

BRITAIN'S LEADING MAGAZINE FOR YOUR ATARI ST

ISSUE 8 ■ MARCH 1990 ■ £2.95

ST FORMAT

COVER DISK 8

GFA RAYTRACE

FULLY USEABLE DEMO
OF THIS SUPERB 512
COLOUR RAYTRACE/
ANIMATION PACKAGE!



NEED HELP? TURN TO **PAGE 19** WHERE ALL IS REVEALED

POWER SURGE!

Upgrade, enhance,
expand, improve,
transform and
speed up your ST

NO COVER DISK? DEMAND ONE FROM YOUR NEWSAGENT!

STE FIASCO: FULL REPORT ON PAGE 11

GAMES: GRAVITY, BLACK TIGER, AUSTERLITZ, KICK OFF+ / LEARN DTP & C /

MUSIC: SEQUENCERS HEAD TO HEAD - PAGE 89 / ANI ST: HOW TO USE IT - PAGE 27



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**THE FASTEST,
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OF THE
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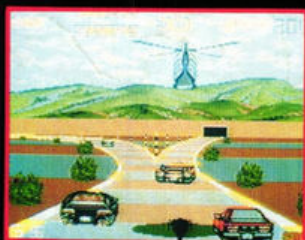
TAITO

**TURBO
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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!

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W 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

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

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ROY ADAM IS BACK!

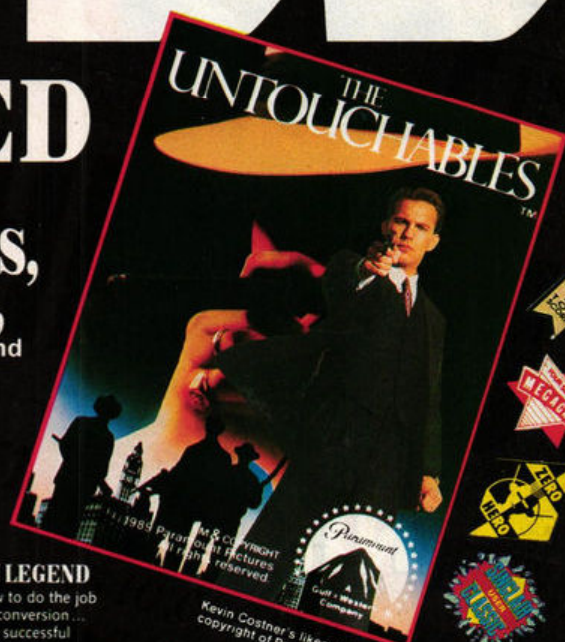
The Hi-jack report came from a DC10 leaving Paris for Boston - Arab guerillas were in control of flight 102 and had turned the aircraft towards Africa... The plane lands in hostile territory and the terrorists begin their demands...

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.



Taito

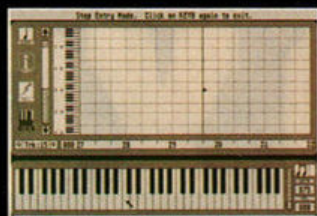
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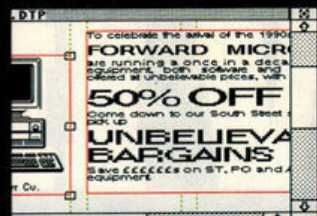
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GET ANIMATED!

**THIS MONTH'S COVER
DISK FEATURES THE
WONDERFUL ANI.ST - A
COMPLETE ANIMATION
PACKAGE THAT USED TO
COST £80. WE GET YOU
STARTED27**



ST FORMAT ■ ISSUE 8 ■ MARCH 1990

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Side A

GFA RAYTRACE Brilliant 512 colour raytracing and animation demo

ANI ST An unbelievable deal! A complete animation package that used to cost £80 (page 27)

TOWER OF BABEL TOWERS Three more testing towers from Microprose's *Format Gold*

C SERIES Complementing our tutorial (page 100)

Side B

MASTER SOUND Special sample mix from Pandaal's monster sound sampling package

SUPER VIRUS KILLER Extraordinary utility that just loves those search and destroy missions

SAVER Nifty memory resident screen saver

FASTCOPY Inject life into your machine with this super-fast copying and formatting utility



■ **On the Cover Disk:** mindblowing 3D graphic simulations with *GFA Raytrace*

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STE FUTURE BRIGHTENS

Following all the doom and gloom stories detailing the incompatibility problems of the STE, *ST Format* can reveal that all is not lost with Atari's latest baby. Software houses are beginning to join the burgeoning band of programmers converting their software for use on the STE.

■ Popular programming team Codemasters have converted their pop industry spoof *Rock Star Ate My Hamster* to take advantage of the STE's graphics and sound capabilities.

Codemasters have adopted a novel drop-down menu system to enable users to select the STE's enhanced graphics and sound. STFM owners can simply play the game as it is. The changes will undoubtedly inject much-needed interest in the flagging game.

■ French coders Titus' latest release includes a special version for the STE, and *Future Wars* from Palace has also been made fully compatible.

■ And Microdeal's *Canvas* (a demo of which is on next month's *ST Format* Cover Disk) is the first graphics package to take advantage of the STE's improved colour range.

These conversions point to a fully software compatible STE by the early summer.

RESOLUTION GLITCH RESOLVED

Another problem associated with the STE is its inability to boot in medium resolution. Many programs such as word processors, spreadsheets and PD applications take advantage of medium resolution in order to provide high resolution displays on colour televisions and monitors. Unfortunately, the STE boots into high or low res only, completely ignoring Desktop information files to the contrary. Luckily this problem was one which Atari quickly discovered and have released a software patch into the public domain, effectively curing the problem. Simply including the fragment of code on a disk enables the

machine to be booted into medium resolution.

Many PD libraries such as Softville (0705 266509) have the patch, but to save you going to the trouble of ordering and waiting for a PD disk to be dispatched, we will include the utility on issue 9's Cover Disk. If you're desperate for an immediate cure, consult the Desktop pages in this issue which contain details of an amendment you can make to the *DESKTOP.INF* file.

GST DENY PROBLEMS

As well as games, several top-selling serious software packages are alleged not to run correctly on the STE, probably the most notable of which is the *1st Word Plus* word processor from GST. Many ST owners use the package, but some STE owners have reported problems with strange combinations of



■ A fully compatible future for the STE?

characters appearing on screen. GST have made preliminary investigations into the problem but have yet to find anything wrong. "We've tested the program with the STE but haven't found any problems", said GST developer David Yemeraliski, "we would like to hear from anyone experiencing difficulties." If you've tried unsuccessfully to run *1st Word Plus* on the STE call GST on 0480 496789.

"WHY WON'T MY GAME RUN ON THE STE?"

To get the most out of a machine the game programmers tend to drive the hardware directly (writes Don Maple). This, in turn, makes the programs extremely sensitive to any changes in hardware. And, you guessed it, that's exactly what's happening now.

The STE contains a number of new chips whose registers are sprinkled amongst the existing ST registers. The first catch is that if these new registers are not correctly initialised an ST program may not run. Conversely, when an ST program inadvertently writes to an address, which on the ST has no effect, this may produce undesirable results on the STE. Because these addresses have no effect on the ST the programmer may not even be aware of this runaway code.

But even if the programming is clean, the next stumbling block is the screen address itself. On the ST this address is specified using only two bytes. The third - low - byte is always assumed to be zero which is why the ST screen has to be on a \$100 (256) byte boundary. The STE, on the other hand, will allow this third byte to be set in order to provide smooth scrolling. An ST program will not initialise this STE register causing two problems. One, if the register contains an odd number - bang - address error! Two, if the register contains an even value other than zero - wham - the picture is not aligned producing an image similar to a bad horizontal hold.

And then there are colours! The STE palette contains 4096 colours which is achieved by adding a fourth bit to each RGB component. If an ST program does not explicitly clear this bit, the resulting STE colour may be random.

COMMENT BETTER A TURKEY THAN A DINOSAUR

Great mysteries of the universe. How is it Michael Barrymore is so popular? Why do the other queues always move faster than yours? How come the best albums never quite fit onto one side of a C90? And, most baffling of all, how do Atari always contrive to snatch defeat from the jaws of victory?

Imagine it. You have, ready for launch, a long overdue upgrade to the base level ST. You unveil it in Germany one month; hide it from an eager public at the year's biggest computer show in Britain the next; and finally release it, quite unexpectedly and without fanfare, in the weeks just before Christmas.

CREST OF A SLUMP

Then, in a quite extraordinary turn of events, the new upgrade machine fails to run dozens of top games, thereby ensuring a certain triumph is turned into disaster. It's quite something to be able to open your mouth, put your foot in it and then shoot the foot.

For the whole sorry story, see page 11. Briefly, the implications are that a large proportion of STEs should be selling to people who already own STs, but who certainly aren't going to be pleased to find that their expensive software library is suddenly decimated. Neither the people upgrading from 8-bit Spectrums and CPCs nor those new to computing are going to be overly impressed with a machine whose main claim to fame is its nomination as Christmas 1989's biggest turkey.

We here at *ST Format* have been inundated these past few weeks with bewildered, frustrated and in some cases furious readers who ordered an ST and opened the box to find an STE. They didn't order one, they didn't expect one, and, now they've seen what happens when they try and load games on it, they certainly don't want one.

DON'T DESPAIR

If, as Denis Norden is wont to say, you are one of those people, do not despair. There's nothing wrong with your STE. In a few months Atari are expected to relaunch the machine, by which time all software houses will be eager to stress their new games are fully STE compatible. They will soon be releasing titles taking advantages of the STE's enhanced sound and graphics.

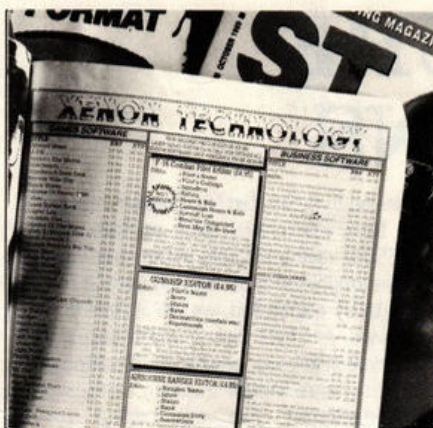
In the meantime this is hardly much help. Take consolation in the fact that at least you're able to upgrade: better a turkey than a dinosaur. Atari clearly intend the ST should be a key player in the home computer market for some years to come, and that in itself is good news. We can only hope against hope that the lessons of this bizarre tale have been learned.

XENON CRASH!

Portsmouth-based mail order company Xenon Technologies have crashed spectacularly, leaving 17-year old proprietor Stephen Lee floundering in a sea of debt. Accountants currently examining Xenon's books say that customers will be partially reimbursed if any cash remains. They stress however that customers will lose money.

Problems started when stocks failed to arrive at Xenon's premises on time, causing a severe cash-flow problem. Kingston CID have stated that they know of no criminal intent surrounding the collapse. Lee "cocked up his business" said a police spokesman: "if the accounts suggest that he has done something wrong then we will investigate, but he appears to have kept well organised books."

Meanwhile Lee's Father is sending letters to all those awaiting goods and is ensuring that cheques and postal orders sent since December 24 will not be cashed. Police advise that anyone who has sent money to the



■ Xenon Technologies: Gone bust!

company should "sit tight" and hope for the best.

If you sent a cheque since the 24th December it will not be cashed, but due to accountancy investigations neither will it be returned. Contact your bank and cancel the cheque. Postal orders sent after the 24th will be returned. If you're still waiting contact Xenon.

If your order was sent before December 24th, write to the company at Xenon Technology, 71 Wadham Road, Northend, Portsmouth PO2 9ED. You will receive an explanatory letter but may not be reimbursed. And don't order anything new from Xenon!

CYBER CUTS

Electric Distribution have announced price cuts across the popular Cyber range of products. A total of 14 Antic products have been reduced including Cyber Studio, Cyber Paint and Cyber Control as well as the human, architectural and future design bolt-on disks.

Reductions range from £10 to £30 providing a significant increase in value for money. Two Migraph products, Easy Draw 2 and Supercharged Easy Draw 2 have been cut by £30 and £20 respectively. In addition, Data Manager Professional from Timeworks is reduced from £69.95 to £39.95. Electric Distribution are contactable on 0480 496666.

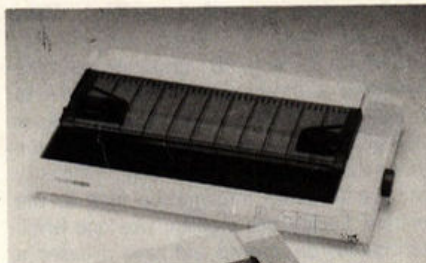


■ Cyber range; reduced in price

CITIZEN GETS SET UP

Printers can be a hazardous stumbling block for novice and experienced computer users alike. Rarely can you simply plug the device into your ST, switch on and print. Software has to be configured, printer drivers chosen, dip switches flicked and by the time the printer's finally ready to do its stuff, you could have written a small novel by hand. But now, respected printer manufacturers Citizen are set to wipe away problems at a stroke with their latest gizmo, the ProDisk24.

ProDisk24 is supplied free of charge with the Citizen ProDot24 printer. Contained on the disk are five utility programs designed to get you up and printing with the minimum of tinkering. The programs include a printer set up program, explanation of printer options and utilities providing greater control of available options. They are menu driven making them simple to use for even the most hardened techno-phobe. Take advantage of a trouble free set-up and call Citizen on 0895 72621.



■ An easy printer set up with ProDisk24

NEWS IN BRIEF...

■ If you're a prospective SEUCKer frantically trying to boot up the *Shoot-em-up Construction Kit*, forget it. For Palace have just announced an error in the program's duplication which successfully stops owners from using the application.

Instructions included with SEUCK tell users to switch on their ST, insert the first disk and double-click on the resulting program icon on the Desktop. In fact, the icon never appears. What you have to do, in fact, is insert the disk *before* applying power to the ST. Switch on and the program will boot. If you have problems, Palace will be exceedingly pleased to help you on 01 278 0751.

NEWS IN BRIEF...

■ Is your mouse on its last legs? Are slow pointer movement and sluggish buttons leading to a marked lack of activity on your Desktop? Basildon mouse experts Romulus Data Systems have the answer.

For an all inclusive price of £5.95 Romulous will replace the switch buttons, clean the rollers (squeaky clean?) and lead and repair any broken internal components.

For £8.50, your mouse will receive all of the above and a new lead.

Contact Romulus Data Systems at 44 Aylett, Basildon, Essex SS14 1UL. Tell 'em ST Format sent you.

NEWS IN BRIEF...

■ Remember when Paradise Computers PD Library offered free condoms with public domain orders? The company that spells tacky with a capital T are now giving away free Easter eggs in a bid to win your custom. All orders over £6 sent before Easter will be accompanied by the chocolate necessities.

Paradise regain a modicum of credibility, however, by including STE compatibility details with their catalogues and testing their full range with the latest Atari machine.

Free catalogues can be obtained by sending a 28p SAE to Paradise Computers, 9 Westfield Crescent, Brighton BN1 8JB.

NEWS IN BRIEF...

■ ST DTPers feeling they've been pushed out into the cold by the Apple Macintosh, the IBM PC and their expensive suites of publishing applications can take heart in the latest DTP package sales figures. A survey has shown that *Timeworks Publisher* has a 34% share of the micro DTP market compared with the Mac's *Pagemaker* at 22%, *Quark Xpress* at 3% and the PC's *Ventura* and *PageMaker* at 13% and 15% respectively.

■ Finally, Digita International wish it known that they use "Environment Friendly" paper in all their packaging, manuals and press releases. So there!

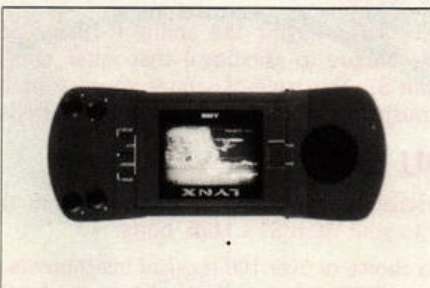
ATARI HAND-HELD SHOWN AT TOY FAIR

Atari UK finally showed the Lynx hand-held games computer at the British Toy Fair in January. Primarily a trade event, the Toy Fair was a springboard for an Atari onslaught on the gift-buying public next autumn.

No official release date has been set for the hand-held games console and Atari were being noticeably reticent about the possibility of a launch date at the fair. However, an Atari spokesman has assured that "...the Lynx will be launched this year and that it will be one of the fastest selling items in this country next Christmas."

Atari have asserted that it's not in their interest to reveal release and pricing schedules due to the large amount of competition from

machines such as the Nintendo Gameboy. When pressed, Atari say that they have noted "a number of rumours of a price around £149" and that they have "found this price acceptable to high street multiples' buyers."



■ The Lynx at the British Toy Fair

CHRISTMAS CHEER FOR ST

As Gallup figures are published for the crucial Christmas period, it's clear that it was a very good Yuletide indeed for ST software sales.

As for the "all important" number one spot, that honour went to Domark's *Hard Drivin'*. It was late appearing and doesn't make the chart at all for the whole December period, but stormed in to take the number one spot. Even more unexpected was the sudden arrival of *Chaos Strikes Back*, Mirrorsoft's *Dungeon Master* data disk. Most extraordinary of all is *Robocop*'s apparently permanent residency in the charts, occupying the number ten spot almost a year after it zoomed to number one.

The ST best seller in December as a whole was *Chase HQ*, hotly pursued by *Batman*.

ST TOP TEN (fortnight ending 30/12/'89)

1. *Hard Drivin'* - Domark
2. *Chaos Strikes Back* - Mirrorsoft
3. *Batman* - Ocean
4. *Chase HQ* - Ocean
5. *Ghouls and Ghosts* - US Gold
6. *Ghostbusters II* - Activision
7. *Bomber* - Activision
8. *Untouchables* - Ocean
9. *Turbo Outrun* - US Gold
10. *Robocop* - Ocean

STEREO SOUND ON THE ST

Much is made of the Commodore Amiga and its stereo sound capabilities. The new STE provides stereo sound - assuming of course that the software you're running is programmed for stereo (and runs!) - but what about STFM owners still suffering dull mono? Just for you Saxon Electronic Supplies have created an add-on "black box," the *Dimension 1*, enabling an STM/STFM to produce stunning stereo effects.

Placed between the computer and monitor, the *Dimension 1* connects to a domestic stereo amplifier (or one of those little 2 watts-per-channel gizmos that a certain high street box-shifter sells) and provides stereo effects from standard mono sound signals emitted from the ST. Games benefit immensely from the new device and do not need to be programmed specifically to support stereo reproduction.

"Hours of stereo fun!" claims the packaging spiel. If this is for you, *Dimension 1* costs £32.50 and is available from Saxon Electronic Supplies on 0455 251197.

COMPETITION NEWS

There were more competitions than mistakes in January's *ST Format*, nearly. The winning entries, pulled from the box with all the ceremonial pomposity the office junior could muster (ie not much), have won prizes ranging from Ferrari F40s (ahem, models) to a relaxing Murder Weekend, top quality camera equipment and foot-stomping CDs. And the winners are:

Hard Drivin': David McIntyre from Edinburgh, S.L. Jones from Cardiff, Nigel Crooks from Yorkshire, John Dodds from East Lothian, and Peter Whittaker from Leamington Spa.

Photofile: Ken Parker from Nottingham.

Hound of Shadow: Matthew Turtle from Cirencester.

Play It Again Sam: Paul Deverill and J.A. Collins from Redditch, Colin Potter from Yorkshire, M.C. Ritchie from London, Miss K Roberts from Bromsgrove, Richard Hope from Crawley, Adam Jones from Croydon, Steve Boyd from Glasgow, Clare Turner from Halifax and the aptly named Mr and Mrs Strange from Luton.

Everyone who wisely bought an ST last autumn found a special edition of *ST Format* snuggled inside the box and a bumper prize offered in the **ST Format Powerpack Competition** - Atari are generously giving away a year's supply of software. The lucky winner of every single game Atari release this year is... **Miss H. Fossett from Romford!**

TECHNICAL EDITOR

COULD YOU WRITE FOR ST FORMAT?

Britain's brightest and best ST magazine is looking for a talented and ambitious writer with a sound technical knowledge of the ST. If you are:

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New "So What" demo from the Care Bears available NOW! (Compatible with the STE)

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QUARTET



THE DIGITAL MUSIC MACHINE

THE DIGITAL MUSIC MACHINE THE POWER OF A MUSIC SYNTHESISER IN YOUR ST

QUARTET is a 4-voice polyphonic music synthesiser, being polyphonic it is the first program to actually allow 4 instruments to be played back at the same time. Quartet turns your ST into a real musical Quartet. It runs on a standard 520 ST and does not require any special hardware. As you become more professional you might want to import your own sounds from Microdeal's "REPLAY" sound sampler and add a keyboard with Midi connections for input of music or playback of sounds.

QUARTET really stands up to its name having the ability to play back four voices simultaneously using programming techniques entirely unique to Microdeal that allow music playback at up to 15 kHz to give unrivalled sound quality from your ST. This style of sample sequencing has previously only been available to professional programmers and musicians, with systems costing hundreds of times more.

WITH QUARTET YOU CAN:

COMPOSE music on the four scrolling staves by either input from the mouse or by playing on a Midi Keyboard/Instrument connected to your Atari ST's Midi ports.

CHOOSE your instrument from a choice of over 100 musical instruments and sounds included with Quartet or import the sound from Microdeal's "REPLAY" sound sampling cartridge. Up to 20 instruments can be selected for playback in any piece of music. Imagine being able to compose your own music for your own Quartet of 2 Violins, a Viola and a Cello, and then being able to change instruments to a Piano, flute, harp and bassoon.

PLAY back from QUARTET'S four channels simultaneously through your Television, Monitor, or for really high quality through Microdeal's "REPLAY" sound sampling cartridge. From "Classical" to "Modern", "Beethoven" to "Bomb the Bass", Quartet will play them all.

QUARTET FEATURES:

- ★ 4 voice sampled music synthesis
- ★ Simple, powerful mouse controlled on-score music editor
- ★ Simple to use slides and loops
- ★ Variable sample playback from 4 to 16 kHz
- ★ Up to 20 samples in memory at one time
- ★ Playback through Television, Monitor or Microdeal's "REPLAY"
- ★ A selection of over 100 sampled musical instruments and sounds
- ★ Use samples from "REPLAY" or any popular sampler
- ★ High quality playback through "REPLAY"
- ★ Sample processor allows filtering and repeating samples
- ★ Simple to add your songs to your own programs
- ★ Includes routines for GFA & Hi-Soft basics, C & Assembler
- ★ Full MIDI compatibility if you own a Midi keyboard
- ★ Digital processing software to change the pitch of samples
- ★ Also supports "REPLAY" professional.

MIDI COMPATIBILITY:

If you have a keyboard or instrument with a Midi Out socket then Music can be entered into one of Quartet's 4 channels by simply selecting the Midi Record mode, whilst you are recording this channel, Quartet plays back any of the other channels previously recorded.

Instruments or sounds held in Quartet's memory can be replayed on your Midi instrument by selecting Quartet's Polyphonic play mode; this allows you to replay up to 4 different notes simultaneously so chords are no problem to Quartet.



QUARTET MAIN SCREEN



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QUARTET ORDER FORM

Quartet is £49.95 post & packing £1 (all prices inc V.A.T.)



