upper,s1x(frame),0,0
position R_upper,s1x(frame2),0,0
position L_lower,s2x(frame),0,0
position R_lower,s2x(frame2),0,0
position L_Foot,s3x(frame),0,0
position R_Foot,s3x(frame2),0,0
position L_Toes,s4x(frame),0,0
position R_Toes,s4x(frame2),0,0
TREESET Pelvis
SUPERVIEW
IF option THEN record
NEXT frame

IF option THEN RSTOP:END
WATCH OFF:END

; Define the Legs and hips
; Set up objects in each leg, set up
their operational
;  limits,  and  define  their
relationships to each other.

@DEFINELEGS
treeclr
treeadd
Pelvis,R_upper,L_upper,R_lower,L_low
er,R_Foot,L_Foot,R_Toes,L_Toes
```


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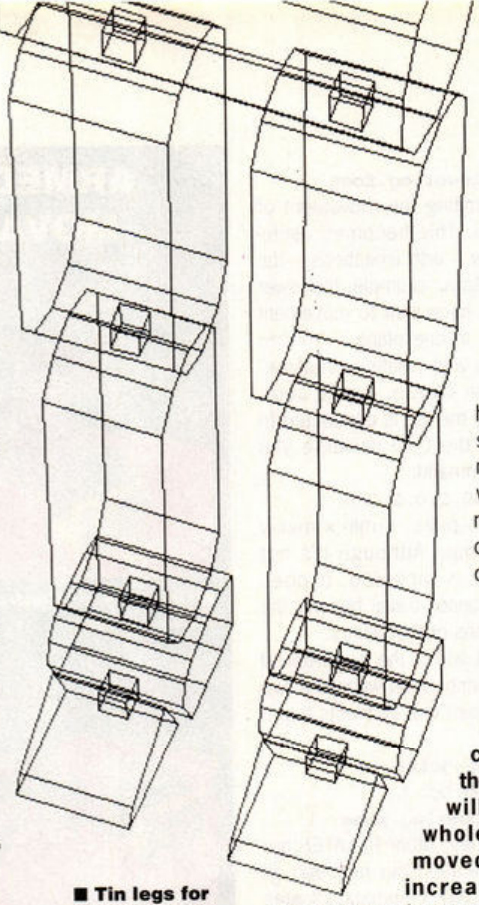
```
limit R_upper,-45,90,0,0,0,0
limit L_upper,-45,90,0,0,0,0
limit R_lower,-130,0,0,0,0,0
limit L_lower,-130,0,0,0,0,0
limit R_Foot,-10,5,0,0,0,0
limit L_Foot,-10,5,0,0,0,0
limit R_Toes,-5,30,0,0,0,0
limit L_Toes,-5,30,0,0,0,0

relate L_upper,Pelvis,L_Hip
relate R_upper,Pelvis,R_Hip
relate L_lower,L_upper,L_Knee
relate R_lower,R_upper,R_Knee
relate L_Foot,L_lower,L_Ankle
relate R_Foot,R_lower,R_Ankle
relate L_Toes,L_Foot,L_Arch
relate R_Toes,R_Foot,R_Arch
return

@DEFSPLINES

; This subroutine defines four independent splines that are used to move
; each of the eight joints in the object..
; Hip spline
; Do note that the splines control only one leg - the other
; is driven by the same data, just 18 frames ahead.

defpt 1,45,0,0
defpt 1,5,0,0
defpt 1,-5,0,0
defpt 1,-45,0,0
defpt 1,0,0,0
defpt 1,45,0,0
defspline 1,37,L

; Knee spline

defpt 2,-30,0,0
defpt 2,-5,0,0
defpt 2,-10,0,0
defpt 2,-70,0,0
defpt 2,-30,0,0
defspline 2,37,L

; Ankle spline

defpt 3,0,0,0
defpt 3,5,0,0
defpt 3,-5,0,0
defspline 3,37,L

; Toe spline

defpt 4,0,0,0
defpt 4,30,0,0
defpt 4,5,0,0
defpt 4,0,0,0
defspline 4,37,L

return
```



■ Tin legs for our iron man

There are several new ideas in this code to point out. First, I have used a simple variable "option" which is linked to an INPUT statement. This specifies either to save the animation or just view it. Secondly, I have used a number of sub-routines which I GOSUB to. This means the code is in modules and is, I hope, easier to read. And finally I have used the SPLINE function in a totally new way. In previous animations I have used the SPLINE to plot an imaginary path through 3D space: here it's creating a smooth sequence of numbers, from one value to another – the numbers are not coordinates but degrees of rotation.

In next month's *Cyber* tutorial I want to add the top half of the body, extending the RUN code and augmenting the model. In addition I will address how the whole figure might be moved up and down to increase realism and simulate moving across a solid surface – not running in air.

If you want to mess with the code I suggest you experiment with the splines: changes here could produce a walk or sprint. Discover the possibble variations by exploring yourself. See you next month. ■

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DESKTOP

This month we look at how to program the STE and answer your hints, tips and queries

Ever wanted to make your own music videos? **James Beswick** from Kent has just this desire but unfortunately he isn't sure if it's a plausible idea.

Your ST is a very powerful machine, enabling you to create all sorts of hypnotic visuals and sound effects. These pictures are sent out to your TV or monitor via the standard ports on the back of your machine. Consequently, they can also be sent to your video recorder and put straight onto video tape. As a result, you could program animation routines or run slideshow software to display your clever graphics. Some mega sound effects can be added using music packages such as *Quartet* or *Master Sound* and the lot can then be recorded onto tape for posterity.

There are two ways of achieving this awesome feat. The first is to take a standard RF lead from the television output on the back of modulated STs and insert this into the RF or aerial in socket on the back of your video. You need to tune the video into your ST's signal, which should be somewhere in the region of Channel 36. You know when you've found the correct station because output from your ST appears on the video channel of your television. Now all you need to do is hit the RECORD button on your video and strut your stuff.

Alternatively, you can obtain a much sharper-quality picture by taking output from your monitor port instead. This can be linked into the RGB, BNC or Phono inputs on the back of your video, providing you use the correct lead. The leads are standard but if you have trouble contact Lightware on 051 639 5050 or SDL on 01-309 1111. This method is the preferred one since not only do you gain a better recording but you don't need to spend time tuning in your video.

By using the PAUSE key on your video recorder, you can perform limited editing facilities to remove painful loading sequences or memory accesses made by the ST software. In this way you can create a video of professional quality.

RAPPING

We've had a programming query from **Martin Sermon** from Lincoln who is eager to write his own word processing software and needs an algorithm for handling word-wrapping.

Professional software tends to store all the data in memory consecutively using carriage returns to denote the end of paragraphs. However, if you're writing the software in Basic, it's much easier if you use arrays to store lines individually. In this case the algorithm would run as follows:

```
Start Loop
  Input character
  Add character to line x
  Does length of line x exceed
                maximum length?
    Yes - search backwards from end
          of line x for last occu-
          rance of a Space
        - Create line x+1 and store
          all characters after the
          last space into this new
          line
        - Remove these characters
          (including Space) from the
          end of line x
        - Display line x+1
        - Set x to x+1
Loop
```

■ **Link your ST and your video and open up a whole new world of possibilities!**

NEW DIMENSIONS FOR NEOCHROME

Richard Hollis from Birmingham has discovered another of *Neochrome's* useful hidden features. Hold down on the right mouse button when using the line draw option and your picture is enlivened by a multi-coloured line. These colours come from the 16 found in the *Neochrome* colour bar and appear in the same order.

Word processing software such as this could easily be written using high-level languages such as *GFA* or *HISOFT Basic* since speed is not a major factor. *GFA Basic 3* is more useful than version 2 because the command RINSTR can be used to find the last space in a line.

CODE CONVERSION

James Arnold from Bath has existing program code in *Hisoft Basic* format and needs to convert it to run in *GFA Basic*. While *GFA* and *Hisoft* code looks similar, there are irregularities which make conversion difficult. According to Hisoft, there are utilities which convert *Hisoft Basic* code into *GFA*, but if you want to convert in the opposite direction your best option is to save the *Hisoft* code as an ASCII file and load it back into *GFA Basic*. Now edit it by hand.

B-BOOT SAGA, 2: NOT FADE AWAY

There have been numerous utilities which enable you to boot directly from drive B. Many have appeared in PD libraries and one even made it onto the Cover Disk of issue 5 of *ST/AMIGA FORMAT*. **V. Williams** from Lincs has noticed an idiosyncrasy about the software which has far-reaching implications for anyone concerned about viruses.

If you run the B-BOOT software and then switch off your ST, it still remains resident for as much as 60 seconds. Consequently, if you switch your ST back on again, it still tries to boot ➢

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from drive B. If you're an ardent games player you may well have noticed a similar effect if you switch off your ST and then turn it back on again after a crash – the last screen is still held in memory and reappears when you switch on.

The explanation is simple: the capacitors in your ST retain power for about a minute after switch off. This means that in theory your ST should be able to hold a virus in memory for this length of time. To make certain you've completely cleared the memory after loading any disks which might be infected, switch off your ST and go and make yourself a cup of coffee before running something else.

PUTTING THE E INTO YOUR STE

The STE has come under attack because a large amount of software, has been found to be incompatible. However, few would doubt that the STE is still a superior machine to the standard ST, although it's unlikely that we'll see software in large quantities to utilise the extra features for some months yet.

The STE comes with hardware to handle horizontal-scrolling, extra colours, new joystick ports and stereo sound. But how do you make use of all the extra features supposedly on offer? This month we begin a look at the enhanced capabilities of the STE and the ways in which you can put them to use in your own programs.

One of the STE's biggest boasts is its graphics handling facilities. Besides offering 32 colours from a palette of 4096, the STE also contains dedicated scrolling routines. Vertical-scrolling was never a problem on the ST since it's possible to grab the screen and place it back down again on another line. But when horizontal-scrolling comes under the magnifying glass, all sorts of special programming routines need to be generated to overcome the ST's limitations and make smooth scrolling possible. Because the low-res screen is made up of four-bit planes, if you want to scroll horizontally you can only do so in blocks of 16 pixels when using the same method as that found in vertical-scrolling. However, the STE contains several new routines which overcome these problems:

The HSCROLL register contains the pixel scroll offset. Ordinarily it is set to zero to retain compatibility with the ST. But if it contains any other value, then it's used to indicate which data bits constitute the first pixel from the first data word of a given line.

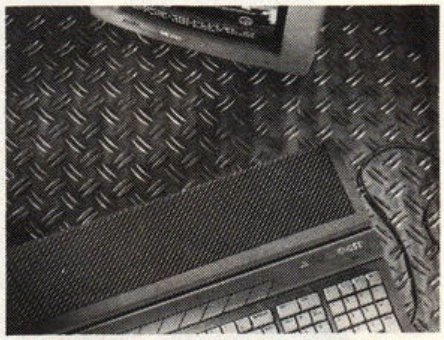
The LINEWID register gives the number of extra words of data (beyond the number required by an ordinary ST) which indicates a single display line. Just as with HSCROLL, compatibility with existing STs is maintained if it holds zero. Any other value indicates that additional words of data constitute a single video line. This allows you to work with virtual screens which may be considerably wider than the displayed screen. In practice, this register contains the word offset which the display processor adds to the video display address in order to point to the next line. If you are actively scrolling (that is, if HSCROLL is greater than zero), this register should hold the additional width of a display line minus several words – the precise number depends on the number of bit planes in the current resolution. In low res, this is four words whilst in high-res it's just one word.

Finally, VBASELO is the register which holds the low-order byte of the video display base address. It can be changed without affecting the display until the next vertical blank interrupt.

The additional colours become available because a fourth bit has been added to each colour. In order to remain compatible with the ST, the least significant bit is added above the old most significant bit.

Register Nos:

FF820D	Video base address low
FF820F	Over-Length Line Width
FF8240+	RGB colour settings
FF8265	HSCROLL register



■ **Make the most of the STE – see "Putting the E into your STE"**

■ **Next month we look more closely at how to achieve horizontal and vertical-scrolling on the STE.**

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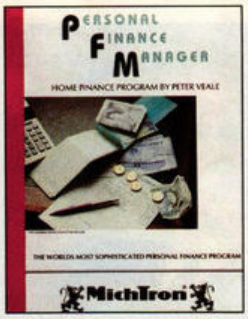

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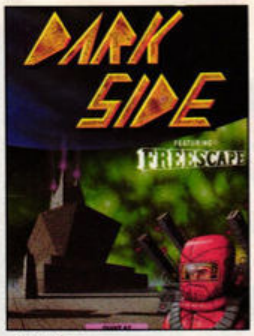

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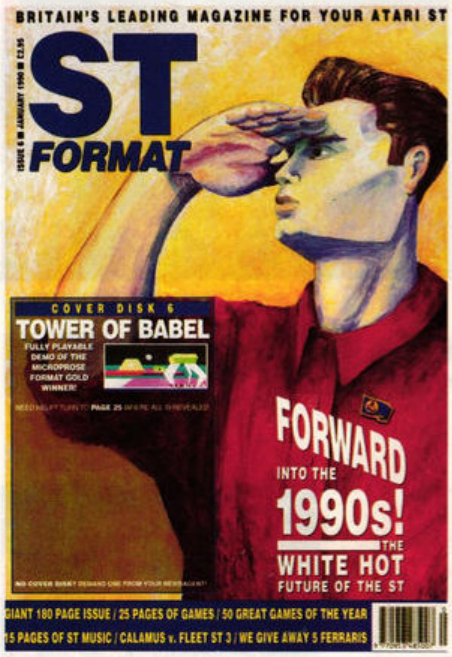

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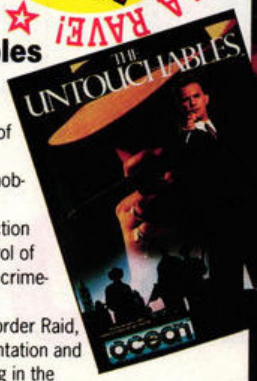
The Untouchables
from Ocean



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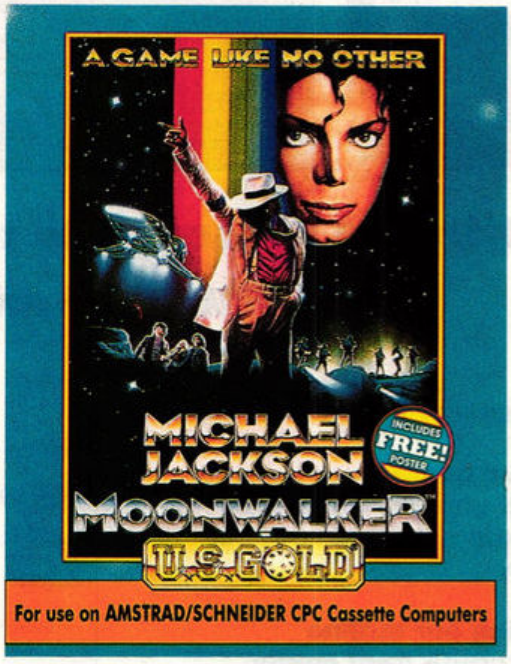
Michael Jackson Moonwalker
from U S Gold



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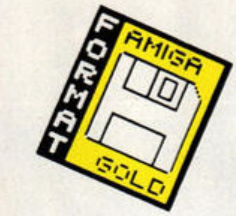

Laser Squad
from Bladesoft

Laser Squad combines strategic skill with the use of grenades and a variety of automatic weapons to defeat your foe. You can take the part of hunter or hunted - play with a friend and take turns at opposing roles. One player option plays against artificial intelligence so highly develped it bites!

"Laser Squad is a terrific game that is superbly playable and can definately be recommended as one for the library of any gameplayer." **Andy Smith, Amiga Format**

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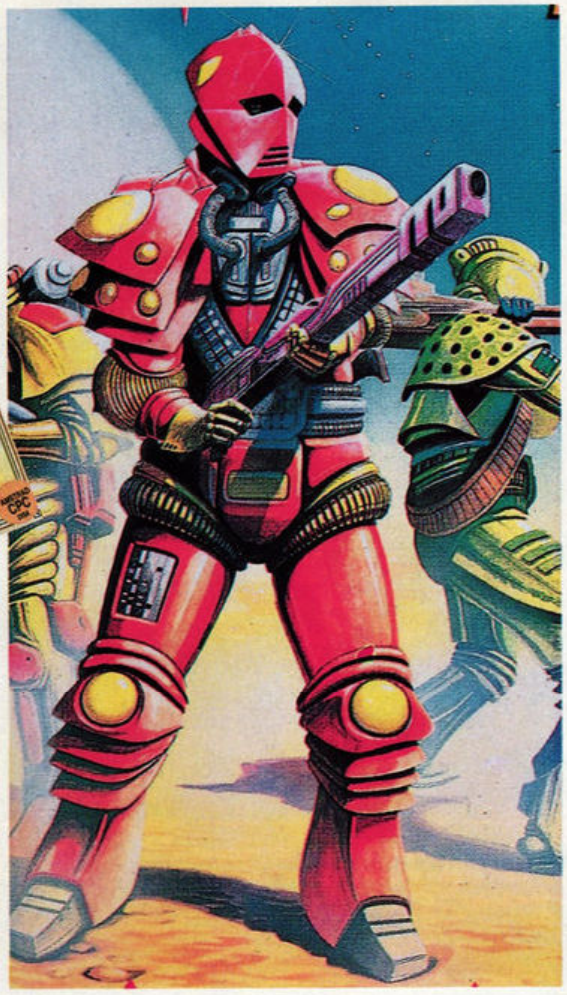

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from Ocean

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"Brilliant is the only way to describe Thunderbolt" - not a game for the faint-hearted"
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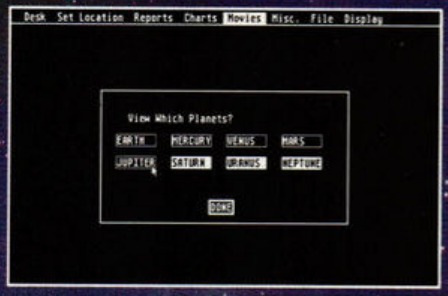
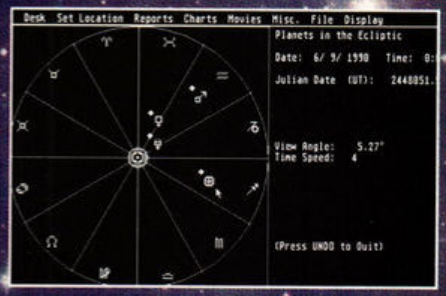


■ **When you run the Ecliptic Movies it's possible to select which planets are shown by simply clicking on them with the mouse pointer**



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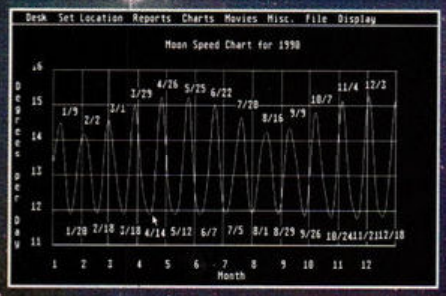

■ **The Moon Speed Chart generates a graph of the moon's speed variation with the stars**

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FROM: THE ST CLUB
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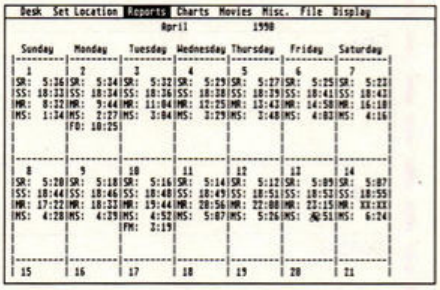
Users of public domain software need no introduction to The ST Club, one of the leading services in this field. As well as supplying PD, The ST Club are now branching out and distributing a range of excellent "budget priced" software for the serious ST user. Their latest release is *The Astronomy Lab*, a program that guides you around the universe from the comfort of your own monitor!

The program runs on any ST in medium and high resolution and is supplied on a single-sided disk which is not copy protected. It's capable of producing graphic animated images of the night sky for almost any date, past or future, and displaying all the celestial bodies on your screen. You can watch the way planets revolve around the sun, learn all about the scientific terms used and even print out a calender to predict the times of sunrise and sunset for any month. You can generate a Date of Easter Report which is calculated on the basis of astronomical events instead of falling on the same day each year, or you can use the program to predict the next solar or lunar eclipse.

The science of astronomy has nothing to do with horoscopes – it's the study of the stars and planets. As any budding Patrick Moore knows, you normally need to stay up late at night with your telescope to glimpse any heavenly bodies. But using *The Astronomy Lab* all you have to do to go STar trekking is to load the program! Up comes the main menu, and by selecting SET LOCATION you are able to tell your ST where you're located in the world. It needs this information to be able to correctly work out the views that you see.



■ **Using the Astronomical Calender Report, you can look up the times of sunrise, sunset, moonrise and moon set for any month**

The location is entered in terms of latitude and longitude and the default values are set for London which is longitude 0 degrees east, being on the Greenwich meridian, and latitude 51 degrees north. For other parts of the country, or the world for that matter, you need to look up this data in an atlas.