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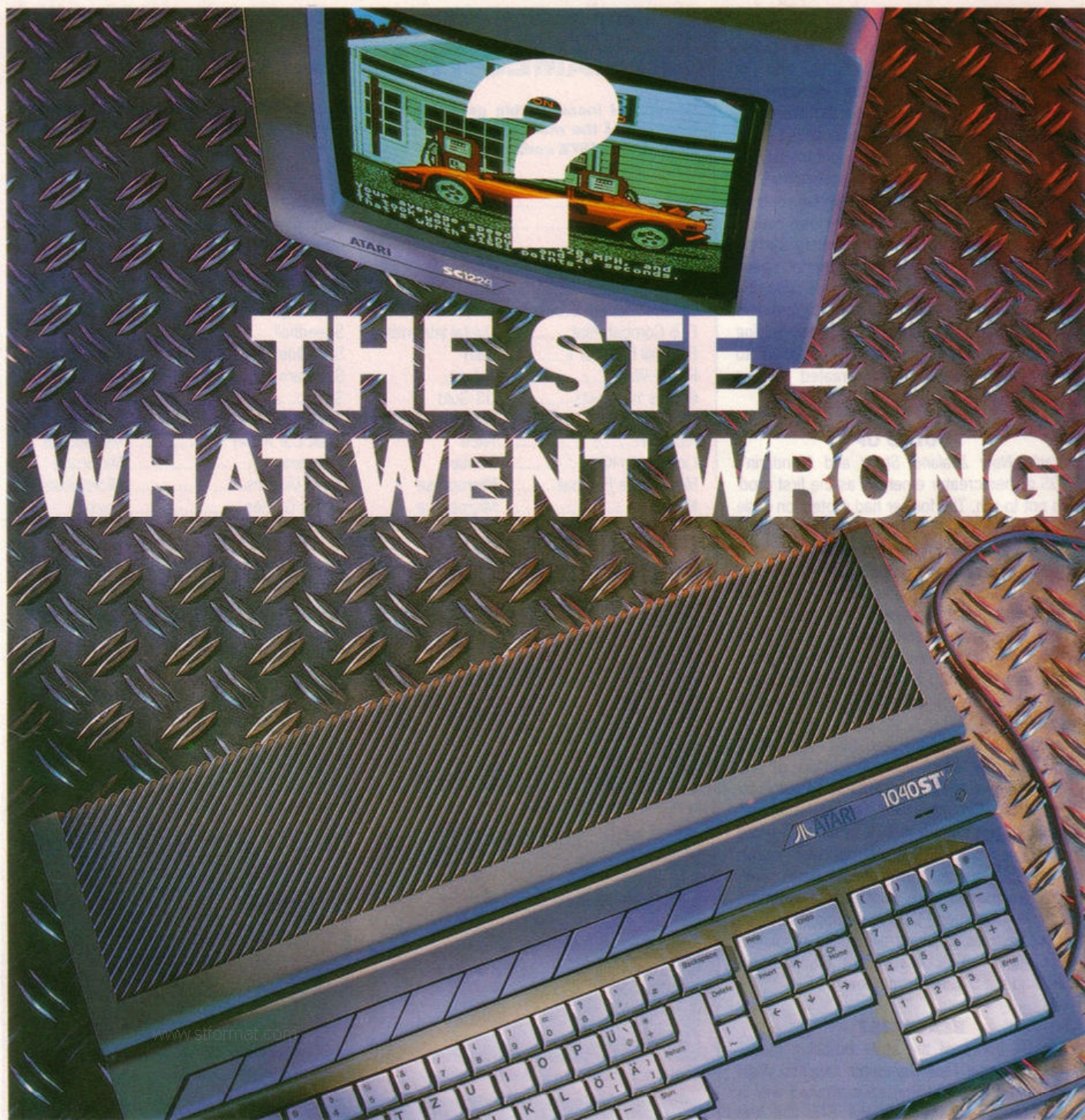
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The STE was going to be an Amiga-beating computer: a machine capable of quite stunning graphics and sound, fast computation, yet priced at a level everyone could afford. Instead of the usual rannygazoo surrounding computer launches, the STE sneaked out of Atari's back door and was discovered by – instead of being forced upon – unsuspecting journalists.

News of the STE's imminent release was reported in the press and, with the exception of one or two disgruntled programmers airing "it won't be supported" views, the machine became popular enough for enthusiasts to wait with baited breath. Rumours about price and availability were rife and everyone wondered whether they could afford to junk their existing ST and upgrade to Atari's latest baby.

Then quite without warning, reports of STEs on shelves started rolling in. The 1040 appeared first, with the 520 following swiftly on its heels. What started as a drip became a

The new enhanced ST was going to conquer the world, but instead became Christmas 89's biggest turkey. We devote a special news feature to the continuing saga of Atari's STE fiasco

STORY Jerry Glenwright

flood, and by Christmas 1989 even the high street box-shifters had shelves positively bulging with STE silicon.

Quiet releases are often used by computer manufacturers attempting to ward off criticism provoked by excessive "crash-bang" advertising campaigns – the maxim is that if you don't set yourself up, then you can't be knocked down.

Unfortunately, during the hands-on review stage, it appears that no-one bothered to test

the machine for compatibility with existing software. When Atari released the 1.09 TOS version a couple of years ago, many PD and "quick 'n' dirty" programs failed to run. PD libraries made note of this in their catalogues so that TOS 1.09 owners could avoid these programs. The STE had a significant TOS upgrade in version 1.6 – was it still compatible? It didn't take long to realise that it wasn't. Gamers, public domain libraries and software houses quickly

noticed games, utilities and business software that the STE simply wouldn't run. Top games such as *Populous*, *Kick Off*, *Strider* and *Rik Dangerous*, evergreens such as *Speedball* and even serious software such as *1st Word* collapsed without regaining consciousness. Suddenly, everyone was panicking about the STE.

Atari had urged software developers to stick to documented operating system routines and not to attempt to patch in their own code – but programmers avoid the operating system all the time in order to achieve greater speed and smoother graphics. Games are also the largest target for pirates, so programmers devise sophisticated software routines relying on undocumented features of the hardware to protect their wares. These created serious problems on the new computer.

FOULED UP

Ocean's *New Zealand Story* and Mandarin's *STOS* games creator emerged as the first products not to run. The former had protection code that fouled up on the STE, the latter's problems remained a mystery but were quickly put right by *STOS* programmer Francois Leionet.

When questioned, Atari's Software Development Manager Bob Katz said, "The main worry is that programmers aren't writing to the ROM which is now larger, and it's in a different place in the memory map. If the programmers have written to our specifications then there won't be any problems".

Although Katz suggested that "[incompatibility]...will only affect a small number of programs, writers of PD have access to technical information through third party sources," libraries assert that up to 80% of their PD could be incompatible. "Some of the well known demos such as the *Union Demo* won't even boot," complained Mike Goodman of foremost PD library Goodman PDL. "I've found that desktop accessories requiring a medium resolution boot-up give an accessory not loaded message, and the STE boots into low res."

BLACKLIST

Within 24 hours of the story breaking in our sister magazine *New Computer Express*, Atari were forced to admit that an estimated one in 20 games wouldn't run on the STE and had asked a major distributor to compile a list of incompatible software. They also released a software patch into the public domain to combat the medium resolution booting bug.

Leading software houses found their foremost titles refusing to load and run on the new machine. Electronic Arts, Digital Integration, US Gold, Microprose and Mirrorsoft all had to re-write existing games. Some titles deemed to be at the end of their shelf life were not updated. Mirrorsoft's *Speedball* and Electronic Art's *Arctic Fox* both fell by the wayside. But top sellers *Ghouls 'n' Ghosts*, *Strider* and *New Zealand Story* were examined and re-programmed within days of recognising the problem.

The main complaint from software houses was the lack of time they'd had to use the machine before it went on sale. Microprose spokesman Martin Moth voiced a common feeling: "The stupid thing about the STE is the amount of time we've been given by Atari. We couldn't foresee this coming because we didn't get our STE delivered early enough."

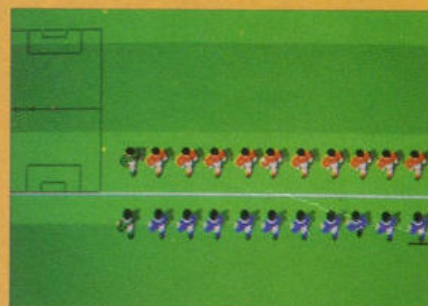
30 GAMES THAT HATE YOUR STE

Reports of incompatible games are pouring in to the *ST Format* office. Here's a brief list of the more popular packages to avoid. STE owners are also advised to look out for "STE compatible" stickers on software packaging.

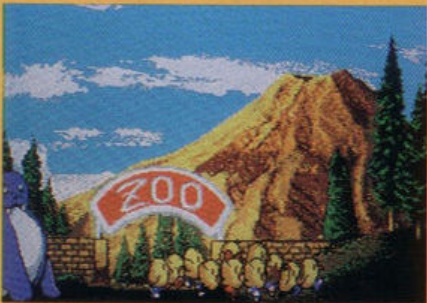
Arctic Fox	Electronic Arts	New Zealand Story	Ocean
Barbarian	Palace	Netherworld	Argos
Barbarian 2	Palace	Operation Wolf	Ocean
Captain Blood	Psygnosis	Paperboy	Elite
Colossus Chess X	CDS	Populous	Electronic Arts
Defender of the Crown	Mirrorsoft	Rik Dangerous	Microprose
F16 Combat Pilot	Digital Integration	Speedball	Mirrorsoft
Football Director II	D&H	StarGlider	Rainbird
Future Wars	Palace	StarWars	Domark
Ghouls 'n' Ghosts	US Gold	STOS	Mandarin
Gunship	Microprose	Strider	US Gold
Kick Off	Anco	Stunt Car Racer	Microprose
License To Kill	Domark	Waterloo	Mirrorsoft
Microprose Football	Microprose	Weird Dreams	Microprose
Mr Heli	Microprose	Winter Games	Epyx



■ WON'T RUN: *Strider*



■ WON'T RUN: *Kick Off*



■ WON'T RUN: *New Zealand Story*



■ WON'T RUN: *Captain Blood*



■ WON'T RUN: *Speedball*



■ WON'T RUN: *Operation Wolf*

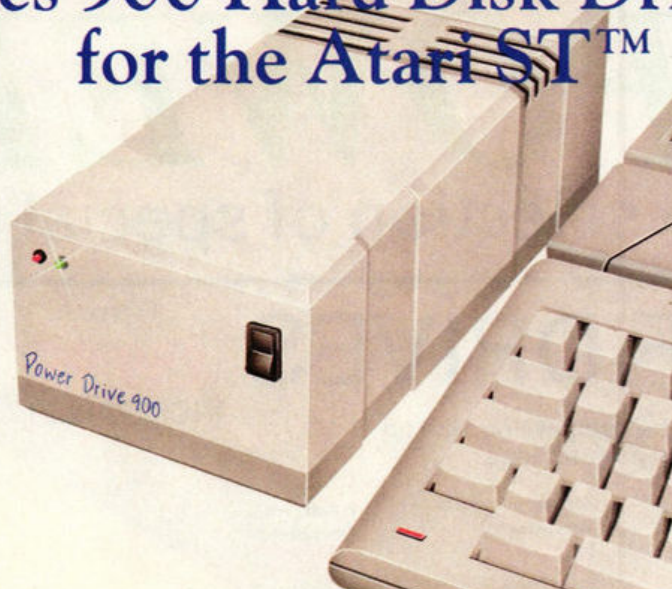
Atari are doggedly denying STE compatibility problems. The company line is that if programmers had stuck to programming guidelines none of the problems would have arisen. Bob Katz is obstinately playing down the fiasco: "We estimate that about five per cent of ST games won't run on the STE. That's about usual with any kind of upgrade. This comes from programmers jumping in and expecting to find everything in the same place in the memory

map as before."

As *ST Format* went to press, rumours about a possible recall of the STE were being emphatically denied by Atari. We'll continue to provide readers with updates detailing the ongoing STE incompatibility story, but advise existing STE owners to hang on to their machines. The STE is a superior-specified, quality computer that will soon receive the attention it so richly deserves from software houses. ■

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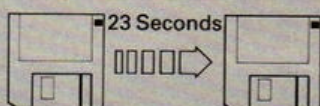
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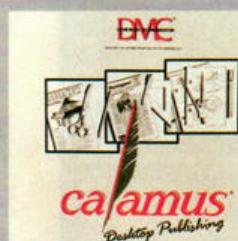
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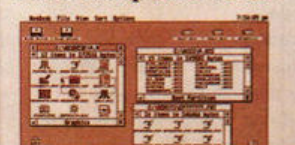
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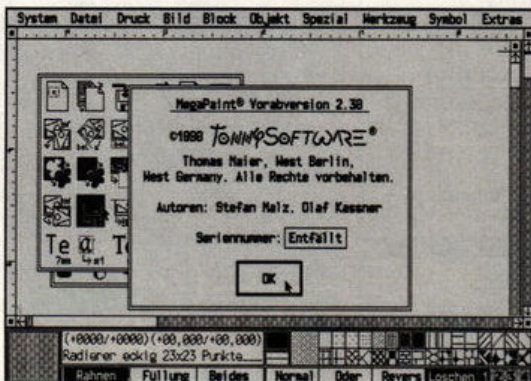
STORY Don Maple

The latest ST news from our man in Dusseldorf

THE ULTIMATE GRAPHICS PACKAGE

West Berlin based Tommy Software have announced what appears to be the most comprehensive drawing/painting package released on the ST to date.

Megapaint II Professional (DM 499: £185)



is both a pixel and an object-oriented drawing program. The program requires a minimum of 1 MByte and runs in monochrome mode only.

The features, too numerous to list in full, contain a picture area of up to 7680 x 7680 pixels, laser printer, scanner, large monitor support, symbol and font libraries, user modifiable pop-up menus and import/export of various picture formats.

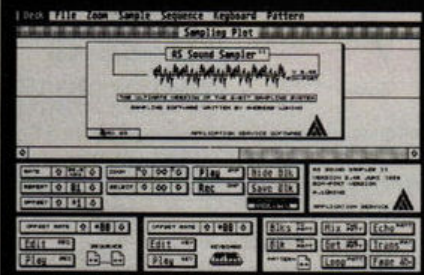
Megapaint looks a serious competitor to Atari's own graphic package, Hyperpaint, and to Signa's recently released O-Line - interested parties can contact Tommy Software on 01049 30 6214063.

■ **Megapaint** (left) is the ultimate graphics package; pixel painting and object drawing in

CD QUALITY SAMPLING

Two new products released by G DATA are AS Sound Sampler II Maxi+ (DM 298: about £110) and AS Sound Sampler III (DM 598: about £220). The sampling resolutions are 8 bits (36 kHz maximum) and 16 bits (45 kHz maximum) respectively. Both devices plug into the cartridge port and contain a level indicator, an anti aliasing filter, LINE IN with preamplifier and LINE OUT connectors.

In addition to assorted sample enhancement and editing, the software contains a sequencer and a MIDI interface. Both samplers are supported with Sound Libraries consisting of ten double-sided disks each and sold separately. G DATA are looking for a British distributor so if you want to be one, or just wish to order directly, call 01049 2323 389858.



■ **G DATA 8 and 16 bit AS Sound Samplers**

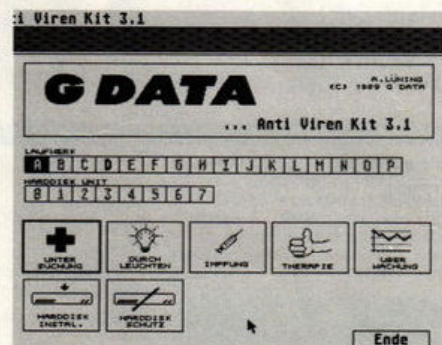
CLEAN UP YOUR ACT!

Anti Virus Kit from G DATA (DM 99: about £35) is one of the most complete virus protection packages available. G DATA provides free updates to existing owners and, since its original release in 1988, AVK has gone through some 20 reincarnations to keep up with the little devils. Currently up to version 3.1, AVK can recognise 19 boot sector and four link viruses. It will also check all internal ST vectors and can restore various game boot sectors.

Hard disks are supported by verification of all eight DMA ports. To top it all off AVK will, if requested, install an accessory on your drive to write-protect desired devices.

So if you want to kill 99% of all known viruses...etc, G DATA are contactable on 2323 389858.

■ **G DATA Anti Virus Kit** (right) provides comprehensive protection for both floppy and hard disks



SNIPPETS

■ Atari Computer GmbH (Germany) has set the date for the 4th International Atari show in Dusseldorf, West Germany, for August 24-26. This exhibition is a major showcase for Atari. Last year it saw the introduction of the TT and STE machines.

Other important shows include COMDEX, one of the major US exhibitions, coming to Paris on April 23-28. In Germany, CEBIT - allegedly the world's largest computer show - is

scheduled for March 20-27 in Hannover.

■ Advanced Application Vicenza have announced **GFA/IIb**, a Basic library to facilitate translation of **GFA-Basic 3.0** programs into **SPC-Modula-2**. The converted programs should be faster than the previously compiled **Basic** versions. Furthermore, using the **SWISS** window manager, several multitasking GFA graphics can be displayed in the same window. For info call 01049 721 700912.

SNIPPETS

SNIPPETS

■ Compuserve, the well-known U.S. online service, is expanding to Europe. It will be offered in the U.K. and Switzerland - the latter apparently in German.

European Atari users will be interested to learn that CompuServe contains several Atari Forums. They will all now be accessible through local gateways, which precludes the need for long distance calls, though there will be a small additional surcharge.

SNIPPETS

■ With 68030 TT on the horizon I took the plunge and ordered the **Motorola 68030 User's Manual**. The one inch thick manual is well organised with detailed descriptions of the processor from both the hardware and software side of things. All for only \$8.90! It's highly recommended and available from Motorola Literature Distribution Centre, 616 West 24th Street, Broadway Building #1, Tempe, Arizona 85282, USA

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Screenshots from ST version



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ST FORMAT

Side A

Side B

- **GFA RAYTRACE** – tremendous useable demo of GFA Data Media's 512-colour raytracing and animation package
- **ANI ST** – a complete animation package offering unbelievable tweening facilities (tutorial page 27)
- **TOWER OF BABEL TOWERS** – three more testing towers to improve Microprose's ace game
- **C SERIES** – source files (tutorial on page 101)

- **MASTER SOUND** – rap to the monster beat of Pandaal's funky sound sampling package
- **SUPER VIRUS KILLER** – extraordinary utility that identifies five viruses, seven anti-viruses, and 133 other boot sectors
- **SAVER** – nifty memory resident screen saver
- **FASTCOPY** – when it comes to copying and formatting nothing beats this devilishly quick utility

COVER DISK

There's over 800K of demos, games and utilities crammed on the ever so palatable *ST Format Cover Disk*. Make sure you taste the delights of this month's feast.

Not all 520ST owners are lucky enough to have double-sided drives. 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.

That jovial chap Rob Northern is responsible for the latest disk format which allows everyone to access the wonderful useable demo of *GFA Raytrace*, the full version of *Ani ST* and all the other exceptional programs on side A. Double-sided owners get a double dose of delicious delicacies with all the dynamic

demos on side A plus the mouth watering utilities on side B. Yum!

To get at side B – assuming, of course, you have a double-sided drive – 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.

Don't dabble with the disk without making a backup first. See page 24 for instructions on how to back up your disk.

GFA RAYTRACE

BY: GFA DATA MEDIA

SIDE: A

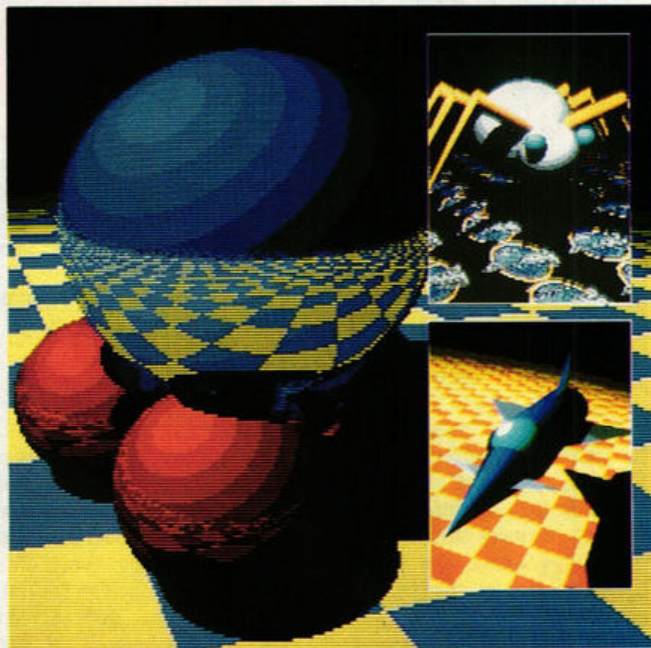
MACHINE: ALL COLOUR STs

FILES: GFA_RAY.PRG,
GFA_RAY.DOC, GFA_RAY.SYS,
BOX.SYS

Fancy that, 512-colour raytraced images on your ST! Raytracing is a technique which adds shading and reflections to images by simulating light sources from various directions. As you can see by the pictures, GFA raytraced images are stunningly realistic and colourful compared to ordinary pictures.

There have been special mode paint packages for the ST almost since day one – however none have offered raytracing and animation combined. The full version of *Raytrace* allows you to generate up to ten frames of raytraced action and then animate them. Unfortunately this feature has been knocked out of the demo, but there are plenty of other options that haven't.

You'll find two main areas within *Raytrace*: the editor and raytrace department. The editor enables you to create a scene with primitive objects and position them



together with imaginary lamps (light sources), the floor and horizon. Once everything is to your satisfaction, the wire-frame is rendered from within the raytrace section in glorious technicolour – or 512 colours at least.

GFA Raytrace can be a little tricky to get to grips with at first,

so follow this brief tutorial to generate a raytraced object.

GETTING STARTED

You'll find **GFA_RAY.PRG** inside the **RAYTRACE** folder. Ensure you're in medium resolution before running this program. To create a simple raytraced image do the following:

■ A full screen image in *GFA Raytrace* takes anywhere between 40 minutes and an hour to produce. Half, quarter and eighth screen size images can be produced to save time. Don't expect this sort of quality the first time, but persevere and you'll soon be producing stunning graphics

■ Click the Add item in the top right corner of the screen with the left mouse button. A new menu will appear.

■ You'll notice an RGB slider towards the middle right of the screen. Click on one of the sliders until you get a colour. Then click on the first of the icons towards the top right of the screen. Hit the right mouse button. Click on the Ground option when the new menu appears. Move the mouse until you notice the line in the Front window is towards the bottom. Press the left mouse button to plant the Ground.

■ Change the colour in the RGB window and then click the right mouse button. Click on Horizon. Moving the mouse causes the horizon to move in the View window. Click the left button to drop the Horizon.

DON'T BE DUMB! BACK UP YOUR COVER DISK NOW! How? See page 24

■ Change the colour in the RGB window and then click on the parallelogram icon. Click the right mouse button, move the mouse, and then press the left button. Move the mouse until a single side of the parallelogram is the shape and size you require. Click the left button to continue. Move the mouse again and click the left mouse button to finish off the parallelogram.

■ Highlight the lamp icon (the last in the group of icons towards the top right of the screen) and then click the right mouse button. Position the lamp somewhere to the left of the parallelogram when viewed from the Front window. Click the left button to continue.

■ Click on the Exit option towards the bottom right of the screen.

■ Click on Raytrace from the menu that subsequently appears.

■ Highlight the number 2 at the bottom right of the screen. Then click on Do Raytracing to render the image. Wait...

That briefly shows you how to create a raytraced image. There are many more features, but it's for you to discover how these work!

Tower of Babel Towers

BY: RAINBIRD/MICROPROSE

SIDE: A

MACHINE: ALL COLOUR STs

FILES: CREATE.TOS,
CREATE.DOC

Another three towers for Microprose's stunning hunt 'n' kill strategy to load into the playable demo given away on issue 6 or the full commercial game. Exclusively designed for ST Format by Pete Cook, the three additional towers will make a challenging game stretch your thought powers to the limit.

GETTING STARTED

You must have a blank disk to use the program provided inside the BABEL folder. Before clicking on the CREATE.TOS program, write-protect the Cover Disk. ➤

WARNING!

The extra towers for *Tower of Babel* are held in a file called CREATE.TOS. When this file is run, the program will attempt to format the disk in drive A and write the three towers to disk. Make sure you have a blank disk in drive A and not the Cover Disk.

ANI ST

BY: JIM KENT

SIDE: A

MACHINE: COLOUR STs

FILES: ANIST.PRG, ANIST.DOC,
CPSCR.TTP, REEF1.NEO,
EEL.STR, FISHLOOP.STR,
FLUER.SCR, FRAGS.SCR,
LITTLSEA.SCR, PLANTLOO.STR,
PLTLOOP2.STR, TETRA.STR

What an unbelievable deal! The complete *Ani ST* on the ST Format Cover Disk. *Ani ST* was, until a short while ago, called *Aegis Animator* and sold for around £80 by the US software publisher Aegis. Jim Kent, author of *Aegis Animator*, recently retrieved the rights to the program and decided to place it in the public domain. What a nice man.

So what you've got on this month's disk is the complete *Aegis Animator* (the name was changed for legal reasons). There's nothing missing. In fact, the only change to the program is a fix which cures a problem with GDOS. As for the manual; there's a very comprehensive help file on the disk. And, as if that wasn't enough, Mark Pickavance reveals all the tricks and treats of the package in his tutorial on page 27.

Unlike other animation software, *Ani ST* does not base its animation on sprites – though sprites may be included if desired. The best way to understand *Ani ST* is to think of it like a CAD system. Images are constructed from objects like lines, circles, stars and squares.

Objects are stored in a list which contains size, colour and position details. The animation is created by changing these factors.

The things *Ani ST* does best



■ Neochrome or Degas backdrops can be loaded into *Ani ST*; polymorphic objects can then be added on top



are transformations from one shape to another. It achieves polymorphic animation by using an in-built function called tweening. This means that you only have to create the key positions in the animation and the program will generate all the pictures in between.

GETTING STARTED

Double-click on the ANIST folder. Inside you will find a file called ANIST.DOC. Double-click on this file to get a good idea of how the software works. If you're itching to continue, double-click on ANIST.PRG. Click on the disk icon when the work screen appears (it's above the exit

■ All functions are accessible from *Ani ST*'s main work screen

icon). Click on the extension .SCR when the file selector appears. Then click on the filename LITTLSEA when it shows up. Next click on load. Click on the close window icon in the top left corner of the file selector window. Click on the large movie camera icon towards the bottom right of the screen. Sit back and enjoy.

Read the comprehensive instructions on the disk to find out what all the other features do.



■ This sequence is easy to produce with *Ani ST*: read Mark Pickavance's tutorial on page 27 to find out just how easy it is

New Products

Spectre GCR

The only 128K Macintosh™ Emulator

Spectre GCR is the long-awaited sequel to the Spectre128 Mac™ emulator, itself immensely popular because of its support for the 128K ROMs, allowing you to run the majority of up-to-date Macintosh™ programs.

Now comes Spectre GCR which allows you to read and write Mac™ disks using your Atari ST's disk drive! Transferring data from the Mac™ to the ST and vice versa is now a snap; no more fiddling with serial leads and comms programs, just push in the disk!

Spectre GCR runs all your favourite programs like Pagemaker 3™, Quark Express™, Aldus Freehand™, Microsoft Word 4™ etc. on your ST and you get a 30% bigger screen and 25% more speed (than a Mac Plus™).

Spectre GCR works on all Atari STs with 1Mb of RAM or more, supports all regular SCSI hard disk drives and costs only £389 including VAT. Please phone or write for full details, or to get in the order queue!

Macintosh and Mac are trademarks of Apple Computer Inc. All other trademarks recognised.

KnifeST

The Ultimate Disk Recovery System

KnifeST is all you need to recover files that you thought you had lost forever, to learn and understand how ST disks work or to simply enjoy a good hack! Some key features are:

- Works with floppy, RAM and hard disks
- Copies damaged disks sector by sector, ignoring bad data
- Extensive File Allocation Table (FAT) utilities
- Full statistics on directories, BIOS parameter blocks etc.
- Formats a wide range of ST & IBM PC disks
- Powerful 'Build File' commands for easy recovery of files
- Undelete program restores many deleted files, instantly
- GEM-based for ease-of-use and convenience
- Full printer support

KnifeST can edit many disks that can be physically read on the ST e.g. those of the Archimedes and Sinclair QL and can also read entire tracks, including sync bytes and track address fields. You can even run other programs from within KnifeST. Comes complete with a 64 page manual full of information and help on ST disks and costs £29.95 inclusive.

Both Shipping Now!

KnifeST and Spectre GCR are just two of our growing range of software products for the Atari ST. Other titles include: DevpacST (£59.95), HiSoft BASIC (£79.95), Power BASIC (£49.95), HiSoft C (£49.95), FTL Modula-2 (£99.95), TurboST (£34.95), Tempus 2 (£39.95), CRAFT (£49.95), WERCS (£29.95) & many more.

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CREATE.TOS formats a disk to Babel specifications and write three towers to the disk.

Be very careful not to format the Cover Disk. Future Publishing will not be held responsible if you mess up your Cover Disk or any other disk. Follow carefully the instructions that appear when you run CREATE.TOS.

C Series

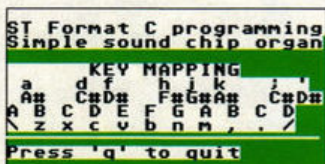
BY: WARWICK GRIGG

SIDE: A

MACHINE: ALL STs

FILES: C_SERIES.DOC,
MUSIC.PRG, SOL3.PRG,
SOL4.PRG, SOL6.PRG, MUSIC.C,
SOL3.C, SOL4.C, SOL6.C,
WORDS.TXT

The second of Warwick Grigg's C tutorials can be found on page 100 of this month's *ST Format*. To save you typing in the lengthy program listing, Warwick has provided the source files on the disk. Don't worry if you don't have a C compiler; compiled versions of the programs are also on the disk.



■ Using C (page 100) to turn your keyboard into a piano

GETTING STARTED

Double-click on the C_SERIES folder. Inside you will find numerous files. Anything with the file extension .C is a C source file; this can be loaded into your C compiler and compiled. Anything ending in .PRG is a directly executable file. The C_SERIES.DOC provides you with further notes on this issue's tutorial.

Master Sound

BY: PANDAAL MARKETING

SIDE: B

MACHINE: ALL COLOUR STs

FILES: MASTER.PRG,
MASTER.DOC, MASTER.PI1,
MASTER.SEQ, MASTER.TXT,
FONT.PI1

Master Sound had a very shaky start in life – but that's all in the past. Software Horizons originally marketed the product, but sadly went into liquidation. After months of uncertainty Kempston/Pandaal Marketing stepped in and the product's future is now assured.

The complete package consists of a hardware cartridge



■ Shake your funky thing to Pandaal's Master Sound

and comprehensive sampling, editing and sequencing software. For a full run down of Master Sound's features refer back to issue 1 of *ST Format*.

What you'll find on the disk is a great sequence of sampled sound. The mix, lasting many minutes, is a real treat for your ears.

GETTING STARTED

Get to side B of the disk by clicking on the folder SIDE_2. Be warned, if you have a single-sided drive you won't be able to get to the second side. Double-click on the MASTER folder and, once inside double-click on the MASTER.PRG file. Clean your ears out and listen.

Super Virus Killer

BY: PUBLIC DOMAIN

SIDE: B

MACHINE: ALL STs

FILES: VKIL.PRG, VKIL.DOC,
VKIL.RSC, VKIL.INF

What a fantastic utility! Not only can it detect (and kill) five different boot sector viruses, distinguish seven anti viruses and 133 other types of boot sector (commercial games, odd formats and so on), but it also lets you add intros with your own messages onto the bootsector.

The Super Virus Killer detects the ACA, Ghost, Mad, Signum and Fun viruses. Anything suspicious is highlighted.

It's possible to store a boot sector as a file, load a previously saved boot sector and install it, display the contents of the boot sector in ASCII or hexadecimal and see the disk BIOS parameter block.

In addition to that lot you can write a special intro to the boot sector which will flash colours and scroll a message. There are six

types to choose from:

■ Rasters and Message – this neat intro scrolls colour bars onto the screen with a message of your choice.

■ Bladerunners – a variant of the above.

■ English Anti Virus – makes disks unattackable by viruses, but also spreads itself onto un-immunized disks like wildfire.



■ You can check the boot sector of any disk and view the contents in ASCII or hex before wasting it or waving it by

■ Medway Boys – a simple boot sector that checks memory for any viruses or reset-proof programs.

■ NeoChrome Picture Booter – place a NeoChrome format picture into the root directory of your disk, tell the program the filename to search for and add a message on boot.

■ Mega Colour Bars – an explosion of colours occurs when you boot.

WARNING!

You must be very careful when using Super Virus Killer. Only check standard ST format disks. And only write boot intros to disks that you've made a backup of. Future Publishing will not be held responsible if you mess up your cover disk or any other disk.

GETTING STARTED

Enter the SIDE_2 folder. Double-click on the VKIL folder and finally double-click on the VKIL.PRG file.

Insert a disk you wish to check for a virus or add a boot intro to (remember it must be a GEM ST formatted disk or one you've made a backup of) and click on one of the options in the menu bar.

Saver

BY: URI GOLAN

SIDE: B

MACHINE: ALL STs

FILES: SAVER.PRG, SAVER.DOC

This utility allows you to save the contents of the screen as a Degas picture file. The program is memory resident so it's possible to grab screens from within many applications and even some games.

GETTING STARTED

To install the program, double-click on SAVER.PRG which can be found inside the SAVER folder. A message will appear telling you if the installation was successful; press a key to continue. Run the application or game of your choice. At the desired spot in the application or game press both Shift keys simultaneously. The screen will turn black and you'll be asked to enter a character to be used as the picture's filename. Insert a disk in the drive with at least 32K bytes free before pressing Return. The original screen will be redisplayed and saved in Degas format with the proper extension. After saving has ended, the program will wait for you to insert the original application or game disk. Press a key to continue.

Fastcopy

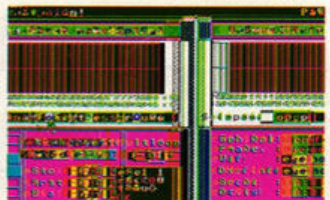
BY: PUBLIC DOMAIN

SIDE: B

MACHINE: ALL STs

FILES: FCOPY2_1.PRG,
FCOPY2_1.DOC

Not only does FastCopy allow you to copy disks using one or two drives, but you can specify how many tracks to copy and whether or not the destination disk should



■ All the options you need to copy or format ST disks at high speed are in the amazing FastCopy

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be formatted.

Formatting is possible using nine or ten sectors per track and, if your disk drive can cope, can go all the way to 85 tracks.

You'll find comprehensive help in the documentation file on the disk. Ensure you read this before proceeding.

GETTING STARTED

Double-click on the SIDE_2 folder. Find the FCOPY folder and double-click on it. Finally, double-click on FCOPY2_1.PRQ to start. By all means experiment with all FastCopy's features – just make sure you've got an unimportant disk in the drive when you start. ■

WARNING!

Formatting completely erases anything on disk. Do not fiddle with FastCopy's formatting options while you've got the Cover Disk or any other valuable software in the drive. A slip could cost you considerable anguish.

Once again, Future Publishing cannot be held responsible if you screw up your Cover Disk or any other important disks.

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 between 4pm and 6pm on weekdays 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.

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:

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

READING DOCUMENTATION FILES

In virtually every folder on the Cover Disk you'll find 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 (or .DOC file) simply double-click on the file. 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 will halt. Pressing return will scroll you up a line while pressing space will scroll up a complete page of text. Pressing Q or Control C will return you to the Desktop.

Future Publishing CANNOT be

held responsible for improper use of any programs on the Cover Disk. Basically, if you wreck your disk collection because you failed to read a help file, it's tough. Your problem, etc etc. Be sensible, follow the instructions, and you won't have any trouble.

Next month: how to give up smoking in 15 minutes with the ST Format thumbscrew.

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!

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

March disk returns,
Discopy Labs Unit A,
West March, London Rd,
Davant, Northants NN11 4NA

DO NOT SEND YOUR DISK TO ANY OTHER ADDRESS OR YOU WON'T GET IT REPLACED

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: _____

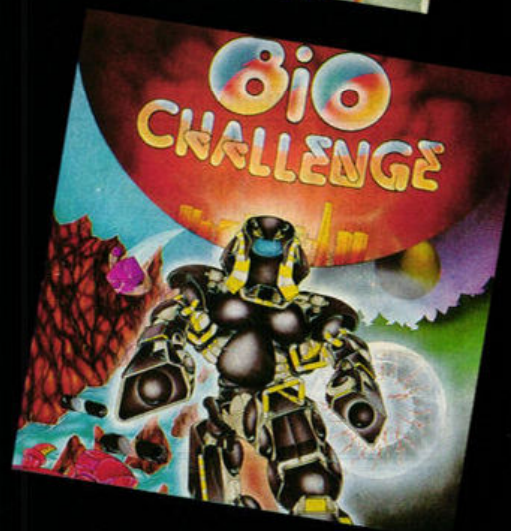
Don't forget to: ■ Enclose an SAE ■ Include on-disk and paper documentation ■ Write your name and address on the disk ■ Use a virus-free disk ■ Avoid exposure to deadly radiation

Please sign the following declaration: This program is submitted for publication in ST Format. It 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.

A POWERFUL PACK OF FOUR



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GET ANIMATED!

STORY Mark Pickavance

On this month's *ST Format* Cover Disk you're lucky enough to get the best of the few animation packages available for the ST. *Ani ST*, previously known as *Aegis Animator*, written by Jim Kent, gives you animation options not possible on any other package. Now you have your own free copy, *ST Format* presents a tutorial using *Ani ST* to create metamorphic polygon animation.

Aegis Animator was one of the first animation packages available when the Amiga A1000 was launched in late 1985. This was the true dawn of the 16-bit era; everyone marvelled at the resolution and colour of the graphics, gloated over the sheer power of the 68000 architecture, and yes, gasped at the frequency with which the Amiga curled up its software toes and Gurued a fond farewell. Some things just don't change, do they?

The Amiga's pre-occupation with resigning from active service during an important operation – like saving your work to disk – made any serious use of *Animator* impossible. Fortunately Jim Kent made a bold move and converted *Animator* onto the ST. Then in 1987 he wrote *Cyber Paint* which filled in the "bit map" side of *Animator*. Both programs have their own strengths – each can do things the other can't – and perhaps one day, who knows, they may even be combined to make an amazing animation package.

The main limitation of *Animator* was that you couldn't port the animation to any other system, but when Jim Kent wrote *Cyber Paint* he put an "Animator to Cyber sequence" conversion utility on the disk.

IF YOU DON'T OBJECT

So what makes *Ani ST* so special? All other animation software on the ST uses sprites – drawn images – which you must generate in order to produce animation. If you've read any of our animation tutorials you'll be familiar with the fundamental ideas surrounding moving graphics. If you haven't then shame on you – better get those back issues of *ST Format* now!

Ani ST doesn't base its animation on sprites, though they may be included if you desire. The best way to understand *Ani ST* is to think of it as being like a CAD system. The images are constructed from objects, lines, circles, stars and so on. The objects are stored in a list together with their size, colour and position. The animation is created by changing these factors. The software looks up a table of ingredients for each frame in the animation and creates that picture.

Close the door, turn down the lights, insert the Cover Disk and get down to some serious polymorphic animation with our Ani ST graphics tutorial

This system has advantages and disadvantages. The things it does best are transformations – from one shape to another. It achieves polymorphic animation using an in-built function called tweening. This means you only have to create the key positions in the animation and *Ani ST* generates all the frames in between. A by-product of this technique is that the file sizes and the amount of memory used are small.

Unfortunately it can't do very detailed animations. I wouldn't consider trying to create a character animation using *Ani ST*, it's just not suitable.

The document supplied with *Ani ST* is fairly comprehensive. It explains how each of the options work and how they combine to create an animation sequence. What I want to cover is what the text doesn't tell you.

The *Ani ST* document states that if you set the "global speed" to certain values then the

animation takes exact times. This is true, but not the times it suggests. I assume the reason for this is that Jim Kent is American, which means his ST would be running off a 60Hz power supply – not 50 as we have in the UK. This would also explain why he uses jiffies as a measurement (a jiffy is 1/60 of a second, not a popular condom as some people would try to make you believe). Only experimentation will lead to animation with exact timing.

As with all animation, good results come from forward planning. If you don't set out your ideas before you begin you may well find yourself in a muddle. One area which causes major confusion using *Ani ST* is the precise order in which you perform your actions. An example;

Create a STAR in the top left of the screen. Move it to the bottom left.

View at start.

Rotate it.

When you run this animation you may be expecting the STAR to move to its new location while rotating – wrong. What happens is that the STAR moves along the path but rotates around the starting point, resulting in it moving to a totally unpredictable position. What you need to do is this;

Create the STAR.

View at start.

Rotate it.

Move it to the bottom left.

This produces the desired effect. If you're not sure that the modification you're going to make will produce the intended effect then save your work. You can use UNDO, but your changes may involve several stages, so be prepared. Everything you do will have a knock-on effect later in the animation.

COSMIC ANIMATION

In the *Ani ST* document it briefly mentions that the animation SCR files are in ASCII (text) format. What it doesn't tell you is that you can create animations within a word processor, as long as you understand the language of *Animator*. This is the animation file of the STAR example;

```
*script STAR.SCR 1 320 200
```

```
*version 16
```

```
*ground_z 512
```

```
*speed 32
```

```
*tween 0 199 199 5
```

```
*act INIT_COLORS -1 0 16
```

```
(0 0 0) (224 0 0) (224 160 0)
```

```
(192 224 0)
```

```
(0 224 0) (0 160 192)
```

```
(128 96 224) (192 0 224)
```



■ Confused? Load up the *ST Format* Cover Disk and follow the instructions in the disk pages. Click on the *Ani ST*.prg file and you're presented with the palette. Choose your option and colour and get animated – it's all downhill from here!

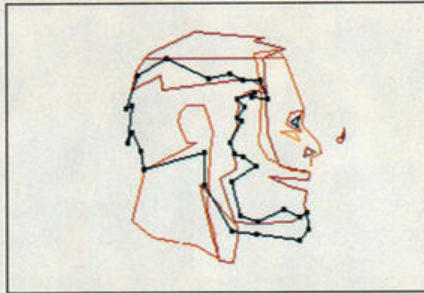
EVOLUTIONARY ACCELERATION



■ Each element is just one polygon



■ The loop manipulates the shape



■ Use ghost mode with complex shapes

```
(160 96 0 ) (128 96 96 )
(32 128 32 ) (192 160 64 )
(96 96 128 ) (128 128 160 )
(160 160 192 ) (224 224 224 )
*act REMOVE_BACKGROUND -2
*act INSERT_POLY 0 0 1 10 1 0 0
(72 32 512 0 ) (64 22 512 0 )
(66 10 512 0 )
(55 15 512 0 ) (43 9 512 0 )
(45 21 512 0 )
```

ters. By experimenting I'm sure you'll be able to work out the basic instructions.

As I said at the beginning, *Ani ST* can do things that no other package can. To show these features off I've devised a small example. The idea was borrowed from an Amiga demo, though my *ST* version is much better – as you'd expect.

This is the basic idea: a side view of a Neanderthal human head transforms into a

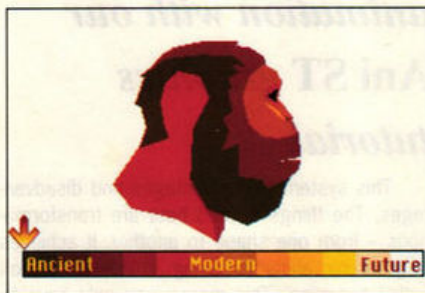
third shape it's necessary to "next tween" so that the system understands that all changes from this point onward are performed on the modern man image, not the Neanderthal. If this hadn't been done my prehistoric man would have changed into a future man without ever becoming a modern man.

Once these key designs are complete the animation between each stage is generated by *Ani ST* without any further input. I was pleased

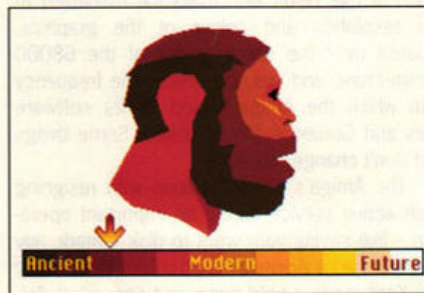
USING ANI ST



■ Using the fast menu speeds things up



■ The evolution from ape man...



■ that took millions of years...

```
(35 31 512 0 ) (48 32 512 0 )
(53 45 512 0 )
(59 33 512 0 )
*act ROTATE_POLY 0 54 25 512 0 0
-842 0 0 16384
*act MOVE_POLY 0 221 137 0
```

If you understand what all the *act functions do and what all the numbers mean then you can produce animation outside *Ani ST*, and you can fix mistakes in *Ani* generated files. I'm not going to detail what each command does because they're too numerous and have many parame-

modern Homo Sapiens and finally into a future man, Homo Superior. This gives us just two tweens with three images to move between.

The head and hair were styled from a polygon, making sure I had sufficient points to carry out the transformation I required. This involved using the easy metamorphic tool – the loop. With this I could pull each point to its new location. After all the polygons had been "morphed" to their new positions I tested the animation by clicking on the small camera icon (fast menu).

When the first change was completed I added a tween. To make the changes into the

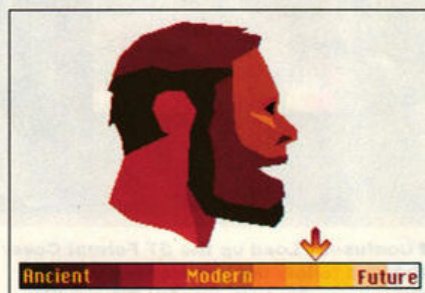
with the results but the presentation wasn't quite what I'd intended. The animation didn't hold at the start or end and needed a pause in the middle. Some additional graphics would have to be created and the timing of the animation extended.

One feature lacking is the ability to insert a tween. You can only add one on the end, which is fine until you need one at the start or middle. Although *Ani ST* wouldn't insert a tween for me, all was not lost: I could always edit the SCR file. For this to work you must at least comprehend how the *tween command works.

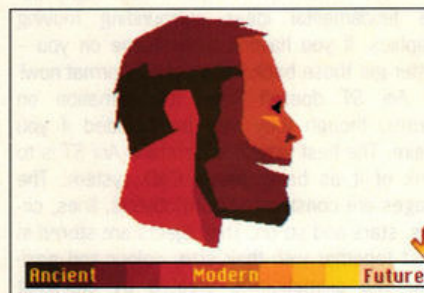
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It has four parameters a,b,c and d. It works out d first: it's the number of " commands between this tween and the next. The value of c is always a + b, and a is always the c from the previous tween and is 0 in the first tween. The value of b is a constant 199, which means c increments by 199 every tween.

If you're looking for logic in this, don't worry, I couldn't find any either. The upshot of it is that if you insert a tween you must alter all the numbers to the above rules - but at least it's possible. One additional modification: the

very first line must also be changed. The form is ***script STAR.SCR 1 320 200**, the number after the name of the file is the total number of tweens - count up the *tween's if you're in any doubt. As a matter of interest the two final numbers are horizontal and vertical resolution respectively.

Following these instructions I was able to insert a tween in my animation so it started with a static display before movement began. More tinkering gave me another tween in the middle, which meant I could pause the sequence.

DEGAS AND DARWIN

My animation required a scale showing at what stage the head was in the evolutionary process. I created two sprites on a Degas format screen, loaded them into Ani ST and re-saved them in the CEL format. From here it was a straightforward operation to position them at the start of the animation and then move the arrow in sync with the transformation.

Using Ani ST is a real pleasure once you understand the approach to producing animation. Using this technique, you can produce long, complicated sequences which occupy little memory or disk space. My "evolution" animation example takes up only 12k and this includes the CEL files. With these advantages and a free animation package, you've no excuses left, load up the Cover Disk and get animated!

NOW IT'S YOUR TURN

Create an exciting graphic sequence using Ani ST and you could win £25 and appear on the ST Format Cover Disk. Forget the Tate Gallery - we have something far more prestigious in mind. We'll be putting a selection of the best entries on the peerless ST Format Cover Disk which will guarantee you a lifetime of hassle from the paparazzi. We're looking for original ideas, so start exploring your ST's graphic potential!

Entries should arrive before 31st March 1990 and be addressed to:
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GET THE MOST OUT OF ANI ST!

GUIDELINES FOR SUCCESS

To get the most out of Ani ST you should remember the following guidelines. Using these simple rules will prevent unnecessary mistakes, muddles and hours of maddening frustration. Remember how those ever-so-bohemian artists used to destroy their canvases in outbursts of frustration? Well we wouldn't want you to set fire to your ST just because you forgot to save your file.

- Plan your animation before you start. If you have a clear idea of what you're aiming for, there's less chance of getting confused
- It's always better to have excess tweens than too few
- If you're unsure of the effect a certain action will have make sure you save the file
- Successive rotations will eventually distort a polygon, so don't expect complex designs to fit exactly after being rotated
- Beware of combined movement - you can easily end up with objects off the screen where you cannot get to them
- Coloured CELs look very good but slow down the animation - use MSK graphics if colour is not critical
- Finally always keep a copy of the original SCR file if you start editing it by hand - you may get confused and trash your file

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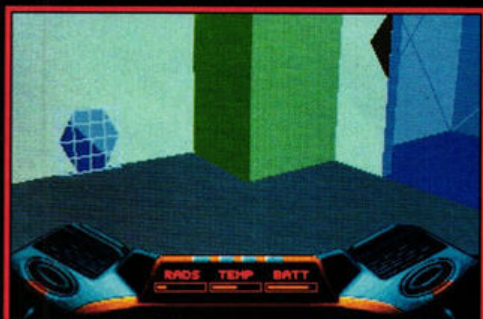
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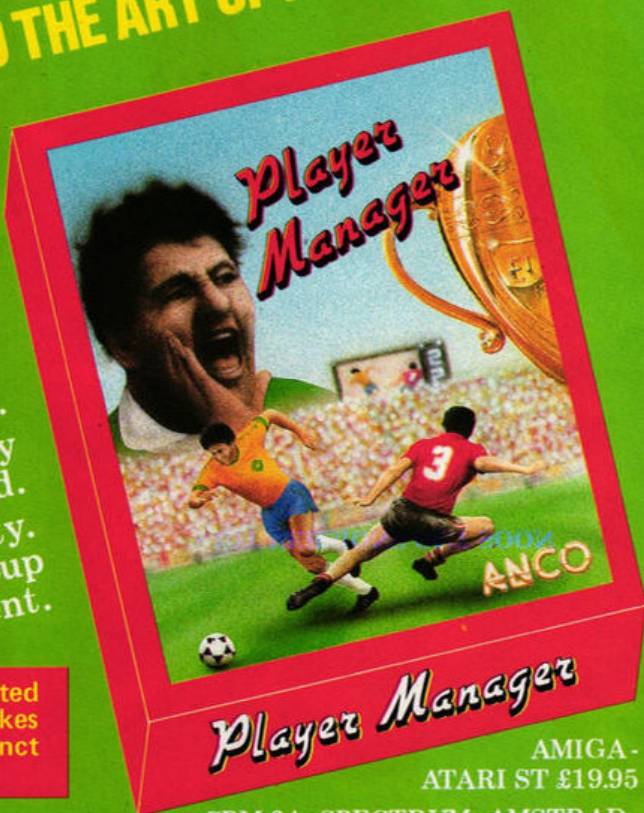
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Player Information			
Name	Z. Barnes		
Position	Midfield	Skills	
Age	21	Passing	111
Height	180 cm	Shooting	41
Weight	81 Kg	Tackling	60
Pace	181	Keeping	23
Dexterity	106	Morale	108
Stamina	128	History	
Resilience	149	Injuries	This Wk Last Wk
Temperament	143	Goals	0 1
Work rate	84	Matches	10 10
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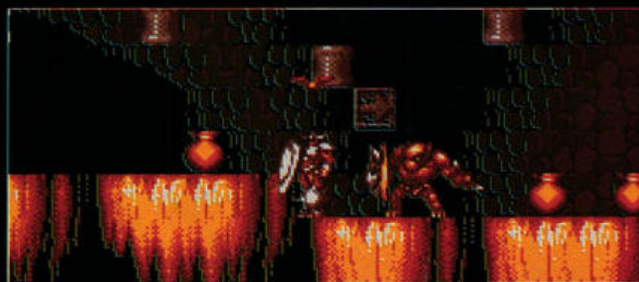
WELCOME TO THE BEST IN ST ENTERTAINMENT

SCREENPLAY

It's truly gratifying to observe the steady climb in quality of ST games. We're beginning to see the first signs this month of a new surge in innovative software such as the addictive *Rings of Medusa* (p40) and the inventive *Gravity* – catch the full mammoth review (p42). But we haven't waved goodbye to the traditional games. This month sees Peter Turcan's latest wargame *Austerlitz* (p48) and US Gold's delayed Capcom conversion, *Black Tiger* (p35). If you want the first, definitive reviews, you've come to the right place. Nobody does them better



■ Go hunting Outies in *Gravity*'s unique space environment and catch our Herculean three-page special on page 42



■ *Black Tiger* finally makes it from the arcades to the ST – was it worth the wait?