Once your location is entered, it can be saved to disk when you quit the program, and it becomes the new default setting next time you run the program.

The animated displays produced are called "Movies" and the Movies menu has five options. These are customised to your particular requirements by the details that you enter and show exactly what you specify. For example, say you select the Ecliptic Movie 1 from the Movies menu, a dialogue box will appear and you decide on a number of possible options such as ➢

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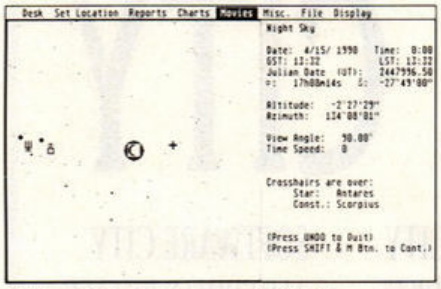

■ The night sky for April 1990: the crosshairs can be positioned over any star shown and its name is displayed. You can scroll in any direction to see other parts of the celestial sphere by using the arrow keys

the date of the Movie, what planets you wish to appear in it, and at what speed you want it to run. These selections are all entered using the mouse pointer and the keyboard. The procedure is very user friendly – graciously allowing you plenty of opportunity to correct any incorrect data.

When you've entered the data, a graphical representation of the solar system appears with the planets revolving around the sun *(no kidding? Ed)*. As each frame of the Movie is generated, the date and time is incremented and you can see how the planetary bodies move and relate to each other over time. The date is displayed in the U.S manner (that is, month, then day and then year) and also in a format used by astronomers called Julian Date or Universal Time.

The significance of Universal Time, Mean Time and many other important terms and concepts are concisely explained in a splendid manual accompanying the program. The manual, covering both the use of *The Astronomy Lab* and also astronomy in general, is over 100 pages long and contains a glossary of terms that serves as an excellent introduction to a complex subject.

There is even a tutorial section encouraging you to use the program to calculate results for set questions and then check your answers against those supplied! *The Astronomy Lab* is an excellent hands-on working tool or teaching aid for anyone interested in the science of astronomy. ■

OTHER ASTRONOMY PROGRAMS

There are numerous PD programs dealing with astronomy, but you have to learn to use them on your own. If you're interested in the subject they offer a cheap way to experiment, but you won't get the same results as you could from *The Astronomy Lab*.

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FORMAT RATINGS

THE ASTRONOMY LAB

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Features **90%**
Full of features – it's capable of many detailed and complex operations of interest to the astronomer

Speed **85%**
Very fast considering the complicated mathematics involved – almost instantaneous response to most operations

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Don't expect to get too far without consulting the manual, but it's well explained and straightforward when you get there

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The Competition
There's nothing quite like it apart from PD programs that are nowhere near as comprehensive or well-documented

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❑ The ST Club Newsletter - £8 for 12 issues or 80p for a sample copy.

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❑ Public Domain Software - Our current catalogue details over 1,500 disks. Same day despatch on all orders and help available on using PD software. Free catalogue available.

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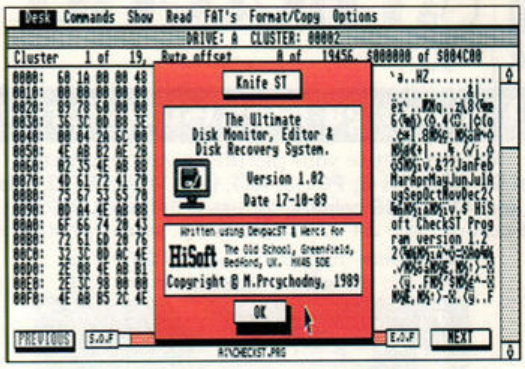
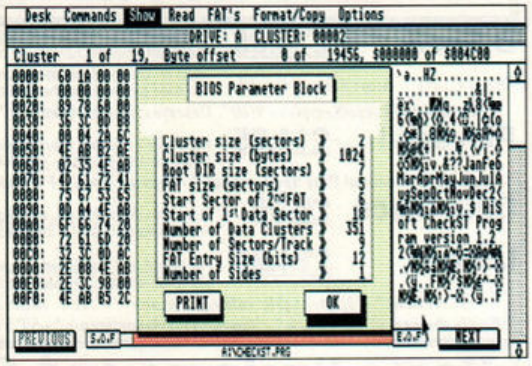


■ ***KnifeST*** **uses all available memory when editing a file; no pauses while data loads from the disk means work can take place at an unprecedented rate**

■ **Extra disk information like the BIOS parameter block is available at the press of a key. Options are selectable by key combination or mouse**



CUTTING EDGE

A sector editor, file recovery program and formatter may not set your heart on fire, but KnifeST is a neatly packaged dream

STORY *Richard Monteiro*

KnifeST

MACHINE: ALL STs
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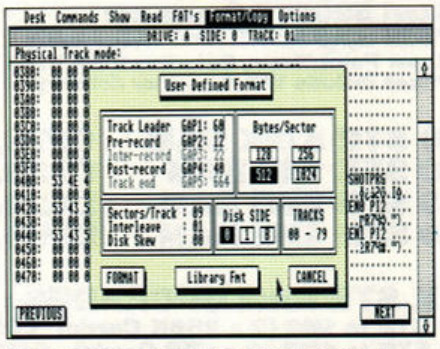
CONTACT: 0525 718181

Like many of the disk management packages to appear recently, *KnifeST* combines various utilities in one program. HiSoft's new release consists of a disk sector editor, file recovery program and formatter. On their own they're relatively unexciting, but put them together under one roof and spruce them up to offer countless facilities that can't be found elsewhere, and you've got a very handy package. In fact, you've got *KnifeST*.

One of the main reasons *KnifeST* is so attractive is because of its very powerful file recovery program. With many file operating systems it's only the first letter of the file name that is lost when a file is deleted. Not so with GEM; almost all reference to the whereabouts of a file



■ **As well as standard ST and PC disk formats, *KnifeST* lets you create your own custom formats**

are lost when you deposit something in the trash. It takes a clever program, in this case UNDEL, to work out where the file data might lie on the disk.

GEM doesn't erase all the file's data when you drag a wriggling, screaming file to the trash, but it does remove most of the information which tells the computer where the file lives. The directory entry contains the name of the file except for the very first letter. Recovering the file name is no problem; it's the rest that's tricky and important.

Files are stored on ST disks in units called clusters (a group of contiguous sectors). A file always occupies an integral number of clusters and each file starts at the beginning of a cluster. The erased directory entry contains the number of the first cluster used by the file.

Another piece of information left in an erased directory entry is the file length. By doing some simple maths, UNDEL can work out how many clusters need to be recovered.

For GEM to know the whereabouts of files and any remaining free space on a disk, a data structure called a file allocation table (FAT) is maintained. This FAT is simply a map of all the clusters on the disk.

To recover a file you need to know which clusters it occupied. In many instances files occupy contiguous areas of the disk which makes things easy for UNDEL. If there has been lots of disk deleting and saving, the data can be spread all over the disk. UNDEL makes as many intelligent guesses as it can, but asks for help if it gets confused. It presents the data it has accumulated so far on the screen together with the next likely-looking cluster. It's up to you to decide whether the data is relevant or not.

There are plenty of sector editors available for the ST, so you'd be justified in yawning at HiSoft's attempt but for the fact that *KnifeST* is so sophisticated. In addition to loading a specified sector or track, it can read a single track regardless of its format and display gaps, synchronisation, ID and data addresses. It's also possible to load an entire file into memory and edit it from there. *KnifeST* uses all available RAM for the editing buffer. File editing is therefore very fast if you have plenty of RAM.

Other options let you read a disk's BIOS parameter block, display checksums for all specified sectors, show the clusters which belong to a specific file, examine a directory and the FAT tables, and check that the two FATs on a disk are identical (yes there are two).

Possibly the most powerful disk formatter to have appeared for the ST also shows up in *KnifeST*. Standard formatting facilities enable you to format any number of tracks, choose either nine or ten sectors per track, pick ST or PC system disk characteristics, determine the disk side to format and even choose the number of directory entries a disk will have.

A user defined format is also feasible. Along with disk side and tracks, you can specify a number of other values. Sector size may be 128, 256 or 1024 as well as the standard 512 bytes. The number of sectors per track can also be defined. So too can interleave, skew, track leader gap, pre-record gap, inter-record gap, post-record gap and track-end gap.

KnifeST is very well presented and comes with a comprehensive manual detailing the structure of disks. The program is relatively easy to use; a doodle if you're an experienced disk hack. UNDEL spares you headaches while the disk editor and formatter provide you with features you always dreamed about but never imagined would appear unless you wrote a package for yourself. ■

FORMAT RATINGS

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Features 92%
Excellent formatting and sector editing facilities

Speed 87%
Not the fastest formatter, but the disk sector can be nippy if you've got lots of memory

Ease of Use 77%
You need to know a little about disk structures to get the best out of the package

Results 91%
Does everything it claims it can; the undelete option is more successful than not

FORMAT VALUE 90%
Nothing startlingly new is offered but the way it is all bundled together is neat

The Competition
Lots of programs offer some or all of the facilities on *KnifeST*: *Blitz, DASH, Procopy, Saved, ST Doctor, Utilities Plus* and even the *GEM Desktop*

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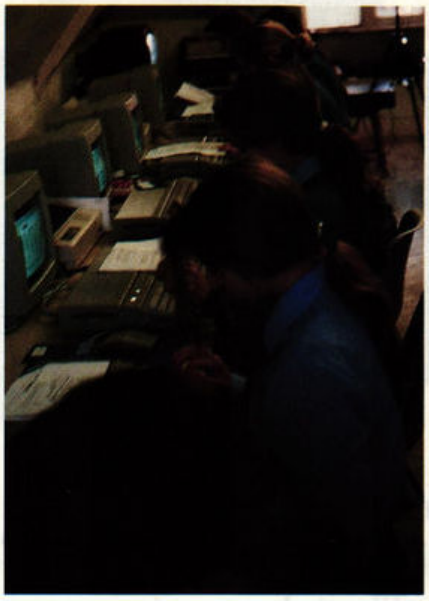

■ STs in the classroom: fourth years learn how to use spreadsheets

TOP OF THE CLASS

If you really want to find out what goes on in a classroom, ask a teacher. We did just that and found the ST has a major role to play in equipping children for the future. Is the ST set to be the educational machine of the 90s?

STORY *David Jones*

Changes in society will inevitably lead to changes in the educational system. After all, it's this system which equips today's pupils for tomorrow's world. Like it or loathe it, one major change happening today is the use of increasingly sophisticated machinery to accept, analyse and transmit data and information. In short, Information Technology is taking an ever more prominent role in all of our lives.