■ *Rings of Medusa* is Starbyte's new adventure



■ Replay Napoleon's finest battle in *Austerlitz*

THE ST FORMAT RATINGS SYSTEM

GRAPHICS

The ST is capable of some superb graphics and animation: the last thing you want is crummy 8-bit graphics with tiny sprites and jerky movement. The graphics rating takes both still and moving graphics into account.

SOUND

Your ST holds the power to output some great audio effects – not just sampled music but also some pretty nifty tunes using the sound chip. One thing which doesn't go down well with our experts is the notorious beep.

INTELLIGENCE

Some games you can just pick up and play: if you've seen half a dozen vertical-scrolling shoot-'em-ups you know what to expect. Other games however, take some thought and intelligence to play. Look out for a high score here if you like your games brainy.

INSTANT APPEAL

If there are 1,001 instructions to read before you can even boot up then it's hardly instantly playable. You need to be able to shove the disk in, pick up your joystick and play for lots of instant appeal.

LONG-TERM INTEREST

Here we measure the appeal of a game after several hours' play. Combine this, and the previous score to find out how long a game needs working at to appreciate its finer points.

OVERALL

Taking all the above into consideration and comparing it to recent similar games, we award a percentage score. Remember though, that ST games are becoming better all the time so a game rated Format Gold a year ago may well no longer warrant such a score now.

■ *Black Tiger* is a straightforward scrolling action game littered with enemies and obstacles. In between the blasting, you'll also want to collect coins for buying extra weaponry

Hit the vases and they break, releasing coins

This is Audrey the orchid. Stamp on her and she'll fill you with poison

It takes precision to jump this chasm

Last year US Gold established themselves as a serious 16-bit software house; a position confirmed at the Indin awards where they won best 16-bit adventure for *The Last Crusade*. After superb achievements with *Strider* and *Ghouls 'n' Ghosts*, they're now launching *Black Tiger*, an arcade conversion that's been poised for release since last September

US GOLD

BLACK

Capcom's *Black Tiger* was one of the lesser-known arcade games, making only a brief appearance in 1986, but thanks to US Gold it's finally found its way onto the ST. The scenario is the usual formulaic nonsense: three evil dragons descending onto a once peaceful kingdom causing the usual heady mixture of mayhem and massacre.

Your character, the oddly-named Black Tiger, is (surprise, surprise) the only one who can defeat them.

Black Tiger is a four-way push-scrolling action game that sets you off on a journey exploring eight levels. The idea is to follow the red arrows leading you either along the ground or upwards. Just negotiating the ladders and leaping across gaps in the ground can be bad

enough, but there are all sorts of monsters after your blood as well – and some of them are completely indestructible.

You don't make the journey alone; you come equipped with an armful of impressive weaponry. Your private arsenal can be built up even further after you visit the shop. To reach it you need to track down an old man who's been

turned to stone. If you stand close to him, he slowly comes to life. He's so grateful for your assistance that he offers you as much ammo as you can afford. If you're entertaining ideas of leaving the shop and blasting him, forget it. Once you've raided the ammo stores, the old man disappears, preventing you from returning to him later.

■ As well as vertically-scrolling action, you're also encouraged skyward. With a considerable number of screens pieced together, you can get a good idea of how it's often not the monster that's your biggest enemy, but the terrain

20000

You've climbed all the way to the top, but more beasts await your presence

Finding a way up to that next level is harder than it looks

Get your hiking boots on to climb up here

Flashing your sword won't do you much good

and defeat him, only to come up against a bluebottle and another

a magician's treasure trove holds many bonuses

Survive this obstacle course, if you can

You confront a beast...

TIGER

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Money to pay for your supplies is obtained en route by smashing vases with your weapons. When the vases shatter they spill their contents of much-needed coins or keys.

You'll also come across the occasional treasure chest. Provided you either found or bought a key earlier, you can open the chest and reap the rewards. Some contain fire columns, and one breath will send your energy levels plummeting, but the majority hold useful bonuses such as hourglasses, lanterns and gold. The hourglass is the most useful of these, granting you extra time to move through the game.

When you reach the end of a level, you find the customary Bad Guy, for whom all the extra weaponry was designed. End-of-level monsters consist of ugly blocks of stone and various spitting dragons. They aren't spectacular, but they still take some beating.



■ A standard screen shows only a small area. Consequently, you don't know what's coming up until you've walked into it

Black Tiger ends in one of three ways: either you run out of time, you're killed by monsters, or you fall down a chasm and are impaled on the spikes below. Since it's extremely difficult judging your jumps, falling onto the spikes tends to be a depressingly regular experience.

ing would be a better description. The ST is renowned for its scrolling problems but programmers have learnt to overcome them. It comes as a disappointing surprise to see the same mistakes repeated all over again in what is tipped as a major release.

Sound effects suffer from the



■ Find and revive an old man and you'll get the shop keys

limitations of the ST's sound chip and are uniformly standard.

VERDICT

Black Tiger should have been released before US Gold's *Strider* and *Indy* games, but it wasn't. As a result, it looks dated and unoriginal. On the positive side the game's style is similar to *Ghouls 'n' Ghosts* but more colourful and violent. Backdrops are visually exciting and tackling the terrain is challenging.

Black Tiger will appeal to fans of the arcade game and anyone who enjoys a decent *Strider*-type action game. It has considerable playability but the sub-standard horizontal-scrolling and the small sprites just don't do the game any favours.

MARK HIGHAM

GRAPHICS	7
SOUNDTRACK	5
INTELLIGENCE	1
INSTANT APPEAL	8
LONG TERM INTEREST	7
OVERALL	70%

■ The idea is to follow arrows which lead you towards the end of the level, but if you take a detour you can find many interesting spots. Here, you eventually reach the door to a dungeon

With some deft moves of the joystick, you're up that pole faster than a BT engineer

You avoid the snake and clamber past the beast. Now the door to the dungeon is waiting...

You leap around, Tarzan-style

You daren't turn your back on them for one minute. Even the bat takes your energy

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TITUS DARK CENTURY

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Programmers are constantly looking at games from new angles. *Hard Drivin'* brought classic 3D routines to the jaded car genre and *Space Ace* looks set to bring sophisticated animation onto the ST. Now we have *Dark Century* boasting ray-traced graphics that add a startlingly realistic reflective surface to 3D objects.

It's the year 2250 and you're in Outer Space heading for a planetary prison. Unfortunately, the convicts imprisoned there have assembled sophisticated tanks to break free. Your job is to go after the fugitives and prevent them from invading Earth. You have your own tank to track them down and a radar screen to tell you roughly where the enemy tanks are located.

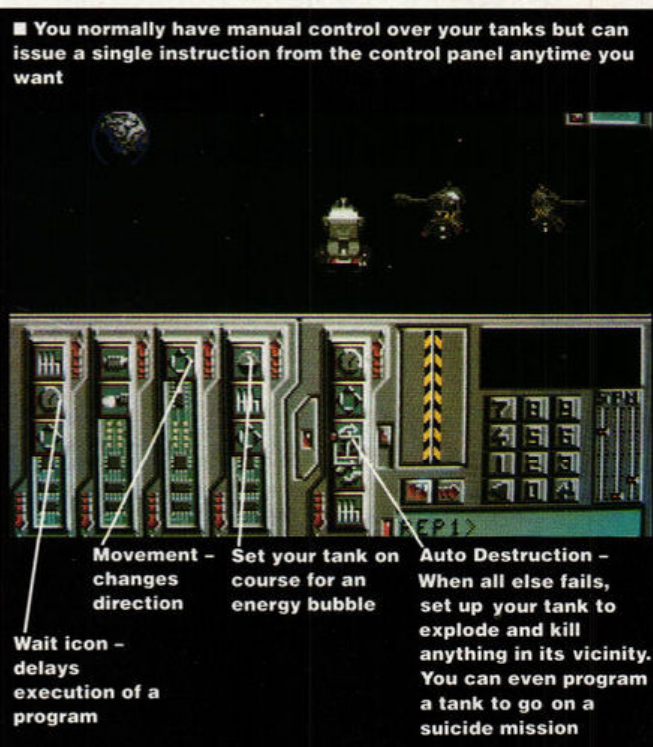
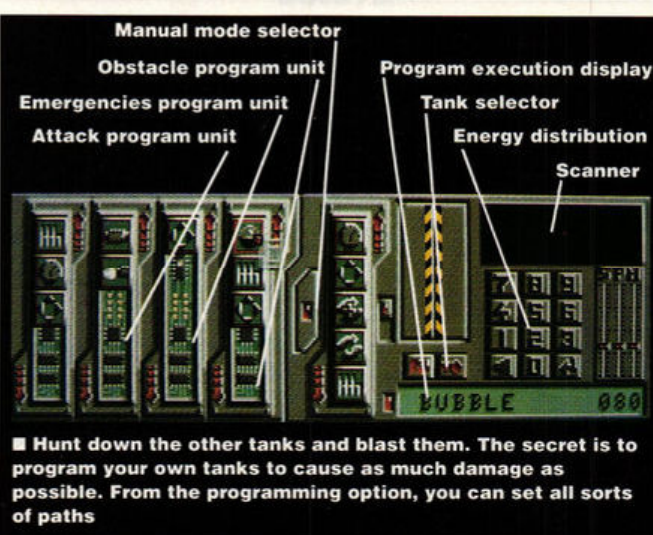
The more you play *Dark Century*, the faster you realise that "catch" and "blast" are mere buzzwords. Tanks hurtle towards you at such great speeds that it's impossible to keep on their tail without switching onto auto-pilot mode.

At the start, you're given the option of programming your tanks to go off in all directions. A series of icons guide the tank's movement and firing mechanisms. Simple programming instructions can send a robot scouring space in search of enemies or even track down special energy bubbles. There are also provisions for emergency action allowing you to issue commands to self-destruct the tank when it's under fire, killing any nearby fugitives kamikaze-style.

Instructions can be issued during play and once the game gets going, the best way to keep on top of the action is to program one or two tanks and despatch emergency tanks only when the situation warrants it.

EFFECTS

The ray-tracing graphics are *Dark Century's* boldest boast, but unfortunately the tanks used in the game are so small and move so quickly that it's impossible to appreciate the ray-tracing effect.



■ The tanks hurtle towards you at terrifying speeds. If you're lucky they just zoom straight by...



■ but if they're feeling malicious, they could insist on ramming you until one of you goes up in smoke

Only the title screen, enhanced by two massive revolving tanks, really grabs your attention.

Take away the tanks and you don't have much left. The display is a featureless expanse of Outer Space; a boring vista of stars, more stars, and even more stars. The only hint of colour is in the control panel. During two-player mode even this is replaced by another view of space, taken from the second player's viewpoint.

Sound effects are limited, unexciting and no compensation for the boring visuals.

VERDICT

This is the first game to incorporate ray-traced graphics and if they were up to the standard set by ray-traced demos, there's little doubt *Dark Century* would have won some major prizes.

You're left instead with unflattering visuals and no in-depth gameplay or action to compensate. Although there's the opportunity to program tanks and send them out after the opposition, it's never a very exciting challenge. The tanks move too quickly to play the game as a straight shoot-'em-up and you'll spend a sizeable chunk of your time cynically considering if it might just not be more fun to stick all the tanks on auto-destruction mode and send them out into the great black yonder.

MARK HIGHAM



■ In two-player mode the screen is split in two and both players are treated to their own dedicated view

GRAPHICS	7
SOUNDTRACK	4
INTELLIGENCE	5
INSTANT APPEAL	6
LONG TERM INTEREST	6
OVERALL	52%

TYNESOFT

BEVERLY HILLS COP

£19.99



■ Level one is full of thugs and lethal mines

Big movie licences were topping the charts all last year. *Robocop*, *The Last Crusade*, *The Untouchables* and *Batman* were all transformed on the pixel palette. Released the same year as the film, they cashed in on the tidal-wave of marketing hype and publicity that surrounds a Hollywood blockbuster.

It's strange then that *Beverly Hills Cop* has missed the hype boat by half a decade. As a result the programmers have had more than enough time to get it right; the usual rushed programming of film tie-ins as software houses struggle to meet film release deadlines, and the communication problems of programming while a film is still being shot, are no longer viable excuses. So is *Beverly Hills Cop* a well-designed and polished product, an anachronism, or just a marketing timetable disaster?

It's split into four distinct games. The first puts Axel on night patrol duty in Beverly Hills. Direct him through a horizontally-scrolling level, shooting at anyone who moves. The objective is to reach the end of the level where a gang are loading crates of arms into a van. The criminals are easily killed with a single shot, but they toss the occasional mine in your direction and if you stand in the wrong place, you're dog meat.

The second game is a car chase. The gang have loaded the van and you're racing after them, but the chase is complicated by them throwing crates at you. It takes some clever steering to avoid them. If you get close enough to the van, try blasting them off the road by shooting the crates stacked in the back.

By the third game, Axel has discovered the location of Mr Big (yawn). He's holed up in a luxury mansion protected by his gang of baddies. Guide Axel through the garden, indicating his direction by moving an on-screen cursor, and knock out scores of Mr Big's trigger-happy cronies. Fire by using



■ Your first task is to find the van at the end of level one. Unfortunately, you have a substantial element of *Beverly Hills'* criminal community to contend with



■ Get through to level two and you're in for some fast-moving car action. Find that truck and stay on its tail



■ When you get close to the truck, fire at the crates in the back. If you're lucky, you'll blast the truck off the road



■ Follow that truck – but watch out for those crates!

the same cursor to indicate the direction of your bullets.

At the finale, Axel is inside the mansion searching for hostages held by Mr Big. In this horizontally-scrolling level you need to kill all the guards and find Mr Big. When you track him down, he sets off a time bomb. Kill him and escape from the mansion before the whole thing blows sky high.

EFFECTS

There nothing to rave about in the graphics department. The scenes are unimaginatively coloured and badly designed. The Axel graphic looks nothing like Eddie Murphy unless he's suffered a severe bout of anorexia and emerged as a seven stone weakling.

Sound effects are traditional "computer music." The intro tune is taken from the movie but there are no digitised effects at all.

VERDICT

One of the things which made the film so entertaining was Eddie Murphy's humour, but the programmers have closed their eyes to this, focusing solely on the action, and lost all the original appeal. What you're left with is a series of four ordinary games brought under the protective umbrella of a well-known title. When are software houses going to start utilising film licences instead of hiding mediocre games behind them? The movie was a fast-paced street-sharp vehicle for Murphy's machismo and verbal razzle-dazzle, but the game doesn't have the speed of action or the variety of graphics to even sustain your interest past the first few levels.

MARK HIGHAM

GRAPHICS	5
SOUNDTRACK	2
INTELLIGENCE	1
INSTANT APPEAL	6
LONG TERM INTEREST	3
OVERALL	49%

OVERLANDER

The road game that blasts the way



mis'sion (mish'n) *n.* sending or being sent on some service.
miss'ile (-il, -il) *n.* that which may be thrown or shot to do damage.
car *n.* a wheeled vehicle; motor-car.
en'emy *n.* hostile person; opponent; armed foe; hostile force.
scum *n.* froth or other floating matter a liquid; waste part of anything; vile person or thing; riff-raff.
rock'et *n.* firework or stick that can be shot up in the air by igniting it's contents; automatically fired aid controlled weapon, armed and remote object.
fu'el *n.* (fū-) *n.* material for burning.
mer'cenary (-s-) *a.* hired; working simply for reward. - *n.* hired soldier.
arm'our, (us arm'or) *n.* defensive covering or dress; plating of warships, task forces.
choose *v.t.* pickout, select; take preference.
weap'on (wep'n) *n.* implement to fight with.
carg'o *n.* vehicle's load, it's freight.
reward' *v.t.* pay, make return, for service, conduct etc.
Élite (-a-l-et') *n.* choice or select body; purveyor of video games; video games that will get better and better as time passes.
OVERLANDER *n.* wicked 21st century video game where mercenary completes mission by delivering cargo in a car for reward and uses reward from successful missions to choose fuel or armour and weapons including rockets and missiles to improve his car so that he can defeat scum in further more treacherous missions.



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Fortified by inventive programming skills, recent releases have been reaching new heights of originality. Last month *Iron Lord* scored high marks for its novel angle on the traditional adventure game. This month *Graviti* proves to be one of the most arresting games in aeons. And now *Rings of Medusa* marries elements of strategy and action to produce an exciting new adventure format.

You assume the role of a young prince and must prevent the Goddess Medusa ravaging your kingdom. Since she has unearthly powers, you can't just wander into the green pastureland with a sub-machine gun and blast her brains out. You have to locate five rings sprinkled across the landscape and piece them together in a temple. This forces Medusa to fight you. The conflict makes up the end sequence only, so the real objective of the game is to unearth the five hidden rings.

Unfortunately, you don't begin the game in a very healthy position. You need money to build up an army and there are several ways to get it: you can trade with other characters, attack caravans, raid towns, gamble in the casino (if you can find it) or search out raw materials.

Medusa is split into three parts: there's the rural landscape where the mouse-driven character moves through fields and forest, a town section where wealth and arms are accumulated and the combat area where fight sequences take place.

In the town, you need to visit the harbour, store, bank, castle and park in your drive to amass money. Certain cities are abundant in specific items; so, for example, if a city spends all its time producing apples, apples will be cheaper here than anywhere else. The bank



is enormously useful since you can borrow money (at a high interest rate). You need to pay the money back otherwise traders in the area won't deal with you. Take a trip to the park to buy soldiers. There are several types of troops, each with different fighting skills, including cavalry, artillery, dragonriders, wizards and archers.

You're goaded into fights at various points of the game, usually by bumping into another character. Unfortunately, you don't know the size of the army you're confronting, but you do have the option of sending out scouts to discover what you can about your opposition.

The battles themselves aren't graphically exciting; strategic interest lies instead in your judgement of which troops to use. The victor collects rings or money and this is how you'll eventually collect the five rings you need.

EFFECTS

The map and the towns are represented as colourful and clearly drawn graphic images, but this is the extent of the game's visual appeal. Sprites are little more than a few points high because it's more important to squeeze a large portion of the map on screen. But the biggest frustrations is the time it takes to move between two screens of the map. For some reason, it takes as much as a couple of seconds to move between screens, even though no disk accesses are made.

No spot effects are used but a tune plays constantly in the background, sounding atmospheric at first, but soon driving you to reach for the volume control.

VERDICT

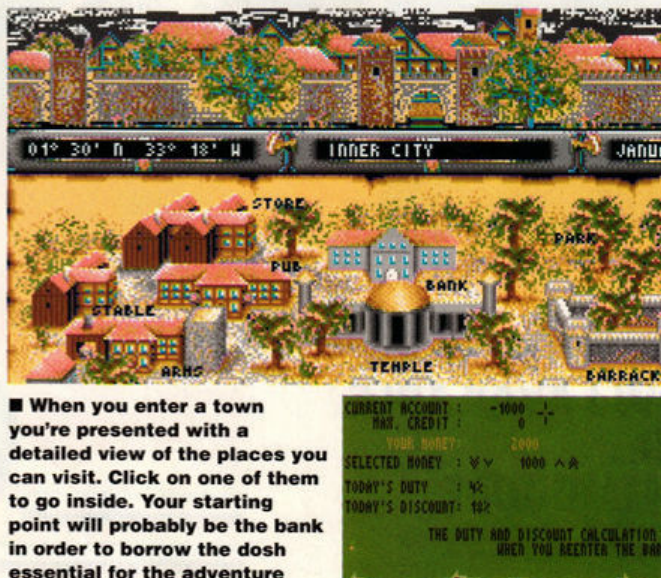
For the first few hours *Medusa* is breathlessly entertaining. Sending your hero around the map and

looking into the wide range of towns is frighteningly addictive. Since you can't progress far without bumping into an army, it stays that way, at least until you discover the first few rings.

Without the variety of graphics and sound, however, *Medusa* soon loses its appeal. We've compared it to *Iron Lord* but the latter's programmers recognised this problem and developed the game beyond the limitations of the map sequence. With nothing more in *Medusa* you're left feeling you only have half a challenge.

MARK HIGHAM

GRAPHICS	6
SOUNDTRACK	2
INTELLIGENCE	3
INSTANT APPEAL	7
LONG TERM INTEREST	4
OVERALL	69%



SPACE HARRIER™ II



ATARI ST



C64



SPECTRUM



AMIGA



SEGA

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GRANDSLAM

stein

The last Imageworks game acclaimed for its originality was *Interphase* – not just a generic re-hash with a thin veneer of novelty but a fully-fledged fore-runner of a totally new breed of game. Mirrorsoft's *Gravity* is in the same spearheading category, a strategy/action space game incorporating into its gameplay new theories about black holes and space travel.

The game is set in the year 2320, after space travel experimentation has discovered the ultimate way to move. It's been discovered that if an object is dropped into a black hole, it continues in a straight line at infinite velocity until it reaches a second black hole, where it emerges with zero time elapsed.

This theory has allowed humanity to venture into Outer Space and colonise planets. Unfortunately, conflict developed when one of the populated planets was turned into a black hole by an Outie (a coloniser) looking for a quick short-cut through space.

Your role in the game is to continue the process of terraforming and colonising space and to find and harass the Outies whenever you can.

Gravity is played on a scrolling isometric space grid. The grid delineates the spatial dimensions and the field of gravitational forces. All the planets and black holes are represented by detailed sprites which affect the grid. Newton makes a guest appearance because spacecraft react to the gravitational influence of the planets and black holes in accordance with the laws of Newtonian mechanics.

You equip your spacecraft to take on this challenge remembering that different missions and different situations require different types of equipment. Some of the equipment can be purchased in Outer Space but the majority are



IMAGEWORKS/MIRRORSOFT

GRAVITY

£24.95



Mirrorsoft have a fine record of producing original and intriguing games. Now they've come up trumps again with their latest release, *Gravity*, truly a force to be reckoned with. Watch action, strategy and Newtonian physics fuse in our game of the month...

best obtained by returning to your colony. Since you'll need to return home to receive fresh orders, it's sensible to wait until then.

The game can be played in two ways; either with you controlling the strategy element, deciding where to go and what to do, or with the colony controlling it. If you

take command, you give missions and destinations to up to eight spacecraft, taking personal control of one of them. There are five missions which can be given:

Exploration: a trip to a particular system to discover if it's occupied by Outies and to see the size and type of planet.

Terraforming: making a planet ready for possible occupation.

Military action: either chasing and destroying Outie craft in the Outie occupied system, or removing the Outie presence altogether by converting a black hole back into a sun.

Colony Protection: protecting a





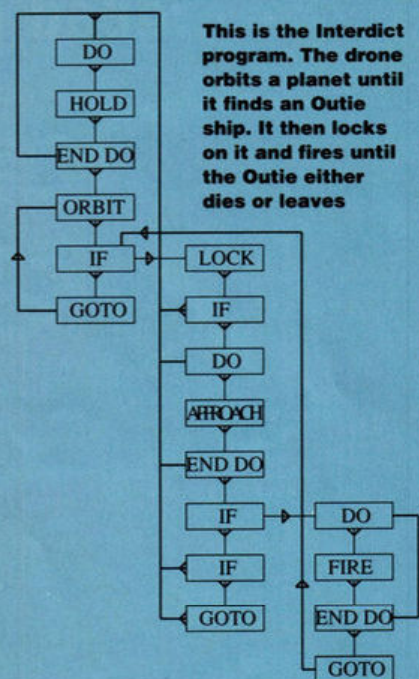
PROGRAMMING THE DRONES

If the drones are used efficiently they can provide enormous amounts of useful information, as well as ridding the solar system of alien presence.

The drones come equipped with several standard programs, such as free-fly and Interdict (the Interdict program is shown far right). These programs are available to be edited but the real power of the drones can only be exploited once you try programming them yourself.

To program a drone, drag icons from the bottom of the

screen, into the programming window. Various connectors appear, allowing you to link the icons together. The diagram (right) shows the general construction of a program, although the actual icons used, are far more informative and colourful. These icons are explained below, but the ones of particular importance are the Orbit and Approach commands. These instruct the drone to find a certain area and stay there. Using the IF icon, you can make the drone respond to a given situation.



convoy of people as they colonise a planet and set up its defence systems.

Route Construction: generating a black hole to establish a new route in space.

It's important to colonise as many planets as possible because colonised planets are key places in the system. They enable you to restock supplies and communicate with other craft. Although you may lose your colonies to the Outies, you must not lose your main base, known as Starcom.

Once you've generated a colony somewhere, it continues to develop without your interference. The longer it survives, the more useful it becomes to you. All the planets have a technology (or Tech) level which increases with time and enables you to purchase more and more stock to re-equip your spacecraft without returning home. It's only back at Starcom, though, that you'll be able to purchase the full range of equipment.

Using drones is the easiest way to confuse and destroy Outie craft. Drones are equipped with eight of their own special programs, but you can also program them yourself. This makes it possible to send them into space, patrolling designated territory, and use their lasers or nova guns to hassle the Outies and prevent their imperialist encroachment.

A simple programming language needs to be understood before you can fully utilise the drones. This language consists of icons employed in a flow diagram. The drone follows the instructions and responds to the Outies with the programmed results. One of the standard programs found in the game runs as follows:

```

label1:
if no Outies are detected then
hold station
goto label1
else
attack until Outies destroyed
goto label1
  
```



Missiles can be homing or free-flight

The warhead explodes after a set time or on contact with enemy craft

Thrust can be either short burn engines or continual thrust



In the missile programming section, you can change the kind of missile on the launching pad. The most dangerous option to alter is the warhead. Two types are available - either shafter or fusion. The fusion warhead is straightforward, causing localised damage to the target. But the shafter head can cause more problems because it's so powerful it tears holes in the grid



To move through time, you need black holes, not planets



Follow the radar and you'll find one soon enough

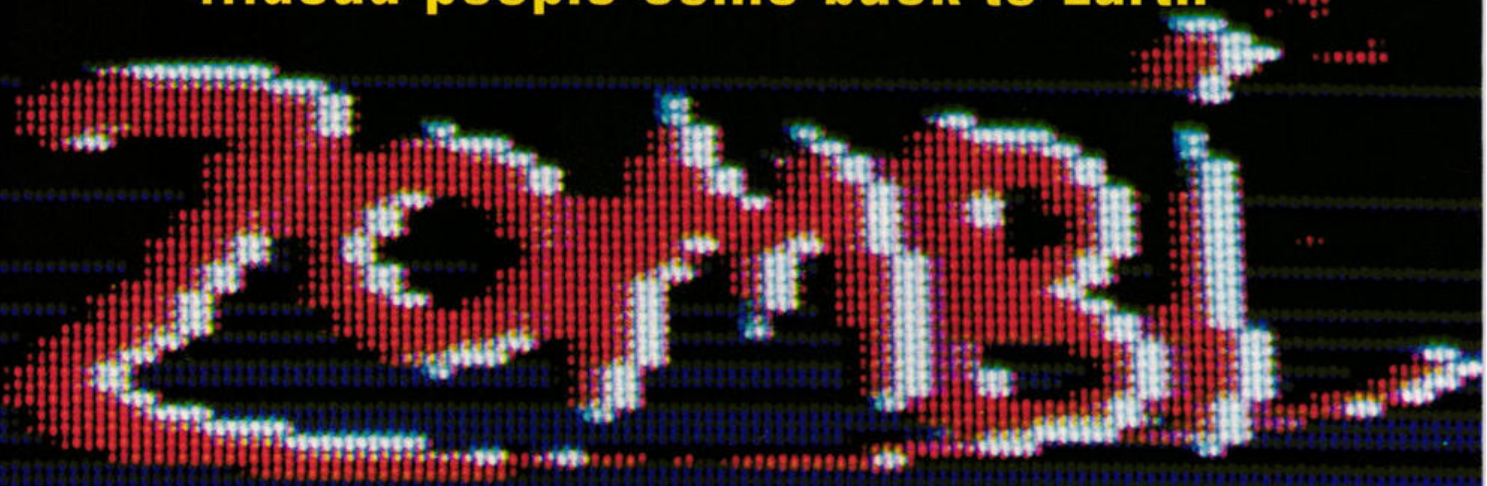
A TRIP TO THE SUPERMARKET



As you progress you can start buying add-ons like the black globe. Once you put the globe on you're unable to change direction - but that's a very small price to pay for invincibility!

If you're visiting colonised planets supplies should be available, but certain items will not be in store until the colony has had time to fully develop and achieve a high enough tech level. Fortunately, all the items are also on sale back at Starcom. It's usually easier to go home and buy things unless you've let the enemy through to your own colony.

**When there is no room left in Hell...
...dead people come back to Earth**



The nightmare has just begun

For mysterious reasons, dead people come back to life to feed themselves on the flesh of human beings. The Earth is inhabited by millions of Zombies, who are spreading terror, and by gangs of hooligans, who are ready to do anything to survive. Yet four people didn't lose hope and decided to run away to new horizons.

"What a great game ! UBI SOFT have taken a video nasty and an arcade/aventure, and combined them, coming up with a real winner in the process. Moving your four characters around the building, trying to find a way out, all the time fighting off attacks from zombies, is very atmospheric. There are some good puzzles to work out, and a hell of a lot has gone into the game. By all

means, get hold of this game."

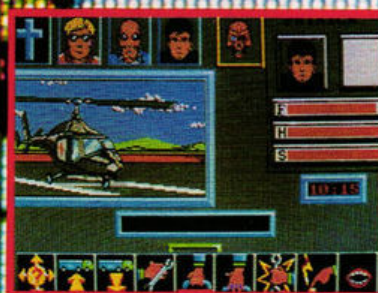
"Everything is nice and detailed, with the background graphics looking particularly effective."

AMIGA ACTION



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Amiga screenshots



UBI SOFT

Entertainment Software

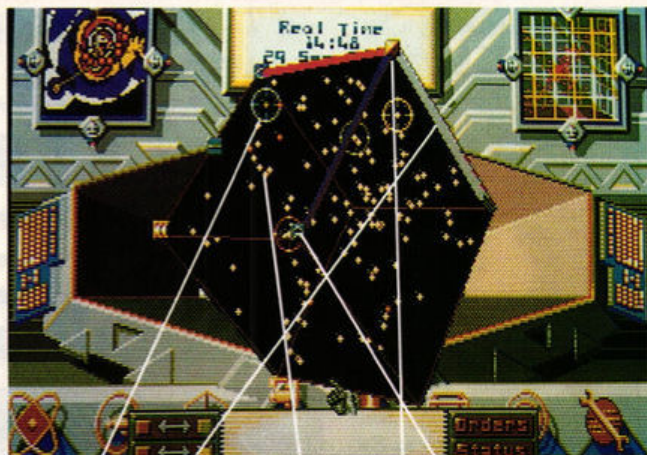


INSIDE THE CUBE

You spend much of your time in the cube working out where to go next. Your home base is indicated by a cyan ring around the planet. A red ring indicates where your most recent order has sent you. The next black hole you fall through will automatically bring you out at this point. Also shown on this map are details about how the Outie's front line is advancing, indicated by planets flashing in a variety of colours.



■ You can get additional information about a planet simply by double-clicking on it. This brings up a detailed message, including details such as when you last viewed it. Another click shows a picture of the planet



Home base Outie planets Your destination
Magnification bars Close cube and return to grid

■ The cube, an important area of the game, shows how the Universe is shaping up. In this case, the number of alien-inhabited planets looks lethal

As you can see from the diagram, the drone patrols its area until it detects an Outie presence. In this event, it launches an attack which can have only two possible outcomes; either the destruction of the Outies or the destruction of the drone.

Gravity is intended to be played initially as a strategy/arcade game with the computer handling your missions. As you become more adept at manipulating the controls, though, you can take over the process of giving out orders and start to develop your own strategy, dispatching your own forays off into the Milky Way.

Your spacecraft can be moved using the mouse or joystick – but the keyboard gives the finest control.

EFFECTS

The electrifying strategic nature of Gravity means that it's gameplay which matters here and not graphics. Consequently, you don't switch on your machine and expect to be assaulted by great visuals. But this is exactly what happens.

Original games are often renowned for having something special in their graphics. Those elements in both *Virus* and *Interphase* which made it so exciting stemmed from the graphics. The same happens here, due largely to the grid. This gives a perfect impression of the gravitational field with lines which carefully weave their way around planets and into black holes and still hurtle along when the going gets rough.

Besides the grid, there are rousing static sprites of the planets

and an animated view of your own spaceship. These again give some prodigiously realistic views to the point that you even find yourself picking out familiar planets. In no time, you'll be screeching: "Wasn't that Saturn we just passed?" and waving affectionately.

The visuals are the work of graphic artist, Pete Lyon. He's responsible for drawing sprites and designing the front screen containing all the icons. Sound effects are as polished as the graphics but there's little more than warning tones and the occasional blast.

VERDICT

It takes a while to get to grips with Gravity but it's well worth the effort. The moment you start understanding how it works, you get involved in the action to the

point that you daren't blink for fear of losing sight of the Outies. Thankfully, an easily digestible manual means you don't spend hours suffering at their hands before you come up with a winning formula.

Originality is now high on the list of the big 16-bit boys, so we may be seeing the end of routine and unimaginative imitations and the birth of a new market for programmers with ideas. Gravity is just the beginning.

MARK HIGHAM

GRAPHICS	8
SOUNDTRACK	6
INTELLIGENCE	7
INSTANT APPEAL	5
LONG TERM INTEREST	9
OVERALL	93%

THE INSIDE STORY

Gravity has been a year in the making, and when you start playing you understand why. There's so much detail to the game that it can take a long time to know exactly what you're doing. Once you do find out what goes where, you begin to appreciate how much care has gone into the game.

Programmer Ross Goodley explained how he "wanted to write the big game." Although Ross is a games programmer, the one thing he never does while working on a new title is to play games. "It's distracting," he says. "You start questioning how the programmer did this or that, or you look at an

effect and want to put it into your own game. So I don't bother playing anything at all." When he does find time to play games, his favourite, after years of play, is still *Dungeon Master*.

Ross' last game was *Bombuzal* – a cutesy 3D platform game which never received the attention it deserved.

That was a year ago. Since then Ross has been concentrating solely on Gravity, his programming a refreshing alternative to programmers who underestimate the intelligence and enthusiasm of committed games players.



■ Programmer, Ross Goodley. Gravity has taken him a year to program and it shows



■ The grids were the hardest part to program because of the way they're used to represent the gravitational field. They come as either filled or unfilled



■ View your spacecraft in 3D to see exactly what it looks like. No damage so far



■ You read the results of a probe. Is it worth continuing? You bet!

EMPIRE

CAP ARRIVES AT DR. DOOM'S CASTLE

DR DOOM'S REVENGE

£19.95

Comic licences have been popular for a long time, spawning hits such as *Batman*, *Garfield*, *Snoopy*, *Asterix* and even *Tintin*. But it's the Superheroes who have always come top of the list. Captain America and Spiderman may not have *Batman*'s mega-fame but they do still have the *Marvel* magic. Paragon Software, new to ST programming, were given the job of translating that magic into gameplay.

There's a vague plot to *Doom's Revenge* that suggests you use Spiderman and Captain America to find a way into the mysterious fortress of the evil Dr. Doom. This is merely an excuse for stringing together a series of action levels in which you pit your joystick skills against an enemy.

You're launched into the game as Captain America and must quickly acquaint yourself with an illogical set of joystick moves to defeat a robot who wheels into the room and proceeds to punch you. This is the Superhero equivalent of a street-fighting game, with the added bonus that you have Cap's shield to strike out at the robot.

There's an energy scale for each character at the base of the screen indicating who's doing best in the fight. When you've hit the robot enough to take his energy to zero, he dies and you move onto the next level.

Level two is horizontally-scrolling and the aim is to dodge fireballs by either leaping over them or rolling along the floor. Unfortunately the screen scrolls so slowly that it's laughably easy.

You then adopt Spiderman's persona, leaping onto walls and



■ You'll learn tricks to knock out enemies only moments into the level. Fortunately the rhino doesn't stand for any nonsense and is much harder to kill



■ Captain America lays into the robot, using his shield for the best results



■ Spiderman takes his turn, using his web to defeat the metallic monster

ceilings and whipping out a web for dealing with the bad guys. Sadly, Spidey's hopeless at hand-to-hand combat. Your first problem is to overcome Cap's robot again but in different surroundings. When he's dead, another creature appears and the surroundings change, but the fight is still the same.

The scenario continues like this with each Superhero performing heroics in two scenes. An energy level is assigned to Spidey and Cap which plummets during a

fight. If either character's energy hits zero, the game is over.

EFFECTS

For all its problems in the playability department, *Doom* does have some auspicious still graphics. They're not as polished as they could be, but they certainly capture the *Marvel* spirit. Unfortunately, the animation is jerky and hopelessly amateurish.

Although most of the game is played against a still backdrop, it's

obvious the programmers came up against the infamous ST horizontal-scrolling problems and came up with their own original solution; forget scrolling and go for good old-fashioned jerks.

If you're looking for digitised sound or even a half-decent spot effect, you won't find it here. Sit back and listen to a ridiculous beep bop bap computer tune and laugh yourself silly as your mind floats back to the days of the diminutive 8-bit micro.

VERDICT

The *Marvel* licences make a great base for computer games and with two characters in the action *Doom* should lend itself to more good ideas than usual. But the programmers, who quite obviously didn't have a clue about the possibilities for ST games, have turned out nothing more than third-rate mediocrity. *Doom* is boring, dated and deadeningly dull.

Another frustrating aspect is the loading times. The initial loading wait is long enough, but this is followed by a coffee break "time-out" between every scene.

Apparently the 8-bit versions are supposed to be playable – so if you really insist on buying *Doom*, you'd better start dusting down your old micro.

MARK HIGHAM

GRAPHICS	3
SOUNDTRACK	1
INTELLIGENCE	1
INSTANT APPEAL	4
LONG TERM INTEREST	2
OVERALL	29%



■ The fireballs look exciting but sadly the scrolling is much too slow and jerky to make them remotely interesting

WE'RE FIT, WE'RE ALIVE, BUT...

LOST PATROL



"Polished until it sparkles,
The Lost Patrol features
animated screens the like of
which we've never seen before"
The Games Machine

WE'RE NOT BACK HOME



AMIGA

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ATARI ST

MIRRORSOFT

AUSTERLITZ

Unscarred after *Borodino* and *Waterloo*, Dr Peter Turcan continues on his triumphant path, realistically reconstructing historical battles. Deploy your troops around the 19th Century Czechoslovakian town of Austerlitz and replay Napoleon's finest hour



■ It's December 2nd, 1805. Things look quiet but last night Napoleon was manoeuvring his troops ready for battle. Today will see the outcome of this war. In reality, Napoleon was victorious, but who'll emerge the winner today?

NAPOLÉON'S FINEST HOUR

On the 1st December, 1805, the battle of Austerlitz was fought between the French and Allied armies. The fighting continued until the following day when 68,000 French soldiers under Napoleon's command were led into battle against the 90,000-strong Russian and Austrian army, led by the Russian field marshal, Kutuzov.

The battle reached its climax close to Austerlitz (now Slavkov u Brna in Czechoslovakia), with Napoleon outmanoeuvring the Allies and winning the war.

Napoleon considered this his finest battle. His strategy had been to lodge himself between the Allies' left and right flanks by winning Pratzen Heights and taking the important village of Blaswitz. That was at nine o'clock in the morning on December 2nd.

At half past ten, Kutukov moved the troops on his left flank to attack the French centre and at one o'clock the Russian Imperial Guards

charged the weakening centre line and almost captured it.

A division was sent up to reinforce the front line. Napoleon was already in a strong position but he now converted that to victory by pinning the Allied centre and right flanks with a frontal attack and circling round from the South. By half past three, most of the units had surrendered.

There's a story that some of the units slipped through the French ring and fled across the frozen lakes around Telnitz village. Napoleon supposedly spotted this and to prevent their escape ordered his troops to fire into the ice, causing 2,000 Russians, their horse teams and cannons, to drown. Much later, the lake was drained, but only two bodies were found.

It was Napoleon's victory which forced the Austrians to finally make peace with France – signified by the Treaty of Pressburg.

Following the example of his earlier successes, Turcan is laying considerable store on the realism of this game. *Austerlitz* isn't just another simulation in which you move pieces around a map as if they're part of a chess set. Instead, you assume the role of either Napoleon or Czar Alexander I, and face the same situations in your living room as they faced nearly two hundred years ago on the battlefield.

To move your armies you must first dispatch riders with orders. The orders will not be followed until the rider reaches his destination. He can, of course, be killed before he reaches the relevant unit.

Your view of the battlefield is restricted to what the leaders would have seen at the time. Judgements about which unit to dispatch where must be based on reports received, adding the extra problems of being unable to see the formations of the enemy.

Since this is a simulation of an actual war, considerable research has gone into making certain that every part of the French and Allied

strategies are followed. At the start of a new game, a set of questions enable you to select which leader you want to play, whether to display various messages about what's happening (so you can "cheat" and watch the game from both sides), or whether to change the historical orders. Normally both sides are issued with the orders given at the start of the real battle but these can be changed to give variations on the battle scenario.

The war begins at 7am on December 2nd, 1805 and is played as a series of turns. Within your turn, you have 15 minutes of simulated play and a maximum of eight orders. The orders are taken from a specific set of commands (see the panel of battle orders). The battle comes to a close when one side has crushed the other to a pulp. When this happens, your progress is assessed and you're presented with a full battle report that details your final position and takes stock of your troops. This is useful for planning your strategy in the next game.

Mail: 1 15 pm Alexander, a report has arrived from Langeron. 18 45 am, Pratze, I have 18100 men and 24 guns.

Napoleon the effective French army is now 54600 men with 106 guns, having suffered 14800 casualties

■ Mail flies thick and fast at the height of battle. This is often the only way you'll be aware of how the battle is progressing



■ By clicking with the mouse you can look at an area of the screen...

AUSTERLITZ



£24.95



■ Austerlitz aims to be as realistic as possible by giving you the view of the battlefield which your leader would have seen

EFFECTS

Unlike many other wargames, the map is presented as a solid 3D view, even detailing the heights of hills and mountains. This is regularly updated as the battle progresses. You can obtain additional information about the scene by clicking the mouse on any part of the screen and can also view the scene from different directions to give you a more complete assessment of your position.

Since this is a strategy wargame aiming for historical authenticity, no sound is necessary and hasn't been included.

considerate of almost all aspects of war that even unit morale is taken into account.

Nevertheless Austerlitz still doesn't claim to look at everything and admits to ignoring such things as gun smoke blocking the line of fire and the breaking down of regiments into lines of skirmishers.

Austerlitz excites more than Borodino and Waterloo because it was Napoleon's greatest strategic victory. If you're looking for a wargame that's as realistic as possible, there's no beating any of Turcan's three great battle simulations.

MARK HIGHAM

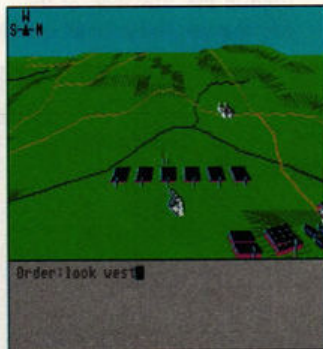
VERDICT

The reality factor is Turcan's ace card. The reality of war made hits of Waterloo and Borodino and it's certain to endear wargame addicts to this latest release. As yet, there's no wargame system to beat Turcan's, which is so

GRAPHICS	7
SOUNDTRACK	N/A
INTELLIGENCE	8
INSTANT APPEAL	4
LONG TERM INTEREST	9
OVERALL	92%



■ see the entire battlefield or view the scene from different directions...



■ to get a more rounded idea of the layout and assess your strategies

BATTLE ORDERS

At the start of your army's movement phase, you may move your headquarters by specifying a compass direction and clicking on an area of the map with the mouse. Just as in a real battle, you cannot move your army straight to that spot but may move only as far as time allows.

After this, basic orders let you make direct commands to the program. These are not treated as part of your turn. You may use the LOOK command to change the compass direction from which you view the field, or you may find out your point situation - points are awarded according to the current size of your army, prisoners taken, casualties caused and farms and villages under your control.

Battle orders are the real meat of the game and these comprise MOVE, ATTACK, DEFEND, SHELL, STAY IN RESERVE and RETREAT.

MOVE: moves your army to another location

ATTACK: sends your army onto

the battlefield in an all-out offensive attack

DEFEND: defends a spot

SHELL: fires artillery batteries

STAY IN RESERVE: Be ready for more orders

RETREAT: Withdraw the troops

GIVE/TAKE SUPPORT: Transfer troops

REPORT: Request report from Corps Commander

FORM ATTACK/DEFENCE

LINE: An order to the front line Corps Commander

Added to these are the place names and Corps Commander so that an order may look like any of the following:

Murat move to Bosenitz Stream. Bernadotte shell the enemy cavalry one mile east of you. Davout send me your battle report. Keimayer transfer your cavalry to Langeron. Soult form a defence line from the north flank to Menitz linking with Legrand.

Since these conform closely to how you would dispatch orders anyway, you become accustomed to the lingo within an hour.

■ Your orders are made up of army commands and place names. Places can be shortened to the smallest number of unique letters - such as Prat, standing for Pratzen



■ Things get problematical at the finale. Suddenly armies are surrendering everywhere



■ At the end of the battle, you're given the opportunity to assess how things went and what troops you're left with. Such information can prove helpful in playing the next game



■ Use the gun to blast away the bad guys. Find more ammo and you're safe for another six shots

After *Shinobi*, *Double Dragon I and II*, *Robocop* and a fistful of lesser-known street-fighting games, you'd have thought the beat-'em-up had finally been beaten to death. Programmers have obviously tired of churning out macho kerb brawlers and started to release a new breed of beat-'em-up; one which does its damndest to pretend it's something else. *Barbarian* introduced prehistoric monsters, *Untouchables* let you play with pistols, and even this month's *Dr. Doom* replaces street gangs with Super-heroes.

The same can't be said for *Wild Streets*, a game which certainly isn't fighting shy of its generic heritage, however hack-nayed that might be. It goes straight back to the original formula where the sole objective is to march across the screen raising your fists against a never-ending stream of scuzzy thugs.

The game is arranged as a set of levels with the usual monstrous brute at the end of each one. He's a larger sprite than anyone else you'll meet and predictably harder to kill. When it comes to the bone-mashing crunch, an energy status bar at the bottom of the screen lets you know how the fight is going.

Wild Streets makes an inventive detour from its routine with the addition of a panther and a pistol. The panther accompanies you through the levels leaping on thugs and causing instant death. This is a useful little moggy to have around when you're faced with several enemies at once. Unfortunately the panther never makes an

TITUS WILD STREETS

£19.99



■ A street-fighting game with a difference: a pet panther and a Magnum 357 at your disposal when things get tricky



■ You're through to the end-of-level bad guy. The gun is the fastest way to bring his energy level down but you don't have many bullets left



■ You resort to fists but he's a tough cookie and as a result you come off far worse - where's that panther when you need it?

attack on the end-of-level bad guy, leaving you to resolve this confrontation on your own.

The Magnum 357 is your other ally. You have six bullets and can fire them at any time. Your best move is to earmark them for the end-of-level bad guy or the hordes of thugs who sometimes rush you all at once. In the first few levels, you'll find ammo belts along the way. They buy you six new bullets, provided the gun is already empty.

The gun can be fired from the opposite end of the screen and only one shot is needed to kill thugs. The end-of-level bad guy is more resilient and you won't kill him using the gun alone.

EFFECTS

The tall sprites and well-drawn backdrops give *Wild Streets* a classy feel. So many frames are used in the animation of the panther that you find yourself spending



■ Empty your barrel on those nasty thugs. One well-aimed shot and they drop straight to the ground

more time watching the feline creature in action than you do fending off criminals. The downside is that the characters move in such a leisurely fashion that the action sequences lack any force or sparkle, and although it's no slouch, a little more speed would definitely make it more challenging.

The impressive spot effects manage to realistically emulate the panther's growls and the sickening thud of fist on flesh.

VERDICT

Standard street-fighting games have had their day and even a good one is unlikely to survive without some element of originality. Titus have tried to introduce that element by arming the main character with a panther and a pistol. To an extent these do make the game more fun to play, but it's a shallow variation of a formulaic pattern.

Wild Streets is a beat-'em-up with smooth graphics, large sprites and a very sexy black panther. If you like beat-'em-ups, there's no reason why you shouldn't fall head over heels for this one; but if you aren't instantly attracted to the idea of simply randomly smashing your fist in other people's faces, there's nothing likely to endear you either.