As a teacher, I am aware, perhaps more than most, of the importance of equipping our children for their futures. I feel that it's vital that all children from an early age receive experience of computer technology. They should learn that computers are useful tools that can assist in speeding up and alleviating tedious or boring jobs as well as making certain difficult tasks easier and more enjoyable.

I teach at Babington House School, a small independent school in Chislehurst, Kent, which caters for a large age range (from nursery to sixth form). The senior school is exclusively girls, the remainder co-educational. Up until two years ago, IT at Babington was only a minor sixth-form option. Pupils would attend several times a week in between their "normal" A-level classes. They took a Royal Society of Arts (RSA) examination called Computer Literacy and Information Technology (CLAIT). To pass this exam they had to complete at least three practical modules which included spreadsheets, databases, videotext and word processing. Even in 1987 CLAIT was still in its infancy.

Along with many other centres offering this course, we had to use totally inadequate BBC-Bs to train and examine our students. Three modules of that course could take up to 18 months to finish.

In September 1987 we expanded the provision of IT to include all junior and senior classes. We still, sadly, had to rely upon our set of BBC-Bs and were only crudely able to introduce hands-on IT experience. Pupils were given the erroneous impression that IT was slow, clumsy and prone to error. You can imagine how frustrated both myself and my colleagues became. Our vision of preparing pupils for an IT-demanding world was slowly evaporating.

We were fortunate in having a headmistress with her finger firmly upon the pulse of changing demands and influences in education as well as an understanding board of governors. The case for a complete refurbishment of the IT department hardly needed arguing. Many teachers will doubtless not find this support, especially in the over-stretched state sector. By Easter 1989 my recommendations had been accepted and a complete teaching system based on 520 and 1040 STs was ordered.

Until only a few years ago a majority of schools had a small collection of BBC-Bs. These were, for the uninitiated, large yellow boxes that housed 32K of RAM. It would be wrong of me to knock the Beeb. In its time it was a good machine. It had a well structured BASIC (perfect for teaching) and provided you ➢

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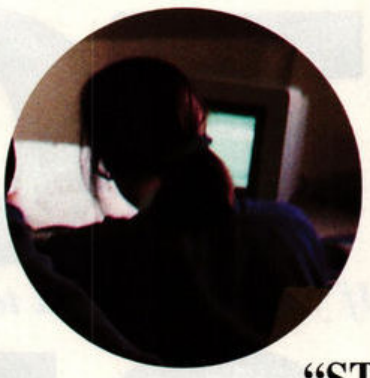
with access to a wide range of educational software. I can say this with my hand on my heart and both fingers crossed.

The BASIC was fine, but with the benefit of hindsight we can see just how crude the software was. Could you imagine a word processor today that allowed you to write just five A4 pages, a database that took over two minutes to sort 15 records each with six fields or a graphics program that only accepted large pixels which had to be defined from the keyboard and so on?



"STs have a enormous appeal among our pupils. The take-up rate for IT now exceeds 90%"

■ **Sisters doing it for themselves: pupil co-operation is strongly encouraged, especially among GCSE students, seen here using *Degas Elite***

Some teachers actually liked the Beeb (and probably still do). There are some reasonable maths and science programs, even one or two history and language packages that are not too bad. But many of these use computers for the sake of using them. Most teach no more than a good textbook or lesson could – and the only computer experience such packages give is where the on/off button is and where a few letters on the keyboard are.

The advent of mass-produced PCs and other 16-bit machines have led many who used computers in education to question the relevance of BBC-Bs to today's world. We looked around at the alternatives available, though most of us did not have to look very far – my mail still contains at least four wonderful offers a week from various companies. I'm even contacted by "Tracey, telephone sales for... might I interest you in our latest range of...?"

The educational computer market is a competitive mess. The ill-informed or unwary are, on occasion, ready to be sold the latest collection of double-glazed PCs.

Well over a year ago I examined the possibility of replacing the Beebs in my school. Before even approaching the governors I spent several months carefully comparing the systems availble and weighing up a number of important factors:

- Is the system easy to use?
- Does it provide a stimulating working environment?
- Is suitable software widely available?
- Is the applications software of a commercial/industry standard?
- How much does it cost?

The first category did little to distinguish between the available systems. Initially any machine (ST included) appears daunting, but after a few hours you wonder what the worry was all about!

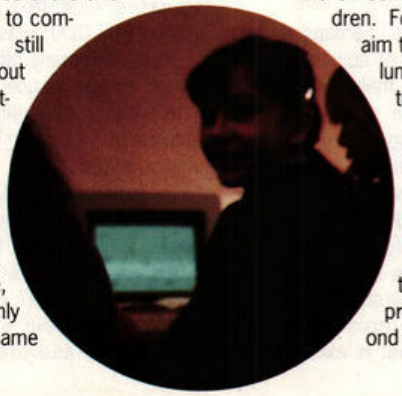
This leads to the second factor: the system's working environment. Inevitably this comes down to personal preference. I happen to like the ST's operating system and, despite being no expert in this area, find it at least comparable to that of most PCs.

Educational software initially appears to be the ST's major weakness. A criticism I've often heard is that there are insufficient programs available for teaching purposes. However, we need to look at what we want to achieve by using computers in the classroom. There are only three major categories of usage – serious applications software, computer aided learning programs and primary computer familiarisation programs.

A teacher concerned with IT first looks for suitable serious software. She or he examines the needs of the courses and finds a requirement for decent word processors, databases, spreadsheets and so on. She or he then looks towards ways in which IT can be integrated into other areas of the curriculum. In this respect the ST is in an excellent position with a wealth of applications software available. Furthermore, the ST also fulfilled my fourth criterion because much of the software is similar (and in some cases identical) to that which pupils may encounter in the future.

The ST cannot, at the moment, be defended against criticisms of an absence of software for Computer Aided Learning (CAL) and primary education. However, I would suggest caution when using the term "educational software." The BBC has flourished in schools because of the widely publicised availability of such software, much of which is, in reality, profoundly inadequate for the job it claims to do. Quantity is not a measure of quality.

The final deciding point was cost. I had already allowed about £5,000 for peripherals (including monitors, external drives, printers) and an initial batch of software and consumables. In order to complete the system I still needed to think about purchasing ten computers! Figures quoted included £6,300 for ten Amstrad PC 2086s and £10,300 for ten Acorn Archimedes A310s. Ten 520 ST-FMs were, by comparison, only £2,990. Even the same number of 1040's were well below the Amstrad price at £4,990.



The demand on resources when teaching IT is age-dependent: prep school children (5 – 8 year olds) are the least demanding. For this age group the BBC-Bs remain adequate and each classroom has its own unit. The software they use reinforces ideas covered in lessons (simple number and spelling programs and so on) and introduces computers as work-tools.

Beyond prep school age the BBC-B's limited approach is no longer valid. Our junior children are introduced to IT usage and encouraged to move away from the concept of computers as educational toys. STs are gradually being introduced into their curriculum. I say gradually because software availability for juniors poses a problem; commercially there is little specifically directed at them (a situation which I hope will not persist much longer). Because our aim is to introduce a range of uses for computers, we have been able to adapt some existing software to make it easier to use (for example, by pre-defining fields in a database which is used to carry out simple surveys) as well as producing project-cards containing precise instructions on any package used. Some of the gaps created by non-availability of commercial software have been filled by the public domain.

The ST comes into its own with senior children. For first and second years we aim to provide a balanced IT curriculum by introducing a theme every term. The intention is to introduce children to the basics of software packages and build on this later in their education.

Having acquired a simple understanding of some packages they are then encouraged to carry out computer-based projects. For example, one second year project is to consider the

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problems associated with the design and production of a newspaper. First they have to consider the methods of text-entry and for this they use *First Word Plus*. Then they examine textual layout using *Timework's DTP*. To import pictures they use a variety of methods including using graphics libraries, drawing packages, digitisers and scanners. By adopting such an approach, children gain an insight into the various uses of IT. They are also introduced to communications, CAD, music packages, robotics and so on.

First year pupils initially find all packages somewhat difficult to use. Toni Millen summed up the general feeling of her class by saying that "it takes some time to get used to a new program, but once you have got used to it, it's really quite easy." Another, Sarah Golding, in comparing STs to BBC-Bs said "they are much easier to use... they can do far more."

Second year pupils are more confident. They are already aware of the importance of the use of computers in any future employment. When questioned they were all equally impressed with the work they were able to produce and the apparent ease with which they could produce it. They all appear to genuinely enjoy their study of IT.

The ST really proves itself with the older pupils: 3rd year pupils being prepared for their GCSE choices and 4th and 5th year pupils in the midst of their examination courses. A number of GCSE IT syllabuses now exist. We have opted for what I consider to be the widest ranging of these syllabuses, that offered by the Northern Examining Association. This is a modular course with 90% of the assessment conducted by practical course-work assignments and the remainder by a mid-course written test.