MARK HIGHAM

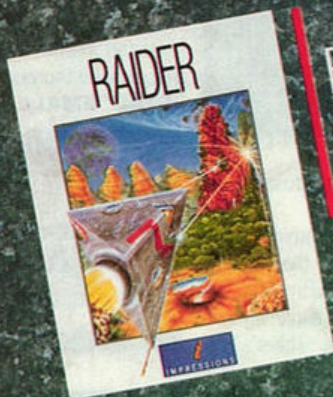
GRAPHICS	7
SOUNDTRACK	5
INTELLIGENCE	1
INSTANT APPEAL	7
LONG TERM INTEREST	5
OVERALL	71%



■ When things look tough, the panther comes to the rescue. He leaps up and devours your opponents in one swift move

PACK OF 4 COMPUTER GAMES

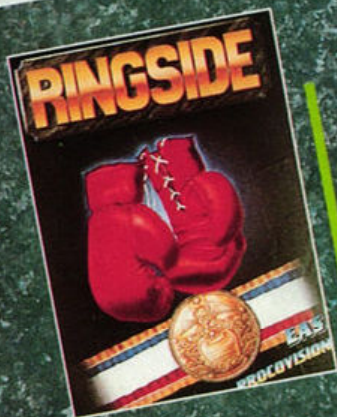
HYPERACTION



RAIDER



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In apocalyptic gobbledegook, *Aquanaut's* packaging blurb describes how "in the year 1999 Mankind finally came to its senses. All wars ceased and the nations of the world did, in fact, become united." Our lovely Earth, however, is once again under threat from those beastly aliens and it's up to you to save it.

Once you begin playing, the plot thankfully becomes irrelevant – this is a straightforward right to left scrolling shooter with a tad of collecting and lots of mindless trigger action.

■ Instant death in the murky depths of the second level



Looking like a downmarket version of an ageing Speccy game called *Scuba Dive*, that has beautifully smooth graphics of sharks and swordfish, the sprites in *Aquanaut* are large but only have about three frames of animation each –

which is crude and inexcusable on an ST.

The title tune is nothing more than bearable and the sound effects are limited to the hissing harpoon variety and explosions if they hit their target. There's no

underwater noises and no bubbles or sub-aqua inhaling sounds to capture the atmosphere of the submarine depths.

The gameplay consists solely of shooting fish (how very unsportsmanlike) and collecting objects. Because the sprites are large and you can't see that far ahead, it's all too easy to bump into a shark or swordfish and lose a life.

It's an unspectacular, frustrating game and unless you're a sub aqua freak, or a violently suppressed marine biologist you'll find *Aquanaut* a thoroughly damp squid.

PHIL "SMALL BOY" JONES

GRAPHICS	4
SOUNDTRACK	3
INTELLIGENCE	2
INSTANT APPEAL	4
LONG TERM INTEREST	3
OVERALL	41%

ANCO

KICK OFF
EXTRA TIME

£9.99

Anco's expansion of the original *Kick Off* provides a sizable pack of new bolt on options. All five play levels have been speeded up and there are four new tactics, making eight altogether. There's a manic all-out attack option called "Blitz" and, if you're a goal up and sitting on your laurels, a packed defence option called "Lockout". You can control the strength of kicks and stop or dribble the ball.

There are four options to alter the playing surface. Choose between a hard pitch, a wet one, artificial turf, or a soggy mudbath. Each of these supposedly affects the players and the motion of the ball in a different way. On the arti-



■ Frantic goalmouth action but *Extra Time* is a waste of time

cal pitch, the players' stamina is reduced and the ball bounces higher – but the difference is hardly noticeable.

The major novelty is the varying strength meter, positioned below the player with the ball, that allows you to determine the



■ The *Kick Off* data disk is a nice idea but *Extra Time* includes nothing that makes the original game any better

strength of a kick. The last thing you want when you're in front of goal is to have to concentrate on timing your shot to a colour-coded display. It's an unnecessary ornament that just gets in the way of a damned good game. If you've got an ST, you've just gotta have *Kick Off*, but you don't need to face the tiresome prospect of *Extra Time*.

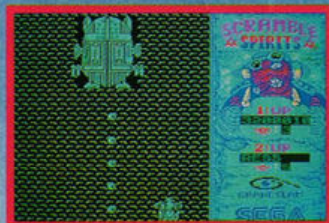
PHIL JONES

GRAPHICS	8
SOUNDTRACK	6
INTELLIGENCE	4
INSTANT APPEAL	3
LONG TERM INTEREST	4
OVERALL	49%

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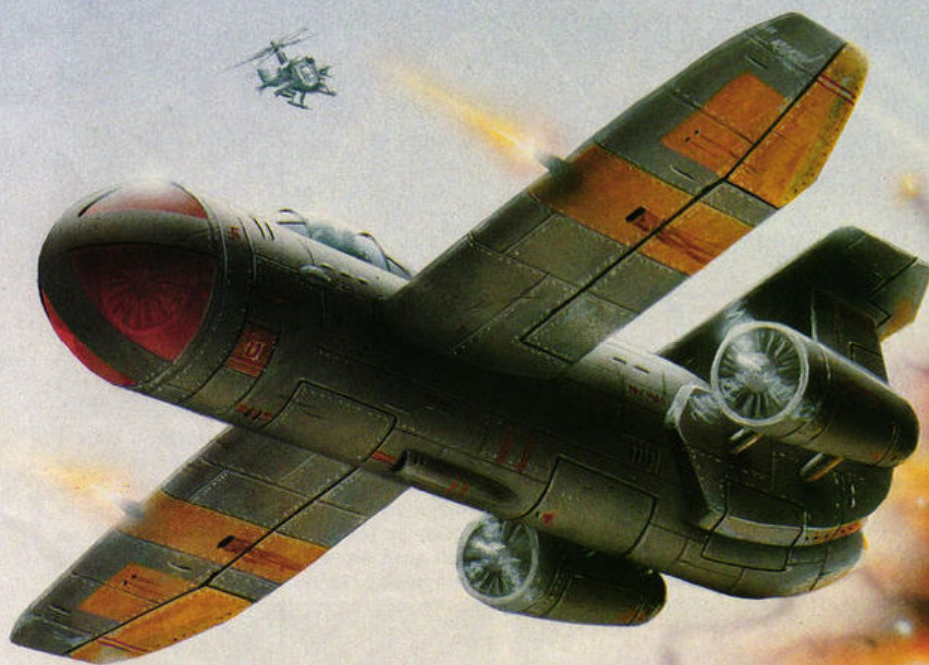
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■ (Above) **CLOUD KINGDOMS** (Logotron): If you're a fan of mega-cutesy games like last year's *New Zealand Story*, and have a tough time keeping both feet on the ground, then you'll love Logotron's new release. Floating kingdoms in the clouds, with yours truly bouncing jauntily around collecting diamonds and fruit (sigh) – well what do you expect from a cutesy game? Logotron are claiming the game features "Amiga-quality sound," whatever that might be and the first "injection-moulded, eight-way scrolling, rubber bottomed software hero." Ouch!



■ (Above) **KID GLOVES** (Logotron): *Rick Dangerous* was one of last year's surprise success stories and Logotron are claiming *Kid Gloves* will be "the *Rick Dangerous* of 1990." A platform game set against scenes from the Ice age, Amazonian Rainforest, Egyptian pyramids, 1960s California and Industrial Revolution, it must have a plot more tortuous than *Dynasty* to be able to string together scenes from a fistful of different continents and historical periods. Read the full *ST Format* verdict before buying this one – we don't treat anything with kid gloves!



■ (Above) **NEVER MIND** (Psygnosis): oddly-named games are back in vogue and Psygnosis are chucking in their two bits' worth. *Never Mind* is a mind-bending puzzle featuring an amazing 300 levels and is due out shortly. The aim is to rebuild a video wall-picture by picking up blocks and dropping them into place. It sounds easy, but rogue chess pieces are attempting to disrupt your design. Described as "a totally interactive thinking man's animated puzzle," the *ST Format* boys felt unqualified to pass on their verdict.

PREVIEW EXPECT

*Originality is the marketing buzzword of the 90's. If it's not unique, it's hasn't a hope in hell of streaking clear of the crowd. From Psygnosis' promising *Infestation* to Palace's intriguing *Dragon's Breath*, bold new games are on the horizon. Put on your shades and hold your breath, the future's looking bright!*

DRAGON'S BREATH (Palace)



(Above and Below) Nothing to do with the stench of your breath after a late-night curry, Palace's new fantasy strategy is stuffed full of trading, role-playing and arcade action. Centring around the bizarre entrepreneurial fancy of breeding dragons in your back room, its amazing

graphics and haunting soundtrack should turn it into one the hottest games of the year. Just as well because Palace have hung a whacking £29.99 price tag on it, enough to burn a hole in anyone's pocket. Read next month's *Format* review to see if the hype is all hot air.



'S: GREAT 'ATIONS

INFESTATION (Psygnosis)

(Below) Psygnosis are blaming programming problems for *Infestation's* delayed release. We've been hearing about the problem-infested game for so long now that it's beginning to take on mirage-like qualities. The game features

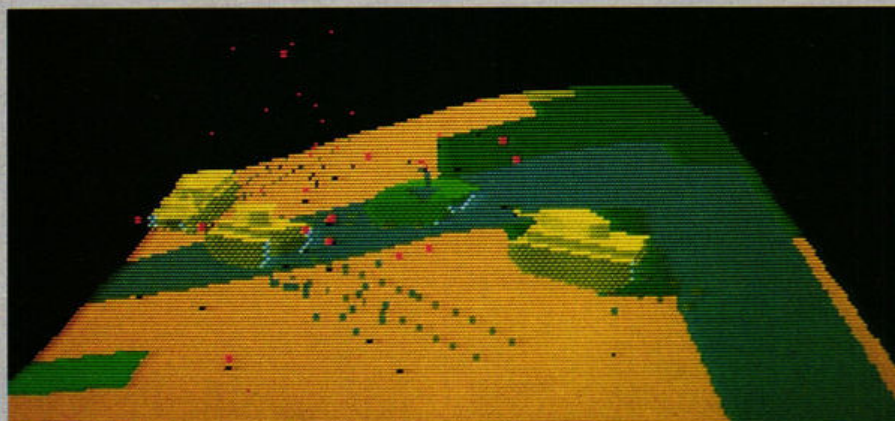
3D lightning-fast vector graphics and a nasty plot that involves poisoning alien eggs with cyanide gas and atomising planets. Read the hard-hitting toxic-free *ST Format* review to see if it lives up to expectations.



CONQUEROR (Rainbow Arts)

(Above and below) If the demos are a taste of things to come, *Conqueror* looks like it's going to be one of the best tank games around. The screenshots look similar to *Virus*, so it's no surprise that the main action sequences were written by the same programmer. It's this environ-

ment which makes a traditionally boring tank game into something really special. It's an action/strategy game involving tactical deployment of tanks to defeat an opposing army. Big hit or unplayable turkey? We give it a thorough reviewing in next month's *ST Format*.



■ (Above) *STRYX* (Psygnosis): this one's a giant step backwards in the graphics department, featuring the smallest animated characters ever - two-thirds the size of those in *Barbarian* according to Psygnosis. The reason for this (so we're told) is to squeeze as much as possible of the playing field on screen at once. It's a strategy game, with the hero fighting to the death against Cyborg robots. A good idea or a programming disaster?



■ (Above) *EMLYN HUGHES INTERNATIONAL SOCCER* (Audiogenic): football games are multiplying like proverbial rabbits. Everywhere you look, software houses are luring big names to support new releases. *Gazza's Soccer* and *Kenny Dalglish* have already made it onto the shelves, but one of the biggest jokes must be Audiogenic's forthcoming contribution. How they expect Emlyn Hughes to still sell computer games is beyond comprehension. The old man has smoothed out the wrinkles, dug up his boots, and trotted out like an old war-horse to put his name on two new games - a soccer and a quiz title. We'll let you know if the boy done good.



■ (Above) *MIDWINTER* (Microprose): an environmental chiller set in the Azores during an Ice Age triggered by fluctuations in the global climate, *Midwinter's* action sequences include skiing, hang-gliding, snow-buggy, driving and fighting. Phew! Read the earth shattering review in next month's *ST Format*, and keep a close eye on the weather - Microprose's "extensive consultation with eminent professors" has unearthed the alarming possibility of an Ice Age in the next 50 years. Ha!

Doesn't that shiny ST look good on your desktop? The machine you've always dreamed about – speed, colour, sound – right there in your home with lots of software to support it, right?

But sometimes, when it's late and you're tired, don't you get just a little frustrated when the floppy drive

continues to whirr, the mouse crawls oh-so-slowly across the Desktop and the television you're using as a display makes your eyes feel like a pair of skinned maraschinos?

OK, you think, maybe it is time to examine the upgrade possibilities. But just what are the possibilities – and how do you decide between them? This month, *ST FORMAT* delivers into your hands the definitive guide to upgrading, expanding and improving your ST and its peripherals. We take you from basic enhancements costing little or no money to hard drives, monitors, memory and the like, requiring a bank roll that would choke a donkey. A gargantuan grab-bag of impressive improvements at prices to suit all pockets.

Welcome to the...

*The A to Z of upgrading,
expanding and generally
improving your ST*

POWER SURGE!

WHY UPGRADE?

When computers first appeared in the home, owners were lucky to have machines with 16 or 32K of RAM. Floppy disk drives were as rare as Sinclair C5s at Snetterton and machines had about as much colour and sound as a Charlie Chaplin movie.

Nowadays, even the entry-level Atari ST has a fast 68000 central processor, half a megabyte of RAM and more ports than you can shake a stick at. New owners of the computer positively gloat over their silicon acquisition.

Programmers however, are a jaded lot. They soon outgrow the limitations imposed by .5MByte of RAM and start to write ever bigger software packages which make heavier and heavier demands on your ST. Sooner or later, you'll want to run a top application or a game everyone's raving about only to find that your system simply doesn't measure up any more. But fear not, for you are about to discover how to stop the programming Schwarzeneggers kicking software sand into your silicon face.

STORY *Jerry Glenwright,
Mark Higham
and Jon Bates*

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auto-booting

● Come on, admit it. More than once you've wanted to stick a disk in the drive and dash off to make a cup of coffee while your ST automatically loaded your favourite word processor. And you thought your ST couldn't handle it, didn't you?

Most games load themselves anyway so if you're an ardent joystick fan you already know how useful it can be. But people who use serious software, or write their own programs, aren't able to auto-boot them.

It's a cinch to do provided the word processor has a .TOS file extension – if it's a GEM program (with a .PRG extension) you're going to have some headaches. Auto-booting TOS files is simply a case of creating an AUTO folder on the disk, moving the program file (your word processor) into it and re-booting the machine. It may be necessary to move associated program files such as the resource files. Trying this trick with GEM program files only causes your machine to plunge headlong into a crash, and even though the sight of the bombs might be entertaining, it's not much use on the speed enhancement front.

GEM programs are those that

include drop-down menus and alert boxes. Atari remedied this problem in TOS 1.4 (found in the STE) so GEM files can be auto-booted from within the INSTALL APPLICATION drop-down menu option. But if you have an STFM, you'll need to buy a piece of PD software.

Disk 357 or 548 from the South West Software Library is exactly what you're looking for. It costs only £2 and works by asking you to enter your GEM program name. You then copy the auto-booting software into an AUTO folder on the same disk as your own program. When you re-boot your machine, you'll see the Desktop appear and then your program will be automatically loaded. The South West Software Library can be contacted at PO Box 562, Wimborne, Dorset BH21 2YD.



blitter

● Originally promised as a plug-in chip upgrade for all STs, Atari have never quite managed to release any of the little beasts to the general public. Blitter is an acronym for Block Line Transfer.

Computers manipulate graphics pixel by pixel. If you want to draw, re-draw or animate something on-screen, each pixel must be individually attended to – allocating the process far more time than necessary.

Manufacturers soon came up with the idea of the sprite in order to get around this time consuming problem. Instead of moving individual pixels, the entire sprite could be moved in one go, speeding up graphics and making computer versions of arcade games playable for the first time. Unfortunately most computers are severely limited in the amount of sprites available to the programmer.

Atari decided to take the idea of the sprite one stage further by introducing a custom chip, the blitter, that would move around whole blocks of lines at once. Windows would appear on screen almost instantly and all GEM screen updates would be incredibly fast. Nice idea, right? But as stated earlier, the company just never bothered to bring the chips onto the market. So if you want one, you must upgrade your entire machine to a Mega or STE where the device is fitted as standard.

There is, however, another option: the software blitter. A little utility program that hides away in the memory and attempts to perform in software what the real blitter does using silicon substrate. See under Utilities for more information.



■ The blitter considerably speeds up screen operations. Unfortunately Atari haven't put the chip onto the market



clocks

● Although your ST is capable of keeping time, and using it to stamp your files, you must input the current time and date whenever the computer is switched on – it's a drag, right?

Files almost invariably end up being stamped DATE HERE, the date the system was programmed. What if the machine could be provided with the correct time and date every time power was applied? No need to boot up the control panel and go through the tedious process of setting the time, and all your files would be set with the correct date of creation.

Several manufacturers market add-on clocks for the ST. These come in two forms; a circuit board that fits inside the ST's case, or a plastic box containing a circuit board which plugs into the cartridge port.

The former, although slightly more difficult to fit, is a far more elegant solution. Once inside, the clock can be completely forgotten, except for the once yearly change of batteries, and your cartridge port remains free for emulators and scanners. Fitting is a matter of undoing half a dozen screws, plugging in the circuit board and reassembling the ST. It's a process everyone except the most hardened technophobe can handle.

The latter is simply removed from its packaging and plugged into the cartridge port – your granny could do it. Easier and quicker to fit, but then the port is tied up. If you want to use a sound sampler cartridge or similar device, the clock must be removed.

Both roughly cost the same and ultimately provide the same results. Decide how badly you need the cartridge port to be free and base your choice on that. One of the best external clocks costs £29.99 and is marketed by Datel Electronics 0782 744707.



data switches

● Are you one of the lucky few who owns more than one printer, disk drive or monitor?

Perhaps you have two 3.5 inch drives and want to add a 5.25 inch device to your system. Or maybe you have a mono monitor for word processing and a colour monitor for games and fun. Isn't it a bore when you have to

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start unplugging the mono monitor in order to use the colour device? And good though the ST undoubtedly is, it can only use two floppy drives at any given time – there's no room for a third.

That's where the dataswitch comes into its own. For a smidgeon under 20 quid, you can connect two or more printers, both the monochrome and colour monitor or a third drive and switch between them easily and quickly.

The switch itself is a plastic box with a knob or switch at the front and several outlets at the back. Using the switch couldn't be simpler. For example; suppose you have two printers – a daisy wheel and a dot matrix – and you're fed up with unplugging the one in order to use the other. Plug the ST's printer port into the dataswitch and the dataswitch into both printers. Choosing between them now is a straightforward matter of flicking the switch or turning the knob at the front of the device.

Dataswitches are a cheap, simple and effective solution to the problem of plugging and unplugging equipment to and from your system. If you're convinced of the need for a dataswitch, Datel Electronics market a comprehensive range of printer switch boxes enabling several printers to be connected to one computer or vice versa. The devices cost around £25. Contact Datel on 0782 744707. If a monitor switch box is the answer to all your prayers, call Best Prices on 0903 700714. For the paltry sum of £14.95, you can end the misery of plugging and unplugging monitor cables.

emulators

● You've got the best computer, so why on earth should you want it to behave as if it were an inferior piece of silicon? Well, although the ST is extremely popular and has been around for several years now, a lot of business and publishing-orientated software houses haven't bothered to convert their wares for the Atari – why spend megabucks converting code when sales might be limited? If you want to use *WordStar*, *dBase*, *Lotus 1-2-3*, or any one of a myriad of professional publishing packages then you're going to have to get an emulator, a device that transforms your ST into an entirely different machine.

The moment the ST became



available, the emulator started to make its mark. The ST is so powerful that getting it to copy the behaviour of other machines is relatively easy. A software-based CP/M emulator was bundled with the machine, PC and Mac emulators soon followed and you can now choose from any one of almost a dozen quality emulators mimicking a variety of computers.

Probably the computer and operating system which most people want to emulate is the IBM-PC and MS-DOS. Your choice is limited by cash flow rather than the availability of the kit. The best known PC emulator is *PC-Ditto*, an unusual software-based DOS mask. To run PC software, you boot up the *Ditto* disk, insert an MS-DOS disk and Bob's your aunt's live-in lover, the ST is a PC – albeit an incredibly slow one. *PC-Ditto* provides comprehensive PC emulation, support for the CGA and MDA display standard and makes your ST's mouse appear to be a PC compatible Microsoft rodent. The program costs around £70 and is available from Power Computing on 0234 273000.

If you want a fast PC, then you'll have to plump for a hardware emulator costing rather more. Hardware emulators have almost all of the genuine PC chips such as Intel's 8086 CPU on the circuit board and consequently run at a reasonable speed. The best of the recent hardware PC emulators is definitely *SuperCharger* from Condor Computers. The device is housed in a grey plastic box which attaches to your ST via the DMA port. If you're the lucky owner of a hard drive this can be connected to *SuperCharger*. The

emulator comes with .5MByte of RAM and is very fast. *SuperCharger* costs £299 and can be obtained from Condor Computers on 0734 810066.

Next on the list of favourite emulation targets is the Apple Macintosh. The ST has attracted a lot of comparisons with the Mac due to their similar technology and user interface. Several Mac emulators, like *Spectre 128* and *Magic Sac*, have come and gone – although *Aladin* continues to sell well. The latest release from HiSoft, however, is set to wipe the floor with all comers.

Spectre GCR is a Mac Plus emulator that comes complete with 128K Apple ROMs and converts the ST's disk drives to the decidedly funny format used by the Mac. It provides a larger screen display than the Mac and more speed (typically 25% faster). The emulator plugs into the ST's cartridge port, you fire up the boot disk and, in the blink of an eye, the ST is a Mac Plus.



Simple to install and easy to use, *Spectre GCR* costs £379 and can be obtained by calling HiSoft on 0525 718181.

That's the main machines out of the way, but what if you have a burning desire to run QL's *Quill* word processor or even the CP/M version of *WordStar*?

■ Turn your ST into a PC with *SuperCharger*. It's easily the best PC emulator for your machine – fast, reliable and easy to fit

■ Are you looking at an ST or a PC screen? Emulators don't just enable you to run other people's software; they also change your display. Here, you're limited to just the four colours found in CGA mode



■ A replacement drive upgrades your ST's internal drive and increases the available storage space of each disk

Worry not, for there's a CP/M emulator and a QL emulator in the public domain and an Atari 8-bit emulator and even a program that purports to transform your ST into an Amiga, but why you should want to do that, remains a mystery...

So there you have it; the ST is a machine with a thousand faces. And remember, it's precisely because your ST is a powerful machine that it can emulate other computers so successfully.

floppy drives



● original 520STfMs were shipped with single-sided, half megabyte disk drives as standard. Fine if all you want to do is play arcade games, but sooner or later you might

want to make use of a word processor or perhaps a database to catalogue your stamp collection, and wouldn't it be nice not to have to send the fabulous *ST Format* Cover Disk away just to be able to access the flip side?

Perhaps the time has come to upgrade your ST's internal drive with a brand spanking new 1MByte version that provides you with complete software compatibility and decreases your expenditure on blank floppies every month by increasing the available storage space of each disk.

Since the dawn of the ST, third party hardware suppliers have offered replacement drives. Some good, some not so good, but nowadays demand is high, prices are low and everyone can

afford to upgrade.

fitted up

● You don't need to be an avid techno-tinkerer in order to upgrade your ST's internal drive; the operation is simple and can be completed by anyone with a screwdriver, a kitchen table and a modicum of common sense.

So just what is involved? The ST's case is held together by half a dozen screws. Undo the screws and you'll encounter a metal shield. This can be removed by straightening the twisted metal tags located in slots around the edge of the ST case. Once you've removed this metal shield, you have complete access to all parts of the ST. Unplug the existing drive and plug in its replacement. Re-fit the metal shield, screw down the case and the job's done. Simple, right?

What if you re-assemble the ST, switch on, and it refuses to respond? Don't panic! Open the case, remove the metal shield and check connections to the drive. If they're snagged somewhere then you may have a short (the signal passes into the shielding or onto the circuit board instead of along the cables into and out of the drive), or the connectors may not have been pushed fully home. Ensure that connectors fit tightly and are fully engaged with those of the drive. If it still doesn't work, remove the new drive and replace the old one. If your machine now boots up, you may have a faulty replacement drive and should contact the supplier who will inform you of return procedures. If the ST still refuses to boot then your installation procedure may have damaged it. If

this is the case then you're going to need a computer repair service. But don't worry, drive installation is very easy and safe and hardly ever goes wrong(!).

So you can handle the installation, you've got the cash – where are you going to get the drive from? Well, the best source of suppliers are the classified pages in the magazine you have in your hands. Several advertisers offer replacement drives and the only real consideration is the price. One of the best drives on the market in terms of price and after sales service is that marketed by Evesham Micros. The device costs £79.95 and can be obtained by contacting Evesham on 0386 765500.

graphics

● If you have a modicum of artistic talent and an ST graphics package, you can throw away your prized paintbox and pick up the mouse instead. The first art packages were fairly primitive, offering you a simple way to combine the ST's 16 colours with some lines and circles and come up with a cave drawing. In no time at all, programmers started tinkering with palette



switching and some bright spark came up with a way of having 4096 colours on screen at once. Voila, suddenly you could recreate Rubenesque nudes. But even they wouldn't look like they were about to step off the

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page and flaunt their fleshy tones, because no matter how good the colours are, there's no art package that escapes the ST's screen resolution. If you want to do that, you need a hardware add-on, and at the end of last summer even that was made possible.

Art packages have been around since the ST popped out of Atari's womb. The first was a PD program - *Neochrome* - which only includes 16 colours and bog-standard drawing tools but still enables you to cut and paste sections of the screen and to edit pixel by pixel. *Neochrome*'s only limitation is that it refuses to run in anything but low resolution mode.

If you want something which runs in all three, give Electronic Arts a ring on 0753 49442. *Degas Elite* might only provide 16 colours on screen at once but they're in a form which can easily be used in your own programs. For this reason, games programmers still swear by *Degas*. For just £24.95 you can do everything that *Neochrome* can do and lots more besides. Magnifying the screen to ten different resolutions and the opportunity to wildly distort any image, will give many a budding artist the taste of freedom, while airbrush, stipple and smear options make even the crudest drawing look reasonable.

If you're quite happy to slave over a hot picture and never see it used in your programs, turn to *Spectrum 512* from Electric Distribution 0480 496666 at £59.95, or *Quantum Paint* from Eidersoft 0234 273000 at £19.95. Both of these have 16 colour modes but they also include a 512 colour option which works using a simple trick known as palette switching. The drawing tools aren't as extensive as those found in *Degas* but when you've got so many colours at hand, you don't need to be as careful with the drawing.

For a paltry £19.95 *Quantum Paint* makes *Spectrum* look crude. A gobsmacking 4096 colours will make your eyeballs roll as you find there's just nothing you can't do with colour. Unfortunately, because *Quantum* is trying to do so much, it ends up being particularly hard to use. Not only have drawing options withered away but you can spend six months trying to find the colour you want to use.

If the only reason you purchased your ST was because you couldn't afford a Cray 2000, there are still ways to improve the quality of the graphics beyond belief. Elmtech have created the *Parsec* graphics board which is the first high-resolution graphics system available for under £2,000. You have to be a serious artistic buff, however, to

want to use it. The board gives you access to an eyeball-shattering 16 million colours and a resolution of 1024 X 768 pixels.

If you want to upgrade, this is the way to go. This high-end model costs around £1,500 but contact Elmtech on 021-472 5719 and they'll tell you about a cheaper version for £799. Although this only includes 4096 colours, the resolution is still the same so high-quality pictures remain possible. An excellent paint package which fully utilises the board's power is included in the price. Imagine filling boxes at 12.5 million pixels per second, or drawing lines at 1.25 million pixels per second: this is the board to do it.



hard drives

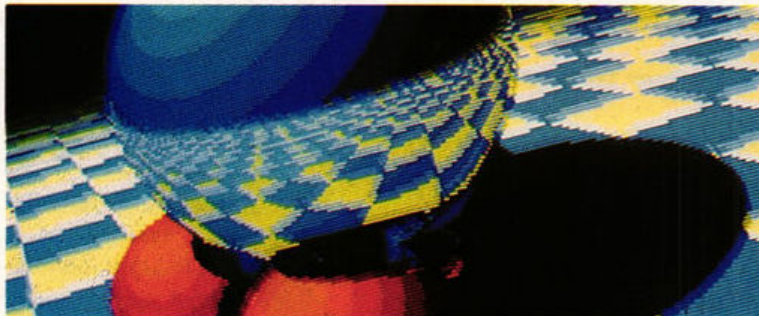
● Did you ever use a computer that had cassette-based storage? Abysmal, right? When you unpacked the ST, fired up the word processor and loaded and saved files to and from a floppy drive you couldn't believe the speed, capacity and ease of use - and quickly came to wonder how you ever managed to compute without one.

Some time later, however, you're cursing the floppy for operating at a snail's pace. A half dozen files and the damned device is complaining about being full! OK, you've just sold your second child into slavery to raise some money, maybe now is the time to get a hard drive.

At their heart, hard drives have a spinning, inflexible disk of Mylar (the platter) coated with a magnetic substance. A read/write head rides on a cushion of air above the platter. The gap between the head and the surface of the disk is so small that a single molecule of cigarette smoke would make the head crash into the platter. The disk revolves at 3,600 rpm (compare that with the floppy's 300rpm) and because of the speed of the platter and close proximity of the head to the disk, vast quantities of data can be stored and retrieved at great speeds.

The original hard drives offered a capacity of between 5 and 10MBytes. Today you can buy drives with 300MBytes of space. ST hard drives range in size between 20 and 85MByte and are priced according to manufacturer and capacity. For example a 20MByte device from Atari may cost almost as much as a 40MByte drive from a third party supplier. Should you

■ The ST's graphics capabilities are gloriously shown off by GFA Raytrace images





•just one of the many quality hard drives available for the ST, this Third Coast offering is sleek, fast and extremely good value for money

stay with Atari or plump for the third party offering?

Names to watch out for are Vortex (cheap 40MByte drives from a variety of UK suppliers), Supra (American drive manufacturers. Quality, fast, but rather expensive), and Third Coast. The latter offer a range of quality drives at reasonable prices and should be at the top of any prospective buyer's shopping list. Third Coast's prices fall all the time, so check out the latest advertisement in *ST Format* for up to date details, or call them on 0257 472444. You can even buy a kit from them and build your own drive on the cheap. And remember, that hard drive you're looking at may cost several hundred pounds, but compared to the cost of floppies per megabyte and their incredible lack of speed, you're getting a bargain!

internals

● You don't need a degree in C programming to make use of internal ST calls. Surprisingly, anyone tinkering with Basic can come up against the occasional problem which only internal calls can solve. For example; ST Basic refuses to let you read the joystick port, and setting the internal clock can be a nightmare. So if you've half considered resorting to another language, consider making a direct internal call instead.

The ST internals are made up of

```
real%=XBIOS(2) !read start of screen address
PRINT real%
fake%=real%-32000 !make fake screen reside 32000 bytes lower
in memory
PRINT AT(1,1);"This text is written on the REAL screen"
c%=XBIOS(5,L:fake%,-1,-1) !move to invisible, fake screen
PRINT AT(1,1);"This text is written on the FAKE screen"
c%=XBIOS(5,L:real%,-1,-1) !move back to real screen
PRINT AT(10,12);"Press any key to see FAKE screen!"
i=INP(2)
BMOVE fake%,real%,32000
```

three main types of operating system calls: GEMDOS, BIOS and XBIOS. GEMDOS calls are almost identical to the MS-DOS calls found in the old UNIX systems. These comprise of standard calls to make directories, examine free disk space and even set the date and time of the machine.

As an example; you could find your ST's version number using GEMDOS \$30. Different languages make calls in different ways but a standard GFA Basic call would run as C%=GEMDOS(&H30).

The BIOS and Extended BIOS (XBIOS) calls are used for basic input/output calls, such as the printer, screen and keyboard. XBIOS calls are widely used in all sorts of applications. One of the most useful is the creation of a second screen which cannot be seen. When writing graphic routines the second page is used to make up the image which is then copied onto the first page to be displayed.

This method ensures that you cannot see the complicated processes which are used to make up the image until it's been completed and moved onto the main screen.

For the complete list of ST internals, including all GEMDOS, BIOS and XBIOS

joysticks

● Originally available as a straight plastic stick with a couple of buttons, the humble joystick has developed into a stylish peripheral that the first home computer enthusiasts just wouldn't recognise. They now come in every colour, shape, form – and price! Wouldn't your copy of *Flight Simulator II* or other flight sim benefit greatly from being used with an exact copy of a small aircraft control yoke?

SpectraVideo market a full-size, full-control yoke that fits neatly into the hand and gives you positive control over any flight simulator. The device attaches to the ST as a direct replacement for your existing stick – without modifications – and is available from SpectraVideo on 0273 675503.

Konix were the first to pioneer hand-held joysticks with their *Speed King* range. Joysticks previously needed to

■ A program to create two screens when writing graphics routines would run, using GFA Basic, as shown right:

Xbios(2) returns the start address of the screen memory, while Xbios(3) returns the physical address, ie. the address used in all output functions. To set these to different values you must use Xbios(5). The -1 values in this Xbios call are ignored.

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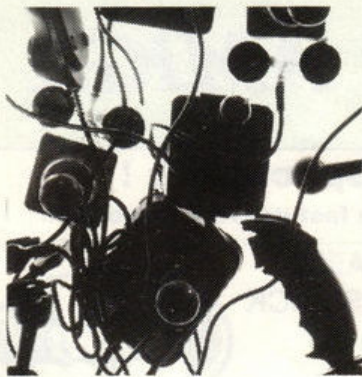
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be attached to a desk top via rubber suction caps. The latest Konix joystick – the *Navigator* – is another of the high quality, hand-held, easy to use joysticks that Konix are justly famous for. Contact Konix on 0495 350101.

The *Cruiser* from Power Play is an innovative joystick that allows you to adjust the stick to set degrees of response. Pulling up on the shaft eases the action, a downstroke makes it tighter and more responsive. The *Cruiser* comes in a variety of wacky colours, costs around a tenner, and is available from your local computer store.

keyboards

● What were Atari thinking about when they created the wonderful ST? They constructed a powerful machine, gave it a tiny price tag, and then bolted on what is probably the worst keyboard this side of "Uncle" Clive's Spectrum. Large and fully featured, sure, but with as much life as one of Freddy Kreuger's throwaways. So what can you do to improve the quality of the ST's keyboard?

One rather novel method of getting more response from the keys is to fit the ST with a set of *Springz*. *Springz* are – as their name suggests – a set of little springs which fit under each key and provide that key with more bounce. Keypresses are supposed to become more positive and the keyboard as a whole more lively. Unfortunately the fitting process is a drag. Prying off the keytops with a screwdriver is dangerous for you and your ST. And when you finally have all the *Springz* in situ, the keyboard doesn't feel much different from its original state. *Springz* cost £15 and are available from ISM on 0983 864674.

There are no replacement keyboards on the market for the ST. Unlike the IBM-PC, you can't unplug the

keyboard and plug in a new device. You could try buying keyswitches from an electronic components supply store such as Maplins and building your own keyboard (as did ZX81 owners of yesteryear) but there's no guarantee that you'll end up with anything better. You'll just have to soldier on with that awful keyboard.

Of course, you could buy a Mega ST. That machine comes with a keyboard unit which is separate from the CPU housing. The keyboard accompanying the Mega is excellent; it has light, responsive keys that make typing a pleasure and you can position the device anywhere your heart desires. An expensive solution perhaps, but the only one open to you.

laser printers

● There was a time when the humble dot matrix printer was an almost unattainable prize, owned by only the most affluent computer user and looked upon with pride. The rest of us had to inflict letters on our friends that were printed on the Sinclair tinfoil device. Its description probably contained the words "absolute" and "junk," but at a smidgeon over 40 quid, the budget would just stretch to it. Now the world and its dog owns a dot matrix printer, many enthusiasts have a daisy wheel device too for correspondence, so where do you go from here?

Laser printers are the next rung on the great ladder to perfect printing. They cost megabucks but provide you with the clearest, crispest, cleanest copy possible. Most laser printers connect directly to the Centronics parallel printer port but have provision for RS232 serial connections too.

The Atari laser printer connects to the DMA port enabling the printer to run slightly faster than third party offerings, it's cheap and serviceable but you need an ST with at least 1MByte of memory and preferably two. It costs £919.99 from Atari themselves (0753 333444) – but shop around, it's often discounted.

Third party names to look for are Hewlett Packard and their *Laserjet II* and Qume's *Crystal Series II*. The former costs an eye-watering £1,900, was one of the first available laser printers and is still one of the best. Contact Hewlett Packard on 0734

777828. The latter is a cheap, yet quality alternative to mainstream printers. Qume devised the industry standard for daisy wheel printers and are well known for the quality of their machines. The *Crystal* printer costs £1,555 and Qume await your order with baited breath on 0635 523200.

For the definitive review of popular laser printers grab a back copy of *ST Format* (issue 4).

monitors

● Have you ever staggered to bed bleary-eyed after a long session at the keyboard? Next morning your eyes feel like they've been plucked from their sockets, rubbed around on sandpaper and re-inserted. Fine for Mr Optrex's bank balance, but lousy for those of you tied to the domestic television as a computer display.

Throughout the computer industry, the Atari monochrome monitor is known as one of the best available. Its rock-steady, clear, crisp display is easy on the eyes even after long periods staring at the screen – and the price is easy on the pocket. Heavily discounted by a number of ST suppliers, the SM124 can be had for around £100.

The SM124 and other monochrome monitors only work with software designated as being "Hi-res" – that is, software that supports the ST's 640 x 400 mono display resolution. Included in this list are most word processors, spreadsheets, databases, utilities, and almost all serious software. Games, with one or two exceptions, work only in "Low-res" (320 x 200 pixels).

Unfortunately, the ST cannot drive more than one display at a time, so if you're using the monochrome monitor for word processing and want to play a game, you must unplug the SM124 and plug in your TV or colour monitor.

The benefits of using a monitor aren't restricted to serious software. Games are a lot more playable when displayed on a colour monitor instead of a TV. The picture is clearer and sprites are easier to discern. Colour monitors, however, cost megabucks (£300 to £400), so unless you perform a lot of serious graphic work, the TV is probably fine.

There is, however, a third option. That is the combined TV and monitor. Many modern televisions such as Hitachi's latest model offer a Scart connector to enable STs and other

■ So what if the keyboard handles like a corpse, there's always the veritable platoon of joysticks to use.

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computers to be connected, and although not quite as good as a dedicated monitor, the display beats standard TVs into a cocked hat. If you do want to connect both a monochrome and colour monitor at the same time without having to plug and unplug, cast an eye, preferably unsandpapered, over the Dataswitch section listed under D.

mouse

● Although a significant improvement over the archaic command line interfaces of certain inferior computers, the ST's mouse isn't everything a silicon rodent could be. Clunky and with buttons that would tire Arnie Schwarzenegger's fingers, a replacement for this Gorgon of the mouse world is a must. Keen to cash in, many third party manufacturers offer replacements ranging from extremely high resolution rats that whizz across your Desktop, to highly exotic tail-less offerings that help to reduce the tangled mess of your table-top.

A quality example of the former is the Naksha mouse, a stylish and ultra-useable mouse of quality construction that's as smooth as Emma Freud's inner



thigh (pure guesswork, I'm afraid). The Naksha comes with a mouse mat and mouse house for around £40 and is available from Naksha on 0925 56398.

If money is no problem then the tail-less infra-red mouse is a gadget you've simply got to have. American company Practical Solutions have developed an infra-red mouse that works rather well. At first using the mouse is akin to using the ST's standard rodent under water, but familiarity soon breeds wrist-flicking, ultra-fast, smooth mouse control. The Cordless Mouse is distributed in the UK by Bath Computer Shack, costs £79.95 and can

be purchased by calling 0225 310300.

networks

● Connectivity is supposedly the way ahead for small systems. Getting a bunch of powerful little micros to share peripherals and data increases productivity and efficiency. The IBM-PC and compatibles have a variety of networks available costing hundreds of pounds. Now, at last, several networks are available for the ST and they're cheap compared to equivalent offerings.

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Signa Publishing, famed for serious ST products *Calamus*, *Imagic* and *O-Line*, are just about to launch a token ring-based ST network featuring comprehensive password entry, file protection, messaging and other stunning wrinkles. For further information contact Signa on 0252 341600.

At the cheaper end of the market comes SGS Net, an American network distributed in the UK by Bath BBS. SGS Net connects via the MIDI ports providing speed and easy set-up. There's file protection and server utilities enabling creation of a range of privileges for each terminal. SGS Net costs £145.95 and for that you receive equipment and software to set up one file server and one node. Other nodes can be added later by purchasing add-on packs. Wait for the full review in next month's *ST Format*, or if you're wildly impatient contact Bath BBS on 0225 836182, or via a modem 0225 835841/840060.

■ Just what am I supposed to do with this small, silver, plastic horn type thing then eh? Just suck it and see what happens!!!

orchestration

● To start with a note of gloom, the one thing you cannot do is upgrade the ST's internal sound chip. Although various improvements are promised for the STE, which may or may not be exciting, we must look realistically at upgrades to software as the most important area in upgrading musically.

The first thing to consider on the 520 is the monitor. You're probably painfully aware that the better programs usually require a hi-res monitor. Although they may well run on the 520, without the definition that either a SM124 or SM125 monitor gives you won't get a peep out of them. The best known programs that run on the hi-res monitor are *C-Lab Notator/Creator*, *Steinberg Pro 24 version III* and *Virtuoso*.

If you're using a 520, memory space is usually inadequate for any serious work. One program that still operates successfully on the 520 is *Virtuoso's* soon-to-be-released modular version of the normal *Virtuoso* program. It enables you to select which parts of

the program you wish to be resident in the ST's memory and which to leave on the disk. Since *Virtuoso* can perform disk operations without interrupting other functions this may be worth more than a passing thought.

The usual memory upgrades don't appear to have caused any problems, but again the single-sided disk is counted out with most sequencing software costing over £100.

With much time, effort and advertising space devoted to the *Multiple Program Environment/MROS/CHAOS* (call it what you will), it is only in the small print that you realise that to have anything like the ability to use two or three programs simultaneously you will need at least 2MBytes, and 4MBytes would be better.

Apart from very low priced programs, the good news is that most software houses upgrade the software you have. For example, if you have *Steinberg Pro 24* and are eager to rush out and spend more money (£500 to be exact) on *Cubase*, the latest sequencer and multiple environment software from Steinberg, you can get a trade in of £200 on your *Pro 24* against a new *Cubase*. You have to surrender your dongle to complete the deal, though – *ST Format* cannot be held responsible for what may happen should you be foolish enough to

turn up with a pirat copy!

The story is very much the same across the board. You can trade in *Creator* against *Notator* and *Track 24* against *Studio 24*. The general rule seems to be that if you have software from a reputable software house and you want to upgrade that particular type of software, then contact the importing company.

It's not a universal swap-shop, however: Dr T, for example, require a modest fee to upgrade you from KCS 1.6 to KCS 1.7, but they won't take too kindly to exchanging it for a voice program or film scoring software. The underlying fear is that this sort of dealing encourages piracy on a large scale and would result ultimately in software houses going bust and prices rising enormously.

The people to go to are the importers, if the program was developed outside of the UK, or the software company direct if they are a UK company. The dealer where you bought the software may do a similar deal, but more than likely won't.

This covers the main points about upgrading the computing side of the coin. If you want to upgrade your synths and sound recording systems the world is your oyster – or rather, a bottomless black hole into which folding money can be dropped endlessly!





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ST Music Matrix Midi Disk Magazine

Dedicated to the MIDI user on the ST. Educational by design, + covering every aspect of the MIDI
and MUSIC data available for the ST computer. Each issue has files with Synth Editors, New
Voices, Original Sequences (Most are in MFS), e.g. Eroica Passage (Issue 5), News, Reviews,
MIDI tutorials, MUSIC tutorials, MASTERTRAKS PRO sequencer demo (Issue 3) and even
complete Sequencers. (Issues 1,7) Available now - Issue 7 has a new 8 track Sequencer which
supports MIDI THRU, MULTIPLE VOICE RECORDING and EDITING also a full K1 EDITOR

Issue 8 is now available with another 50 M1 voices, STOS Midi
Algorithmic tutorial, 32 new K1 voices.

Data in the Matrix includes Editor and new voices/patterns, for the Korg M1, Roland D10/20/110, MT
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- ACC24 - Mono Emulator, makes your TV think it's high rez - CODER, set up your printer
- ACC16 - PRIVATE EYE, see what's going on, RAMDISK, STARTUP (3in1 utility, very good)
- ACC26 - DATABASE, very good GEM driven program, all you'll ever need.
- ACC31 - ST-SHEET, gem driven SPREADSHEET program, very comprehensive indeed.
- ACC69 - MOUSE POINTER, re-design your mouse pointer, over 50 on disk already, good!
- ACC70 - STICKER, design and print your own disk labels (high-res only). Loads on disk.
- ACC76 - OPUS200, SPREADSHEET with built in charting, the BEST around. 1meg needed.

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- ART4 - MASTERPAINTER, works in all resolutions and supports multiple screens.
- ART8 - LANDSCAPE, a Fractal Generator for those interested in this fascinating world.
- ART19 - PEARLE, Ray Tracing program and BLASTRAM, animator/show program to use.

GAMES & EDUCATION

- GAME11 - KIDGRAPH, KIDGRID, KIDNOTE2, mouse driven colourful games for youngsters.
- GAME62 - KIDSONG, GO-ROUND, NUMBER MAZE as above, great for the younger ST'ers
- GAME63 - KIDPUBLISHER, desk-top publishing for kids, (plus instructions for adults), great.
- GAME38 - MISTER POTATO HEAD (kidpotato), JIGSAW, QUIZWIZ, STARCHART
- GAME19 - PICKPOCKET, BARNYARD, (for youngsters) and CRIBBAGE, the classic game.

DISK PRICES

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SO, YOU COLLECT DEMO'S DO YOU?

- DEMI16 - THE UNION DEMO, simply the BEST demo available on the ST.
- DEMI15 - UNION DEMO No.2, the legend continues, prepare to be amazed by this one.
- DEMI143 - THE DEFINITIVE DEMO by The Lost Boys, 1meg memory needed (but worth it).
- DEMI144 - GHOSTBUSTERS DEMO from the ST Squad, the longest scroll in the world?
- DEMI145 - SWEDISH NEW YEAR DEMO by the Cure Bares, one of the very best around.
- DEMI156 - THE SKUZZ, brilliant AVS video animation and music, fabulous (1meg needed).
- DEMI158 - CALIFORNIA RAISINS, THE cutest animation produced so far, (1meg needed).
- DEMI164 - WHATAHECK DEMO, another brilliant display from the Cure Bares (D/Sided)

CLIP ART & WORD PROCESSORS

- WP12 - V3.0 of STWriter Elite, the best PD Word Pro' available.
- WP23 - EDIMAX, a fast text editor, fully GEM'd, VGood.
- WP24 - 144 trade marks from the 1920's
- WP26 - 17 screens of MAC clip art (includes Picswitch/Tinyview)
- WP31 - 21 Screens of 'Whimsical animals and Figures'
- WP32 - 14 screens of 'Office Humour'
- WP37 - 22 screens of 'Foods'
- WP39 - 14 screens of 'Sports'
- WP41 - 15 screens of 'Christmas Designs'



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● P is definitely for public domain: the ST has a truly comprehensive range of superb PD applications. Often derided, the PD is in reality full of useful accessories and utilities that can save you a fortune when you're thinking about upgrading your machine, memory or disk drive. Indeed, using PD software can significantly improve the speed, efficiency and power of your ST at a tiny fraction of the cost of commercial products.

RAM disks have suddenly become very important. You may have rubbished them in the past – but then who can blame you when your ST only had 512K? There's no excuse with 1Mbyte or more; there's plenty of memory to have a RAM disk *and* run an application at the same time.

Likewise, the various disk formatters that abound are instantly doubly useful. With a single-sided drive you might have been able to squeeze 400K on a disk – with a double-sided drive, and the right software, you can store an amazing 800K *plus* on a disk!

It's not only extra utilities that become available when you expand your machine, but demos too. Many require 1Mbyte and often they come on double-sided disks. Let's see what the public domain holds in store for those people upgrading their ST.

pd: rat trap

It's a *Rat Trap* – but you ain't been conned. This great accessory prevents menus dropping down whenever the mouse pointer strays in the direction of the menu bar. Menus are locked out until the left button is pressed while the pointer is over a menu heading. In fact, this is how Atari originally intended the Desktop to work: unfortunately Apple kicked up a fuss and demanded things

be made different from its own system. Want to make your ST operate in tidier, Apple Mac-like fashion? *Rat Trap* is available from Floppyshop ST, Disk UTL23, 50 Stewart Crescent, Northfield, Aberdeen.

pd: ram disk

No matter how much memory your ST has, the operating system insists on making several passes when copying disks with only one drive. In other words it can take a lot of disk swaps before a file is copied from one disk to another. When it comes to multiple file copies you're in trouble. The operation is tedious, frustrating and time consuming.

Enter the RAM disk. A RAM disk sets aside a portion of the ST's memory which it regards as a disk drive; files can be copied to and from it and programs can run from it. So, to save hours of painful disk copying you copy all the desired files to the RAM disk, change the floppies and copy the files from the RAM disk to the new floppy. Easy. And just one disk swap.

RAM disks are also useful for



speeding up programs which make heavy use of storage devices (in this case the floppy). For instance, a picture slideshow utility will instantly show images assuming the pictures are in RAM; there'll be next to no waiting time as the images load.

There are absolutely countless RAM disks in the public domain – indeed, several have been given away on past *ST Format Cover Disks*. Look for something that is easily configured; preferably anywhere from a few K right up to 4MBytes if necessary. Also, try and get hold of a RAM disk that is reset-

proof. If the ST crashes or you hit the reset button at the back of the machine, you lose everything in the memory. With a reset-proof RAM disk it's often possible to recover files after a crash or reset.

Once you've got a RAM disk you're unlikely to change it for another. They all do much the same; some are friendlier than others and some more configurable than others. At the end of the day, it's what you're happiest with. But a good choice appears on the South West Software Library's disk 187, available from PO Box 562, Wimborne, Dorset BH21 2YD.

pd: diskmech

For an all-in-one set of disk utilities you can't go wrong with *DiskMech*. It's the ideal tool for getting the best out of your drive, offering disk analysis, archiving and editing.

From the sector editor you can read and edit any sector on a disk regardless of size, track number or side number. DiskMech provides the ideal environment for discovering exactly how data is stored on single and double-sided drives.