The initial module of the GCSE introduces pupils to a variety of information handling techniques. They use ST packages which fully meet the assessment criteria, including *First Word Plus, Data Manager, SwiftCalc* and a number of graphics packages.

"I feel sure that, given sufficient support the ST could become the education machine of the 1990's."

■ **The ST: playing a major role in preparing these children for the future**

They then have to select two optional modules from a list of eight and carry out a final module aimed to consolidate their IT skills. For each of these modules pupils are required to design and implement an assessable project. The wide range of applications software available for the ST makes it well suited to seven of the eight optional modules: Art, Graphics and Design; Business Applications; Communications; Control; Electronic Music; The Electronic Office and Desk Top Publishing. The remaining module, "Investigations in Science," does not currently lend itself to the ST because of a lack of interfaces for monitoring equipment.

STs have enormous appeal among our GCSE pupils. The take-up rate for IT (an optional subject) now exceeds 90% at Babington. I have found no criticisms of either the ST or its software. All GCSE pupils were able to compare the ST to the BBC-B and agreed that the ST was much easier and quicker to use. Confidence in using STs did, for some, take a little time to acquire: "At first the idea of using sophisticated machines seemed very daunting but after only a few weeks I became very confident" reported Chantal Gillingham. Pupils now emphasise how easy programs are to use and because they are enjoyable many stated that methods learnt stuck "firmly in their heads" between sessions.

Pupils are proud of their work and see the relevance of IT studies to future employment. Daniella Bloom thought she could "see a way that everything we've studied may be used in the future, this makes us want to learn because it's relevant. It's important for our futures."

We are committed to STs. Since making this commitment we have not looked back. In my opinion, the ST is an ideal machine for secondary teaching. I feel sure that, given sufficient support, the ST could become the education machine of the 1990s. ■

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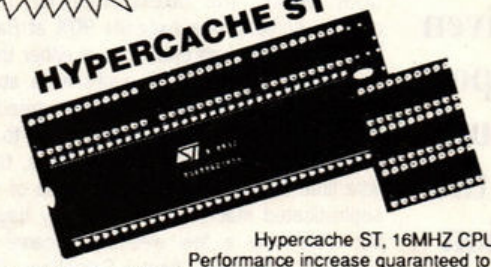

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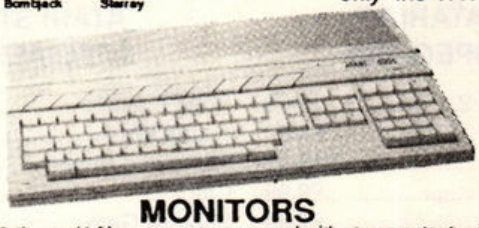

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Have those scaly creatures in **Drakkhen** *been giving you a thorough pasting? We send our intrepid adventurer out to search for clues to show you...*

HOW TO BEAT UP DRAGONS

STORY *Rob Steel*

Although the more experienced RPGers among you may have already completed this superb game, (where are your hints?) there are sure to be many novices finding it difficult to progress through *Drakkhen* territory. This guide is not the definitive way to play, but an account of my experiences with the game. It should help you kick some draconic bum.

Before serious play commences, get yourself a pile of blank, formatted disks for saved games (each character disk supports only one saved-game position). You've the choice of dragon-bashing either with the team provided or – much more interesting – creating your own band of adventurers. My team consisted of four women, but that's my personal hang-up, you may find men just as exciting to play with. It's sensible to build your team by choosing one character from each of the four available classes – basically just to give you more than a snowball in hell's chance of surviving longer than five minutes.

Once you're happy with your foursome, begin playing just south of Prince Hordtkhen's dungeon. Before going walkabout make sure your team is equipped with whatever weapons they have in their backpacks; you won't last long in a scrap using bare hands. I know one particularly stupid man who couldn't fathom why he kept losing fights with even the weakest attacker – until he realised he hadn't armed his adventurers!

■ ***Drakkhen*** **is a tough challenge even for hardened adventurers**

Ready to enter the fray, I set off to save the world. Hordtkhen's dungeon was the only place of interest in view so I headed there. A drawbridge spanning a deep moat tempted me to cross to an open gateway. It wasn't until Olivia (my Amazonian leader) attempted a crossing that I noticed the shark cruising the moat. Too late! Thankfully she became fish fodder so early that it was no hardship to start again.

I was soon back looking longingly at the gateway to Hordtkhen's dungeon. Jaws was still swimming round the moat, but I eventually found two ways of passing the finned fiend: promote my priestess to leader and make her invisible, or time a visible leader's crossing with the shark's fin re-emerging from underneath the drawbridge. I thought the latter method more advisable ➢

because my priestess might need to preserve her magic for what lay through the gateway.

The entrance hall features four doorways blocked by magical forcefields. Mystical, elemental symbols are etched on the stone walls next to each doorway. I was in the Earth Prince's dungeon so I assumed the symbol for Earth might help. Having no idea which symbol was which, trial and error soon revealed the second from left to be correct. Activating it results in the forcefields fading. Preparing to search the dungeon, I clicked my team into automatic-attack mode – just in case.

Whenever given a choice I headed west or left. I took my team through the left doorway and found the adjacent room lit by torches. The torches weren't screwed down so I took them. Continuing left I came across an old man who sounded as if he'd been at the dragon juice a mite too long. Just before he disappeared in a sprinkling of stars he gave me a message. Don't worry if you miss what he says first time, he'll be there when you visit this room again.

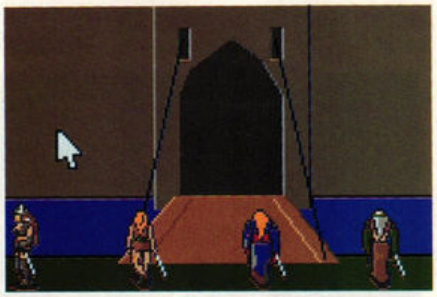
There are a number of these wizened characters dotted around and they always give you a message when you meet them. In fact those met on roads won't let you pass *until* they've given their message. Fortunately, once you know where to expect them, they can be avoided by simply stepping off the road.

Meanwhile... Finding nothing else of interest, I went back to the entrance hall. The room east of it contains bucklers (cheap shields), spears and swords, so I prepared my party for de-scaling a few dragons.

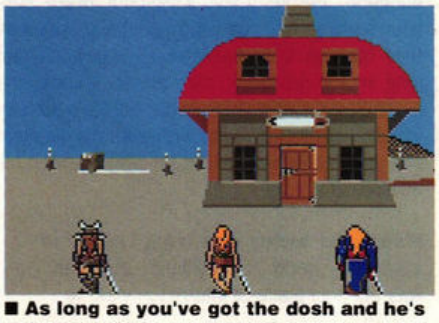
It's best to explore Hordtkhen's dungeon at night because most of his guards are in dragon dreamland at this time. I felt safe enough to click out of automatic-attack mode.

Continuing through the weapon room, looking carefully, I found some empty phials to add to my inventory. To the left lies a kitchen where I met a large humpbacked creature who, because I didn't attack him straight away, provided useful information. I decided from now on to talk first and attack later. Hopefully this would not only reward me with more information but also prevent my team from becoming dead meat within minutes.

South of the kitchen, the locked door should prove no problem to those with 20-20 vision – no, that isn't a squashed gnat on your monitor, it's a red key lying on the cupboard shelf, just waiting to be picked up. All I could find beyond this locked door were more empty phials – but I could be missing something!



■ **It looks like you might make it across. Unfortunately, one more step and the drawbridge slams shut – preserving you for life as a jam stain on the castle wall**



■ **As long as you've got the dosh and he's got the goods, a visit to the weaponsmith (found in the east of the Air region) can be a great confidence booster**

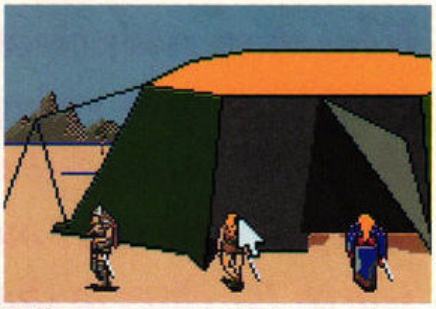
After thoroughly searching the ground floor, kitchen and cellar and finding nothing but torches and phials to pilfer, I went back to the entrance hall and made my way upstairs. I must have been lucky because I'd avoided conflict up to that point, but as soon as I set foot upstairs I was attacked. I soon realised just how weak my team was. After a few failed attempts at getting past the scaly scoundrels I skulked outside to look for help.

Travelling south to the crossroads, then west, I came across several houses and an inn where I gained useful information. The most important concerned an Anak to the north where a priest lived. The priest apparently healed and resurrected adventurers for a fee. As long as I had the dosh it no longer mattered that party members snuffed it – provided at least one stayed alive to buy back their lives.

I also discovered that two team members armed only with arches (bows) can quite happily fire arrows into dragons and kill them – as long as they avoid physical contact. This tactic not only increases Experience, Hit Points and Level but also rewards you with mucho moolah and the occasional mega-weapon.

Find an area where dragons dwell (near the flashing arrows in the Earth region for example), kill off two of your team (not difficult) and wander around making pin cushions out of reptilian giants stupid enough to attack you. When you think you're tough and wealthy enough, go to the Anak and resurrect the other two team members. Have the original pair killed off and repeat the process until all four members are tough cookies. Be careful though, there's a limit to the number of times members can be resurrected.

Around level 13 when all four members were rolling in jade stones, loaded with Experience points and armed to the teeth, I took them back to Prince Hordtkhen's dungeon to sort his guards out – very satisfying. Even armoured fiends fell before me. Back upstairs, in rooms left of the landing, I found two spell books and another key – which, like most objects in *Drakkhen*, reappears every time it's location is re-entered, regardless of how many times it's picked up. Right of the landing is a locked chapel (any key seems to fit) and inside I found an altar sporting a dragon's skull. Turning the skull – only possible when both circles marked on the floor have been walked on and the subsequent messages read – reveals a secret door in the dungeon.



■ **All you get from the inhabitants of the desert region is abuse and death threats**

Finding nothing else but trouble, in the shape of giant scorpions and large draconic guards, I went back to where I found the key upstairs and used the door at the bottom of the screen. If you thought the armoured guards were tough, wait until you get a load of the Earth Prince! Don't panic though – with a little careful planning he can be dealt with.

Select a single member of your team, arm

■ **(left) The Air Prince's castle looks suspiciously like a frozen asset**

■ **(right) The Fire Prince's pyramid – where's the doorbell?**

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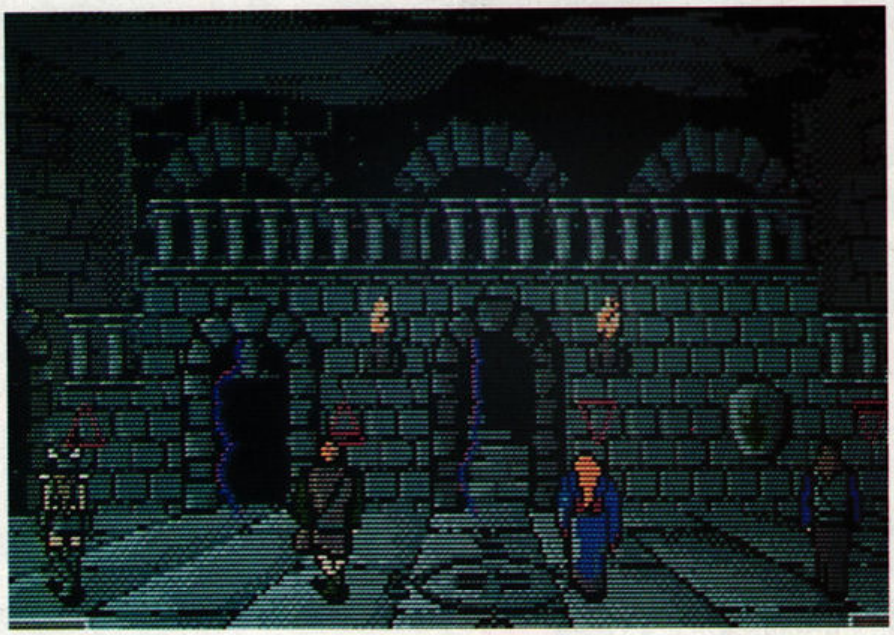

■ **Each dungeon possesses its own mysteries and its own brand of ugly aliens. Your team have their skills fully tested just staying alive let alone fulfilling their quest**

him or her with an arch, calmly walk back into the prince's chamber and position yourself in the middle of the room so that his power bolts can't reach you. Talk to him and he'll give you a simple quest: to visit his sister's castle. You'll find it (south, east, then north) in ruins and the princess kidnapped. Report back to Hordtkhen and he'll grudgingly give you a snippet of information. Now you can kill him!

Find a spot near the end of the bed where you can shoot him with arrows but his bolts can't hit you. A few dozen Hit Points later, he fades away in a cloud of stars. I'm not sure whether it's wise to destroy him – but it sure made me feel good.

Now you can bring the rest of the gang in. A greave (leg armour) and a cuirass (body armour) are there for the taking and an open door, hidden by Hordtkhen until now, beckons. The door appears to lead to a dead-end – the dragon skull on the altar is the key.

Straight ahead is a pool of elixir where your team can fill those empty phials they've been dragging around with them. Past the pool is a room with a mechanism activated by walking on it. This opens another secret door in the dungeon, though a party member has to remain in the room to keep the mechanism activated.

■ **Turning the dragon's skull reveals yet another secret door in the dungeon**

■ **The landscape looks pretty, but danger could be lurking just about anywhere**

Back in the room with the pool, I turned right. Walking on the grid results in a stalactite dropping from the ceiling, but it's so laughably easy to avoid I couldn't see the point of it being there. The next room is very dark (got a light spell anyone?) and contains a coffin and a cage. I couldn't do anything with either of them, so I continued through to what appeared to be another dead end until Kim (my scout) stood on the secret-door mechanism found in the room beyond the pool.

In the next room are two stone altars, one bears the legend "Almighty..." the other "...God." This is a very dangerous location guarded by an endless stream of scaly armed guards. Two coffins rest against one of the dank walls and four more are arranged cross-like around a circle on the floor. Entering the circle restores adventurers to full health but it's a dangerous way to revive ailing members and they could lose more points than they gain fighting off guards when leaving the room.

Having gleaned all I could from Hordtkhen's dungeon I decided to venture to another region. I went back to the Earth Princess' castle then went west and north to the Water Princess' domain. Continuing north on the road led me to her castle. Unfortunately, every time I tried to enter, a huge green thug informed me I couldn't pass because I hadn't been initiated. I found no clues on how I could be initiated so wandered off to find the Water Prince's dungeon: south, west (keep going west even though the road disappears under marshland) then north at the second junction. Along the way I discovered the existence of another Anak, complete with life-giving monk, a cemetery and a house.

When I reached the Water Prince's dungeon I discovered his dislike for visitors. The drawbridge sprang shut when I tried to cross, splattering an adventurer all over his exterior walls.

Aside from an aimless (but intriguing) wander round the ice and desert regions this is as far as I've got. Infogrames are only willing to give out very basic help for *Drakkhen* so if anybody's got farther than this, why not show off about it and drop me a line? ■

GENERAL HINTS

NAVIGATION: the sun rises in the east and sets in the west. At night the moon shines in the southern skies. Take note of mountain shapes to maintain or resume a direction.

ENEMIES: if you survive long enough to dish out a few Hit Points, most foes either explode in a fountain of blood or run away. They usually leave jade coins behind to add to your wealth and quite often bequeath you their weapons, some of which are pretty handy tools to be armed with.

Equipping your team with arches is the best way to survive enemy encounters because you can deplete opponents Hit Points without getting close enough to be hit yourself.

Beware of the huge shadowy thing that swoops from the sky picking up team members with its talons and dropping them – minus several Hit Points.

TRANSPORTER: in each region there's a useful transporter device which is not only perfect for getting swiftly from one side of a region to the other but also spectacular to watch. If you study the terrain as it goes flashing past, you discover the approximate location of dungeons, Anaks and so on. Be warned, however, that the transporter in the icy wastelands takes you across three regions to the desert; useful when the time comes, I'm sure, but not when you don't need it – there's a time limit to the game remember.

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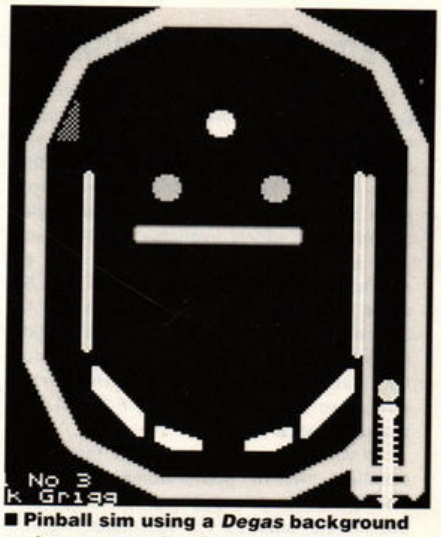

■ **Pinball sim using a *Degas* background and some creative C programming**

PROGRAM IN C – #3

STORY
Warwick Grigg

Insert the Cover Disk and get to grips with part three of our hands-on beginner's series. This month we explore the C language with a side-step into the world of pinball simulation

If you're itching to whip up your own action game using a lightning fast language without the tedium of assembler, get out your *Sozobon C* compiler and let yourself loose on some of the C programming techniques found on this month's *ST FORMAT* Cover Disk.

This month we begin writing a pinball program, display a background *Degas* picture and make a ball bounce around the screen with a realistic gravity effect. Over the next few months we'll extend this program.

Making a ball bounce around a pinball table requires animation (making objects appear to move using a sequence of pictures) and simulation (making objects behave like their real world counterparts).

Animation is quite tricky, but don't despair because once you've read how it works you can plagiarise the code with impunity! We can make an object appear to move across the screen by repeatedly erasing it from its current position and then redrawing it at its new position. Sadly, if we wrote our code exactly like this, the object would exhibit a ghostly appearance. The explanation is not immediately obvious until you consider how the ST generates the picture. An electron beam travels along each row in turn, starting at the top left-hand corner, illuminating each dot according to the content of screen memory. So if the beam is at the object's position just after we've erased it from its old position but before we've written it to its new position, bits of the object disappear!

Fortunately, the ST provides a way round this and most games programs use the technique. Two pictures are held in memory, one is designated as the current "physical" screen visible on the monitor and the other is designated the "logical" screen which is used to generate the next frame in the animation sequence. When we're ready to display the new frame we make a call to the ST operating system to switch over the logical and physical screens. Because the switch is achieved by amending hardware registers, and not by copying large chunks of memory, this is very fast. You can visualise what we're trying to do by imagining a cine film projector with a loop of film, each frame being redrawn just before it passes in front of the lens.

The logical and physical screens are switched in the interval when the electron beam returns from the bottom right corner of the screen to the top left corner. This is called the Vertical Blank or VBLANK. As a VBLANK occurs every 0.02 seconds there is the welcome side effect that the object's speed is purely a question of how far the object has to move between one VBLANK and the next.

Basically we need to calculate the object's position, which is dependent upon speed (or how far it can move between Vertical Blanks), which in turn is dependent upon gravity and objects which get in the way! Don't worry if you can't remember those Newtonian equations because this is so easy that you don't need them. Speed is composed of movement in the vertical direction (the y axis) and the horizontal direction (the x axis). These components are added to the x position and y position every VBLANK. Gravity affects only the vertical speed component and so the speed is increased by a constant value every 0.02 seconds. When the object collides with something, the speed needs to be reduced and its direction changed. In this month's program we're only concerned with collisions with the edges of the screen but more sophisticated techniques are necessary for the real program.

I used *Degas Elite* to draw the background picture and the ball. Because the ball isn't rectangular, a "mask" was used (a "mask" is a way of defining the shape within the rectangle). The bits in the mask that are set to one correspond to the bits that are part of the ball, and the bits that are zero correspond to the parts of the picture surrounding the ball that must be left untouched.

The program reads in the *Degas* file at the start, picking up the ball directly from the image. As *Degas Elite* can convert pictures between resolutions this helped me make the program work for all three resolutions (but the medium and high resolution graphics need quite a bit more tidying up).

The ball is displayed on the screen using ➢

C TUTORIAL PROGRAM #3

MAIN LOOP OF PROGRAM

```
/* Get into initial state where only physical screen shows sprite */

DrawSprite(curlog->scrsprite, posx, posy, ball, mask);
Flip();

/* Main program loop */
while (speedx<-speedlimx || speedx>speedlimx) { /* while ball fast
                                                    enough  */
speedy = speedy + fgravity;          /* apply effect of gravity    */
posx = posx + speedx;                /* ball moves to new position */
posy = posy + speedy;
if (posx<=0 || posx>=borderx)        {/* if hitting wall */
     posx = posx - speedx;
     speedx = -speedx/2;             /* bounce and reduce speed */
}
if (posy<=0 || posy>=bordery)        {/* if hitting floor/roof */
     posy = posy - speedy;
     speedy = -speedy/2;             /* bounce and reduce speed */
}
DrawSprite(curlog->scrsprite, posx, posy, ball, mask);
Flip();
UndrawSprite(curlog->scrsprite);
}

Flip();
UndrawSprite(curlog->scrsprite);
```


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GEM, making it easier to accommodate all three resolutions. As we haven't got many objects to move round the screen, GEM is fast enough. In low resolution and when travelling at low speeds the ball's vertical movement isn't quite as smooth as I would like, but we can tidy this up later. If you look at the main loop of the C program listed on the previous page you can see how the simulation and animation techniques are put together.

I had better explain how C structures work, or you won't stand much chance of deciphering the rest of the program. If you know PASCAL, C structures are like RECORDS. A structure defines the data fields that are associated with an object:

```
struct ball_s {
        int x, y;
        int image[16];
};
```

would be one way of defining the fields required for the representation of a ball on the screen. This declaration doesn't actually create any data, but:

```
struct ball_s
```

becomes a user defined type, like "int" or "char." Then:

```
struct ball_s myball;
```

reserves the area of memory that we need, accessible using the identifier;

```
myball
```

Individual fields within the structure are accessible by combining the name of the structure with the field:

```
myball.x = 0;
myball.y = 0;
```

The fields are stored together in memory sequentially. Being able to refer to a whole structure of fields with a pointer is one of the main advantages. This feature enables us to create high level data structures such as linked lists, chains, trees and circular chain. There is a convenient shorthand for accessing one field from a structure whose address is contained in a pointer variable:

```
p->x
```

is the same as

```
(*p).x
```

but gives you a better indication of what's going on; it reads much more like "the field x, in the structure to which p points."

OK, if you've got this far it's time to hack some code. The source code is on the disk so you can uncover all those programming secrets, try out some changes and write your own blockbuster game!

You can compile the program on a 520ST (just), if you run without a RAM disk and without any accessories. Next month I'll show you how to split a big C program into separately compilable modules. After copying all the C tutorial files from the Cover Disk into the "work" folder on your *ST FORMAT Sozobon C* compiler disk, and having run "gulam'," you compile the program by typing:

```
cc -O pinball.c vdifast.a aesfast.a -o pinball.prg
```

You can run the program (pinball.prg) from "gulam" or straight from the Desktop – it works in high, medium and low resolution. If you're lucky enough to own an STE, everything works fine. Have fun! ■

BOOKS! BOOKS! BOOKS!

If you want to understand the BIOS, XBIOS, GEMDOS, VDI and AES operating system calls used in the program, especially if you intend to do any serious programming at this level, it would be a good idea to invest in a book or two. There are several suitable titles but the most widely available and the two I use most are: *Atari ST Internals* by Bröckmann, English and Gerits, and *Atari ST GEM Programmer's Reference* by Szczepanowski and Günther, both Data Becker books published by Abacus Software. These can be obtained from suppliers advertising in *ST FORMAT* for about £15 each.

If you are on a tighter budget, there's the excellent "INF 18" public domain disk from The ST Club. It's packed full of useful documents, such as *The Hitchhiker's guide to the BIOS*, and the *Professional GEM Series* from ANTIC. The ST Club is at 49 Stoney Street, Nottingham, NG1 1LX.

For people who want to learn C fast, there are so many good books with such a range of writing styles that it's probably best to go into your local technical book shop or library and choose the one which is closest to your individual needs. There is only one book that I can whole-heartedly recommend to almost anyone and that is the definitive book: *The C Programming Language*, Second Edition, by Kernighan and Ritchie. Published by Prentice-Hall Inc. It's quite expensive (about £25), but worth it for its authority – Kernighan and Ritchie created the C Language!

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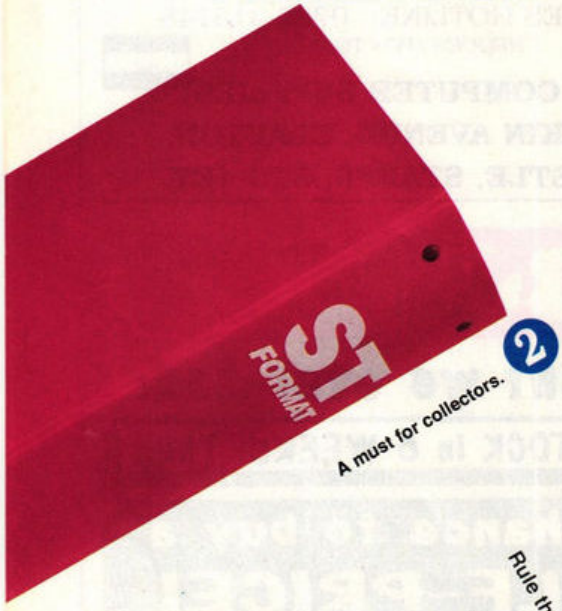

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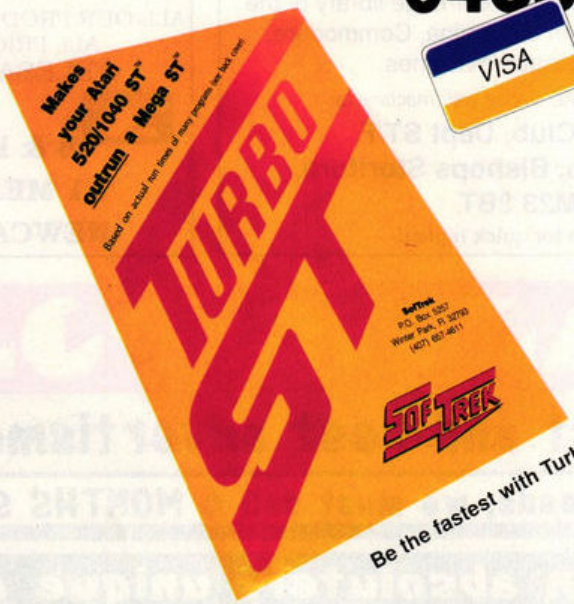

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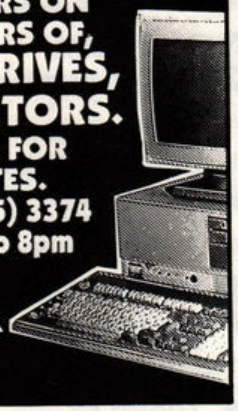

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FEEDBACK

Readers with bees in their bonnets and time on their hands get their point across: the Editor plays a straight bat

Hold it right there

I read your great magazine every month and think you are doing the Atari ST community a great serv–

Hold it! Hold everything right there. Now listen, folks. It's wonderful that you think so highly of us, and don't think we don't appreciate your kind remarks. But if you think it's really necessary to praise us to the skies at the beginning of your letter for us to print it, think again. We try not to print such remarks anyway, so you might as well put them in a PS.

And another thing, while we're on the subject. You improve your chances of getting your letter published and read by upwards of 40,000 readers if you keep it short and simple. I don't know how many times I've read a letter that's a combination of questionnaire, criticism, observation, general philosophising and suggestions for making ST FORMAT even better. So come on people, if you want to get printed, get to the point! Like this next person does...

ST: what a gas

As to C. Christie's letter *(ST FORMAT 7)*, what about us girls who are the subject of sexism in the male owned computer industry?

Come on girls! It's time we made a stand. I'd be grateful for anyone out there in computer land to write to me...

Girls Against Sexism!
C/o Aragon Tanswell
33 Lower Hades Road
Tackley
Oxford OX5 3BE

Best of luck with your crusade, Aragon. Are you aware of a similar campaign that we publicised a few months ago in our news pages (ST FORMAT 5)? OASIS (Organisation Against Sexism In Software) is a one year old group run by Sandra Vogel. More information from OASIS, 3 Alden Court, Stanley Rd, Wimbledon, London SW19 8RD.

Bad for business

I read with interest your articles in the March issue concerning the trials and tribulations of the STE, as my son has a 520 STE which we bought at Christmas.

I thought fairly hard about this, given that new computers are often not all that they are cracked up to be, but decided to take the risk as it was "only" an upgrade of an existing and successful model, with a few goodies like the blitter and chip stereo sound, for much the same money.

The general compatibility problems didn't bother us unduly, as we were starting from scratch (this is written on an IBM), but what really astounded me was that Atari's own Explorer disk doesn't work properly either! It's all very well for Bob Katz of Atari to blame third party programmers for not sticking to the rules, but their own game *Ranarama* doesn't run, and the Desktop supplied doesn't know about the 4096 colours, or how to boot up in medium resolution.

I have written to Atari, who have so far failed to make any response, and although I still like the machine, it seems to me time that the company sacked its Development, Marketing and Support staff, and recruited some people who know what they, and each other, are doing.

This sort of problem is exactly the same reason why the business community (and people like me, who support them) won't take machines like the ST seriously. It's a nice piece of kit, and superior to the PC in many ways, but as long as Atari has the unhappy knack of putting its corporate foot in its mouth and then shooting it (as you so aptly put it) who's going to have enough confidence to specify it? Not me, for sure.

F. James Pickett
Newport
Isle of Wight

You're absolutely right, of course. What is even more galling is that Atari are still refusing to acknowledge publicly the scale of the problems or indeed that it is in any way their own fault. So it's not even possible for us to predict that next time they'll get it right.

£25 UP FOR GRABS!

Address your observations to: The Editor, *ST FORMAT*, Beauford Court, 30 Monmouth Street, Bath, BA1 2AP, marking the envelope "For Publication." We much prefer short, sharp letters that make a point. And there's always £25 up for grabs for the best letter.

If your letter is about a technical problem you should address it to *Desktop*, at the above address. And if it's to do with subscriptions or special offers, address it to Subscriptions/Mail Order, *ST Format*, The Old Barn, Somerton, Somerset.

More STE thoughts

I think it should be pointed out that the STE's problems are gradually being solved. First, *Populous, STOS* and many others are being updated.

But the second and best solution, which no-one so far seems to have mentioned, is to somehow replace the built-in TOS with TOS 1.2 (or TOS 1.09 as it's known in the UK). This could be done by loading the new TOS in memory (at my Atari User Club someone has TOS 1.4 on a disk, so it should be possible to do the same with TOS 1.2).

It could also be possible to make a TOS 1.2 cartridge with a thru port for other cartridges or even replace the built-in TOS ROMs with two sets of ROMS and a switch to swap between them. Personally I prefer the TOS on disk solution because the ROM chips tend to be expensive and may not be needed in a year when STE software will be as common as ST software.

Most of the STE's problems are in fact the disk drive's rather than the machine itself, since its internal disk drive can only read up to track 81 and some methods of copy protection go to further tracks. Using a hardware modification published many times it should be possible to make the internal drive act as drive B and an external drive act as drive A (and to find out how many tracks your disk drive can go up to, use the shareware program Megaformat 1.9 or higher).

I got my STE here in Holland on 17th February 1990 and the correct control panel accessory (16 levels) and the autofolderpatch were both present.

Andrei Ellman
Amsterdam, Holland

Thanks Andrei. But even assuming your solution works, why on earth should people have to go to such extraordinary lengths and cost (and at the same time invalidate their guarantee, incidentally), just to get what they paid for? Because Atari fouled up, that's why.

Time travels

It's immensely frustrating to send for a computer game from a mail order company and receive a letter saying that the game has not been released. I have written three times to a mail order company which advertises in your magazine to purchase *Ultimate Golf* which was reviewed in another ST magazine *(are there any* ➢

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others? – ed.), in their January issue.

I can appreciate the fact that *ST FORMAT* and many other magazines review games very often before they have been released. I feel a possible solution to this is that when your review team evaluate a game they could also include the date when it is due for release.

I am sure that there are many other gamesters as well as myself with the same problem and would appreciate your review team doing this.

What do you think, ed?

Graham Dames
Nottingham

■ In issues 5 and 6 you said you would be having a review of *Space Ace* in the February magazine. Since issue 6 there has not been a review. Why not?

I have some improvements that you can make on your magazine, such as having less adverts, more reviews, and more room on the Cover Disk from 800K to 860K. Also you should have a series on other programming language such as Pascal or Cobol.

David Thomas
Southampton

The problem, I'm afraid, is not within our control. We do not review unfinished games – or, rather, when we do we always state the fact – but there is often a gap between a game being completed and its appearance in the shops. In our preview pages, however, we do not claim to be talking about anything other than games still being written.

Similarly, when we are trying to predict what will be ready for next month's issue we sometimes have to take a guess at what will be finished. Given that it's inevitable that we should be writing those pages some time before the issue appears in the shops, and at times up to two months before a game is planned for release, it's unavoidable that some games "slip" in the meantime.

As for your other suggestions, David, I hope you're aware that, when you take the extensive crunching of Cover Disk programs into account, you're probably getting very nearly, if not over, 1000K of material – that's right, a whole megabyte of mouthwatering wonderfulness!

Fewer adverts? Fine, if you fancy paying more for your mag. More programming language tutorials? They're hardly everyone's cup of tea, and it is our avowed intention to try to give all our readers value for money. So there!

The joy of subscribing

I wish to commend the staff of your Subscription Department for their efficiency. I was very impressed with the speed with which my original subscription was activated and the regularity with which your magazine arrived in my letterbox. I have recently renewed my subscription and again the matter was handled with alacrity.

Your efforts contrast well with a certain American disk magazine to which friends of mine subscribe. Three months after paying the money no correspondence had been entered into. The magazines have now started to arrive but, while it is well into 1990 here it seems that it is only November, 1989 in their office as that is the latest copy received.

David J. West
Yarrabah, Australia

Thank you for those kind words, David: there's no doubt that a subscription is far and away the best way to receive ST FORMAT *every month. And did you know you get your copy several days before it appears in shops the length and breadth of Great Britain? (Er, but not if you live in Australia!)*

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PRIZE LETTER

It's a game Jim, but not as we know it

It's sometimes surprising how different magazines have different opinions on software. I was reading Jerry Glenwright's review on *Starwrek* and he gave it very poor marks.

Yet in another ST magazine *(are there any others? – ed.)* their reporter gave it a very good review saying, "this hilarious parody of the cult series deserves to become a classic..." although he did say it was a bit pricey. So it just proves you can't rely on these reviews before you decide to buy.

J. Cassidy,
Glasgow

It proves nothing of the kind. All it proves is that you can't trust every reviewer or every magazine. Jerry Glenwright, normally such a kind boy, and very good to his mother, spent considerably longer testing the game than it deserved. I can confirm that, of all the poor games released on the ST, this was one of them.

Here, have £25. Try buying it for yourself and see what you think. We'll print your opinion when we receive it.

Medium cool

I own an STE and have found an easy and quick solution for the TOS by not allowing the STE to boot into medium resolution. Simply load into that the DESKTOP.NFO file and go into Edit mode and change the line E 18 12 to E 18 13.

Save the DESKTOP.INFO file onto your boot disk as normal, now reset the computer and insert your boot disk. Lo and behold, your STE now boots into medium resolution!

William Bain
Glasgow

Excellent – if only all the STE's problems could be solved so simply!

Rare first editions

Is anyone out there willing to sell me issues 1 and 2 of *ST FORMAT*, and a copy of the accompanying Cover Disks?

And while I'm at it, any of issues 1-8 of the *ST/AMIGA FORMAT* mags along with copies of the ST-programs on the Cover Disks? I'm willing to pay a reasonably handsome price...

Roy Johansen
Jonas Liesgt 4
N-2800 Gjøvik, Norway

We don't normally allow our letters pages to be treated like a classified ads section, but so handsome was the bribe Roy sent us that we though we'd make an exception just this once.

By the way, anyone interested in a classified/small ads section?

Gissa job

I am in the fifth year at school and wish to pursue a career in journalism. However my greatest interest is in computers and I would like to be able to work for a magazine such as yours, based around computers, although I'm not certain how to get into this type of work and would like to know of any future vacancies there might be in the magazine.

I am studying English language and literature and I am confident of getting a good grade in them both. I would like to know what other subjects would be needed to join a magazine such as yours; would I need exams in computing?

Name and address supplied

We haven't printed your name because it wasn't quite clear from your letter whether it was for publication, but I think the subject is of interest to a fair number of our readers.

Future Publishing, the company that publishes ST FORMAT and eight other computer magazines, employs well over a hundred people, and very few, if any of them, have received a full traditional journalist's training.

I'd suggest the best route is to start by doing as well as you can at school – especially at obviously related subjects such as English and Computing. After that you may choose to go to university or apply straightaway.

Get involved with school or university mags, and try getting letters published in magazines such as this one. Then come up with some brilliant ideas and send them off to the editor of a magazine you'd like to work for.

If you impress an editor enough you'll get to write for him or her, and soon be up and running. (The way to impress an editor is to write well and on time, and do it cheaper than the other guys.)

Having said that, that's not how I got into this job at all, so it's by no means the only way in!

ST clubs together

I would appreciate obtaining an address for a user group in Australia and was wondering if you may know of any.

Bob Lussier
Burnaby, Canada

■ Is there a GFA User Club? It is a very popular language and I would like to join a group. Please could you help.

J Beswick
Biggin Hill

Indeed there is an excellent GFA User Group, which produces a regular magazine and provides a great service. Get in touch with Barry Capel and friends on 0270 256429 (phone between 6-9pm, best between Tuesday and Thursday).

We're intending to start a listings page in ST FORMAT, *so if you want your user group advertised let us know!*

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