The format editor lets you create custom formats with any type of sector layout, alternative ID fields, different gap lengths and much more.

In addition to that lot *DiskMech* provides you with a speedy alternative to GEM's disk copying routines. Give your ST a boost with *DiskMech*, also available from Floppyshop ST (address above) on disk UT1.09

pd: disk formatter

GEM's formatter allows you to store around 360K on a single-sided disk and 720K on a double-sided disk. The Amiga's operating system offers a much more generous 880K per disk (all Amigas have double-sided drives), but there is absolutely no reason why the ST can't store near or indeed just over 800K of data on a double-sided disk.

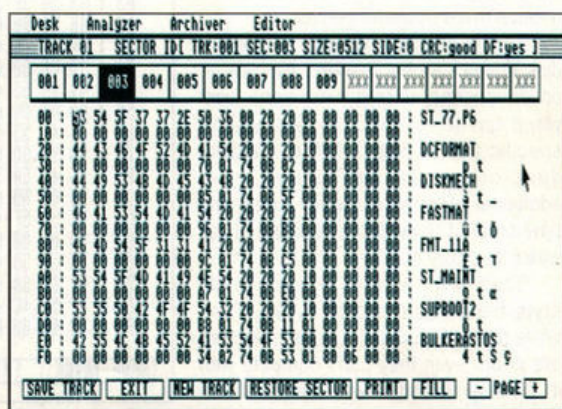
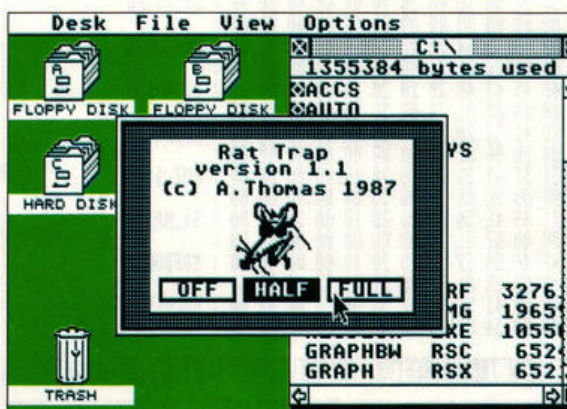
Not all ST drives are equal, so when choosing an extended formatter be sure to thoroughly test all disks initialised by the formatter.

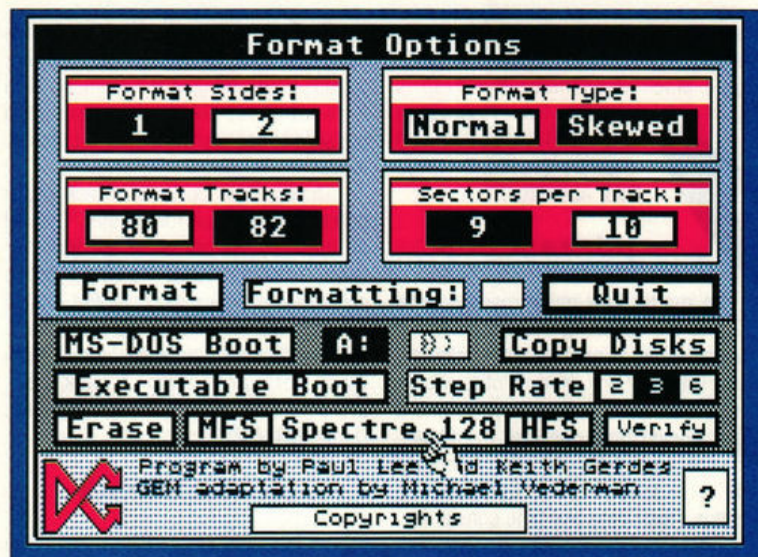
One of the best formatters available

■ A RAM disk appears like an ordinary floppy or hard drive on the GEM Desktop – it works virtually the same as any mechanical storage device

■ **Rat Trap** (right) allows you to determine what happens when you move the pointer over a menu bar heading

■ Deep into the data on your disk (far right) and things are looking interesting...





is DC Format. Not only does it provide extensive features for formatting extended ST disks, but also for formatting Spectre MFS, Spectre HFS and MS-DOS disks. Spectre disks can be read by Spectre GCR (HiSoft's Mac emulator) and MS-DOS disks can be read by PCs. Incidentally, the ST can read and write PC disks no problem; swapping files between these two machines is effortless. *Disk Formatter* is available from Softville PD, disk ACC57, Unit 5, Stratfield Park, Waterloo, Hants PO7 7XN.

pd: b-boot

Imagine this scenario: you have a single-sided internal drive A and a double-sided external drive B. You have some software on a double-sided drive that can only be auto-booted. Unfortunately there's no way you can do this on the ST, because the standard operating system only allows booting from drive A. With a tiny utility called B-Boot on ST UK's disk A82, however, it's possible to get the ST to auto boot from drive B. ST UK are at 1 Bartholomew Road, Bishop Stortford, Herts CM23 3TP.

pd: fsel

Upgrade your ST's file selector to be more like the one promised in TOS 1.4 and available now in the STE (TOS 1.6). When placed in the Auto directory *Fsel* replaces the usual GEM file selector with a much more powerful version.

The improvements are extensive: disk drives can be changed by clicking on drive icons, default extensions exist which can be clicked on to quickly show specific files in the directory window, directories can be printed, and additional information like file length and time created is available because of the wider directory display.

You'll never want to go back to old style file selectors after using *Fsel*. While the TOS 1.4 and 1.6 file selectors are good, even they can't compete with it. Don't even bother with standard TOS



file selectors before 1.4; get *Fsel* disk UTL36 from Floppyshop ST immediately!

pd: spooler

Your printer has its own "buffer" or memory, usually about 1 or 1.5K, which is large enough to hold about 30% of an A4 text page. It's for that reason that your ST locks up when printing. For instance, if you print a 10K file, the ST feeds the file a little at a time to the printer until the process is complete. Not only is this slow, but you can't get on with anything else until the file has finished printing.

A printer spooler solves that problem. Like a RAM disk, a printer spooler sets aside an area of RAM for its own use. Rather than storing files, the spooler stores data designated for

the printer. The spooler automatically passes information to the printer as needed. All this is done in the background. The bonus being, of course, that you can get on with other tasks while printing.

Spooler on Softville's ACC18 disk (address above) sets up a 30K spooler into which printer data is sent from your word processor, DTP package or any application enabling printed output.

pd: mono emulator

You do have a choice. Rather than buying a high resolution monochrome monitor to run all the mono software, you can run an ingenious utility written by Mike West (and available on Floppyshop disk ART03M) that tricks the ST into think it's running in high resolution.

Not all mono software is fooled, but a high enough percentage works to make the system worthwhile. And the difference in price between a mono monitor and a single PD disk are considerable.

Displaying just a high resolution on a colour monitor takes it out of the ST's processor. For this reason it's possible to select a combination of fast screen update (but slow program running) or slow screen update (and rapid program execution).

So think emulator before splashing that cash!

pd: folder extender

Due to a problem in early versions of the ST's operating system, it's impossible to open more than 40 folders in one session without the ST going haywire and possibly corrupting the contents of the disk. *FOLDER200*. PRG allows you to open up 200 extra folders. Simply by renaming the file and altering the last three digits you can select the number of folders required. A handy program, invaluable when using a hard disk system. Available from Softville PD, disk ACC13.

Desk	Analyzer	Archiver	Editor
TRACK 01 SECTOR 001 TRK:001 SEC:003 SIZE:0512 SIDE:0 CRC:good DF:yes 1			
001	002	003	004
005	006	007	008
009	010	011	012
013	014	015	016
017	018	019	020
021	022	023	024
025	026	027	028
029	030	031	032
033	034	035	036
037	038	039	040
041	042	043	044
045	046	047	048
049	050	051	052
053	054	055	056
057	058	059	060
061	062	063	064
065	066	067	068
069	070	071	072
073	074	075	076
077	078	079	080
081	082	083	084
085	086	087	088
089	090	091	092
093	094	095	096
097	098	099	100
101	102	103	104
105	106	107	108
109	110	111	112
113	114	115	116
117	118	119	120
121	122	123	124
125	126	127	128
129	130	131	132
133	134	135	136
137	138	139	140
141	142	143	144
145	146	147	148
149	150	151	152
153	154	155	156
157	158	159	160
161	162	163	164
165	166	167	168
169	170	171	172
173	174	175	176
177	178	179	180
181	182	183	184
185	186	187	188
189	190	191	192
193	194	195	196
197	198	199	200

■ Extend your floppies the DC Format way

■ Mick West's Mono Emulator

■ Do so much more with the improved file selector on

FONT DISKS

- **A13** - Publishing Partner disk 1. 6 fonts: Hudson, Columbia, Devoll, Thames, Spokane and Saturn.
- **A38** - Publishing Partner disk 2. 6 fonts: Caligary, Elegance, Courier, Roman Bookface, Westside and Avant Garde.
- **A95** - Publishing Partner disk 3. 6 fonts: Artist, Broadway, Letter Gothic, Oriental, Ultra Black and Wilkes-Barre.
- **A127** - Publishing Partner/PagesMaker disk 1. 1 PP font: Creative. 5 PS fonts: Futura, ILVB, Script and HAL.
- **A137** - Over 40 GEM GDOS fonts: 8x8, 9x14, COMPUTER, DEVEILLE, EDITOR, HAMPTON, OFFICE, SCRIBE, SPECTRUM, TIMES, UTOPIA, WESTERN, DLANI, FAT, TEST, COMPUT, NORMAL, THIN, BOECKEL, BRUSH, CHICAGO, DOUBLE, ENGLISH, ELEGANCE, FUTUR, BIG, GRANDE, INTEL, MAGNETIC, MONSTER, MINICOL, MODERN, MONITOR, NANO, NANO BLUB, ROT, IND, 16, GOTH2, GOTH22SH, NEWSTAND, MONICA, PC1500, SERIF30, AKASHI12, CAIRO, CHICAGO, COURIER, GENEVA9, LONDON, MOBILE, NEWYORK, PREMIERE, TIMES09, TIMES10, TIMES12, TIMES14, TIMES18, TIMES24, DUTCH10E, DUTCH10N, DUTCH12E, DUTCH12N, DUTCH18E.
- **A135** - Font Master GDOS 31 font.
- **A63** and **A64** - Font GDV 31, Enson, Decas and ST font editor.

CLIP ART DISKS

- **A36 - Clip Art 1 - Degas format - mainly animals, sports, Walt Disney and cars.**
- **A37 - Clip Art 2 - Degas format - mainly Christmas, animals, military, Atari, Commodore, flags and Zodiac.**
- **A65 - Clip Art 3 - Degas format - mainly 1930's trademarks.**
- **A77 - Clip Art 4 - Degas format - mainly Alabamists, Easter, Christmas, Braves, animals and famous people.**
- **A78 - Clip Art 5 - Degas format - mainly Pixies, titles, Halloween, Valentines and Jewish.**
- **A79 - Clip Art 6 - Degas format - mainly Sports.**
- **A80 - Clip Art 7 - Degas format - mainly whimsical and cute and 2 good alphabets.**
- **A115 - Clip Art 8 - Degas format - mainly Atari, Walt Disney, Garfield, pointing hands, robots, hands.**
- **A116 - Clip Art 9 - Degas format - mainly faces, Christmas, horses and eyes.**
- **A117 - Clip Art 10 - Degas format - mainly alphabets.**
- **A128 - Clip Art 11 - 42 GEM pictures.**
- **A130 - Clip Art 12 - 47 IMG pictures and 5 GEM pictures. The 47 IMG clip art disks (13 - 25) contain IMG format files which can be converted to other formats using disks GR20 and GR17. Each disk has a slide show program for viewing the images. All images were scanned at 200 x 200 resolution. ALL ARE DOUBLE SIDED DISKS**
- **A140 - Clip Art 13 - decorative scrolls.**
- **A141 - Clip Art 14 - decorative scrolls.**
- **A142 - Clip Art 15 - 19th century characters (men).**
- **A143 - Clip Art 16 - 19th century characters including north and south American indians.**
- **A144 - Clip Art 17 - 19th century characters including Turkish/Asian.**
- **A145 - Clip Art 18 - Statues.**
- **A146 - Clip Art 19 - Statues.**
- **A147 - Clip Art 20 - 19th century characters.**
- **A148 - Clip Art 21 - 19th century characters (men).**
- **A149 - Clip Art 22 - 19th century characters, scrolls and Einstein.**
- **A150 - Clip Art 23 - a variety of comical/cartoonist.**
- **A151 - Clip Art 24 - happy/celebrating people.**
- **A152 - Clip Art 25 - Miscellaneous, photos, cartoon and Roger Rabbit.**

APPLICATION DISKS

- **A87** - Electronic Bank Statement the excellent accounts package from Budge UK.
- **A96** - DOUBLE SIDED DISK. Sheet v2.0, powerful all features spreadsheet, includes documentation and tutorial.
- **A121** - POOLS - Expert Results Predictor v2.2 by 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, French and Spanish versions, includes documents, 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 typesets. This is a very powerful piece of software. Also includes MetaFont and utility 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 £15.00.
- **MP22** - 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 Sided V0.00 the accounting program by Graham R Hutchings. This is a fully working program that does all aspects of accounting. VAT returns, VAT returns available. Extent

UTILITY DISKS

- **A31** - This disk contains the following 1st Word printer driver files: SG10STAR, KXP1091C, PR1215, PROWRT, EHPREWST, T3130, ESF58X, PAN109B, OLYMPIA, EFX RX80, LQ800, G, PAN109, GEMINI, LQ800, SG10 GPH, EFX LX80, OK132, LQ80 G, BRO10P, BRO12P, BRO15P, BRO_HR15, T3251LF, QUME, SG10TEWP, PROWRIST, SG10IIB, OKI92, ASC11, 1STNX1, SG10-1ST, SLM804, SMM804, G, NEC_P6, SLM804, C10H.
- **A40** - Hard disk disk 1: Directory counter, Gem Soft a 40 folder fix, Hard Auto, SBackup, Turtle backup v3.01 and UnSoft restore v1.1.



One of the Many Clip Art Pics on A116

DISK PRICES: 1 TO 5 = £3.00 EACH, 6 TO 10 = £2.75 EACH AND 11 OR MORE = £2.50 EACH!

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EXCELLENT QUALITY BLANK DISKS INCLUDING LABELS

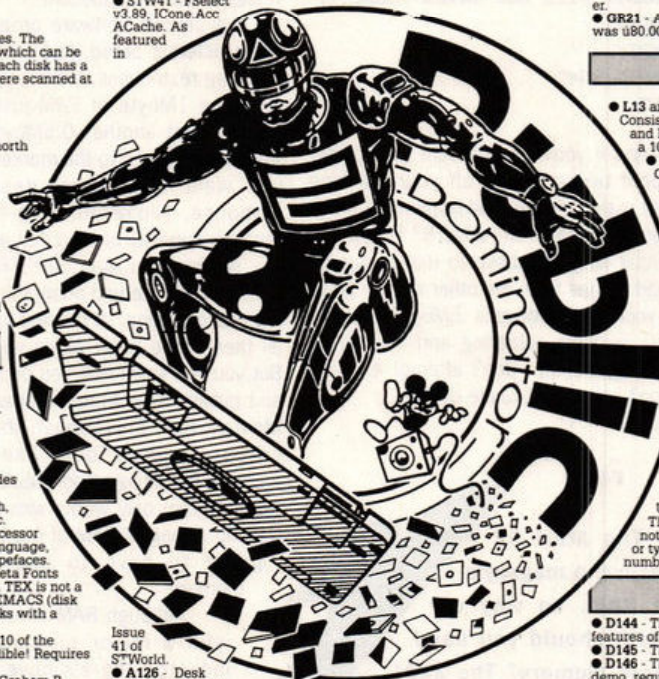
10-£7.00, 50-£33.00, 100-£61.00.
BLANK DISK LABELS-100-£3.00, 1000-£10.00.

BOXES: 10 CAPACITY £1.50, 20 CAPACITY £3.00, AND LOCKA 50 CAPACITY £4.50, 100 CAPACITY £7.00.

50 CAPACITY £4.50, 100 CAPACITY £7.00.
DISK AND BOX: 10 £8.00, 20 £16.00, 50 £35.00 AND 100 £65.00.

DISK CLEANING KITS - £2.50

- 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.
- This disk is packed and 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, Com 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, 512 bytes, reformat programs to run on Disktop Spectrum 128 disks, place MSDOS boot records, it can write an executable bootsector to do things like bypass HD autoboot, set 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. It gives desktop access to all the programs on the disk. DICTOP INF, GDOS ASSIGN SYS display a welcome screen, set time/date, set a password on booting and loads more including even stopping Super Boot from running with a 'key hold'. It includes a 50K document file, excellent.
- **A97** - Sticker III. The disk label program full GEM includes dozens of con 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 numbers 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 Inv v1.3 is a program developed primarily to allow the user to change the desktop 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 file, including GEM programs. You can choose from a list of 128 programs to load, or you can load in from the mass.
- **A12** - ARChiver. ARC V5.1b, ARCSHm V2.0 and V2.05 and a utility to switch back and forth between LHAARC and ARC. DAYSZ 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 ACAs featured



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 Puzzer - TNT. G36 - Tycoon - Adventure/simulation.
- G37 - 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. G57 - Word Puzzle generator.
- G56 - Make a Break - Quiz. G57 - Parabellum - platform.
- G58 - Tri-heli - Arcade. G59 - Perils of Penfold - Arcade.
- G60 - Operation Angelica - Battle. G64 - Bandit - One armed bandit type.

- G68 - Slippery Sid. ● G69 - Psycotic - 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

- **G03 - MASTER Painter** - excellent graphics program works in ALL resolutions in NEO2, Degas and Doodle formats. Has multiple screens on 24 bit, and a 24 bit high resolution RAM, animate between these multiple screens, all the usual tools plus rotate to any angle, skive- horizontal and vertical, zoom, twist, built in converter, very well laid out and designed- full GEM this is a truly brilliant program. Fill option is a bit dodgy.
- **G06 - Degas disk** - 155 fills, 10 brushes, 7 fonts, 20 printer drivers including HP3 and PS. Epson iX80 colour (you should be able to use this for HPSTAR LC-10), plus programs to manipulate Degas Elite.
- **G111 - Disk** full of picture utilities: Tiny Stuff v3.4 and Tiny View v4.21, Pic Switch v0.7, NEO2Mono, Convert, Mono2Medium, NEO2Degas, plus 3 screen to disk savers.
- **G115 - JIL2D CAD** drafting program from Jesus is Lord corp. Looks good and is very complicated. This disk is double sided and requires 1Mb
- **G117 - Picture** converters. Print Master/Degas converter, NEO/Degas/Tiny/IFF/SPEC512 to NEO/Degas/IFF converter. IMG/AIM converter IMG/AIM to Postscript, Mac GIF stripper. Spectrum 512. SPC/SPU to GIF converter and Spectrum 512 SPC, SPS and SPU slide show.
- **G119 - Fractal Zoom** V0.7 is the most comprehensive fractal generation program available on PD.
- **G120 - 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 catalogue and printer.
- **G121 - ANI ST** the famous commercial animation package that once was used on just now is P.D.

LANGUAGE DISKS

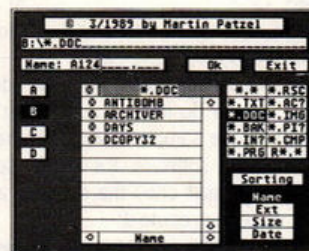
- **L13 and L14 Modula 2** compiler system V1.0 from Ana systems. Consists of the M2/68 assembler, linker, libraries, development shell, and Micro-Emacs editor. Requires minimum \$20St with 2 drives OR a 1040St. This is a 2 disk set. Both disks are needed.
- **L15 - Szozobon C Compiler.** A complete implementation of the C language as defined by Kernighan & Ritchie and prevailing practice. This includes a complete C preprocessor, optimizer, assembler, and linker, as well as several other associated utilities. L15 is a double sided disk. Szozobon C is available on 2 single sided disks @ \$3.00 each called L15a and L15b. This disk is NOT the beginner as it is poorly documented but it will run 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 separate 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 equal 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 selection for each voice. All MIDI notes/channels/programs may be input from a MIDI keyboard or typed on the computer keyboard.
 MIDI channels and program 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 Deltarious mega mega demo from Frnsce. 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 TEK, TCB, NTW crew, Delta Force, The Replicants and Level 16. This demo is absolutely brilliant! It requires a colour screen and a joystick.
- **D125** - DOUBLE SIDED DISK. Snow Man demo. Great Digitised sound and picture demo of the snowman story. The song 'Walking on the air' and digitised 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 city. The demo 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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quickies

● How about increasing the performance of your machine with a handful of useful programs? Our Desktop section provides regular hints and tips on all sorts of things to help you out, but here's a few programs which shouldn't go amiss on your utilities disk.

■ The ST takes an age copying a file from one disk to another if you only have one drive. Here's a GFA Basic program that speeds things up:

```
DIM a$(10)
b$=""
REPEAT
PRINT AT(1,1); "Select file:"
FILESELECT "A:\*.*", b$, x$
IF EXIST(x$)
OPEN "I", #1, x$
a%=LOF(#1)
i%=0
REPEAT
PRINT AT(5,5); a%
IF a% < 32000
a$(i%)=INPUT$(a%, #1)
t!=TRUE
INC i%
ELSE
a$(i%)=INPUT$(32000, #1)
SUB a%, 32000
ENDIF
UNTIL t!
b$=MID$(x$, 4)
PRINT
PRINT "Insert second disk and
press key"
i=INP(2)
PRINT "Select destination
file:"
STOP
PRINT b$, x$
FILESELECT "A:\*.*", b$, x$
IF LEN(x$) < 0
OPEN "O", #1, x$
FOR r%=0 TO i%-1
PRINT #1, a$(r%);
```

■ Here's another "quickie": how about adding digitised music to your STOS games? One way to do it is to use Power's *Prosound* or Kempston's *Master Sound* to digitise the sample. Then a program on the digitiser disk will play the sample in your own software. It's usually something like *SAMPLAY.EXE*. To use this in STOS, you must copy the file onto a blank disk along with your sample and use this code to execute it:

```
10 RESERVE AS DATA 6,1000: Rem Reserve bank for SAMPLAY.EXE
20 RESERVE AS DATA 7,(size): Rem Reserve bank for sample.
Size=size of sample
30 BLOAD "SAMPLAY.EXE", 6: Rem load "SAMPLAY.EXE" into bank 6
40 BLOAD "NAME", 7 : Rem load sample into bank 7
50 LOKE START(6)+28, START(7)
60 LOKE START(6)+32, START(7)+LENGTH(7)
70 LOKE START(6)+36, speed: Rem Speed=Playback speed in KHz
80 CALL 6
```

DIAGRAM FOR B-BOOT MODIFICATION (ATARI ST)

SOLDER WIRES FROM A AND B
TO HOLES LEFT BY PINS AS
SHOWN.

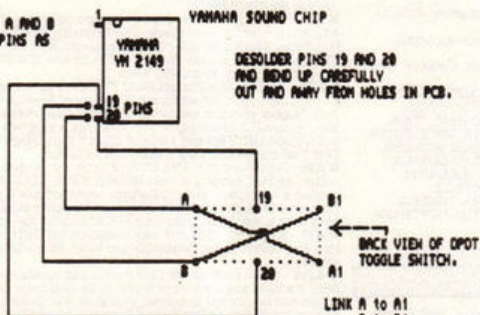


DIAGRAM BY M.ROBERTS 1989

■ This diagram (left) fools your ST into thinking of your external drive as drive A, and the internal one as B

```
NEXT r%
CLOSE
ELSE
PRINT "File not saved"; CHR$(7)
ENDIF
ENDIF
UNTIL x$=""
END
```

■ And if you're a hardware boffin, how about taking the lid off your machine and making a few modifications to make your ST boot from drive B? Follow the circuit diagram above to make your ST load games from the other drive – great if your internal drive is .5MByte only. But this involves soldering and invalidates your guarantee: don't attempt it if you don't know what you're doing!

ram

● The Atari ST has half a megabyte of RAM, so why on Earth should you need more memory? The ZX81, VIC, NewBrain and the rest could scarcely muster 32K between them – just what is the problem?

Actually, the need for more RAM rather depends upon the uses to which you put the ST. For those of you whose main preoccupation is blamming away at aliens and being the first kid on the block to wear out the latest stick from

PowerPlay, 0.5MByte is fine. Arcade games are written with the basic ST in mind, so they work with Atari's baby whatever the RAM quotient.

But serious software programmers are a different breed. Not for them the half meg restrictions. Monster programs requiring 1MByte of RAM just to load and at least another 0.5MByte to run frequently make it to the market place. If you want to publish, design and compose, you're going to need the memory capacity of a herd of elephants.

You have an Atari 520STFM which, until now, has served admirably. Games, word processing, a modest database, all these have been within your reach. But you just know that you could design and publish a far better *Stamp Sorter's Monthly* than *Phill Atelist*, its current editor. *Calamus* looks like a good medium for design and publishing, but that program only works with machines bearing a meg of RAM or more – you're going to have to upgrade the memory.

Although RAM shortages are still a major problem in the industry, there's never been a better time to upgrade. Sure, RAM is expensive, but third party suppliers have settled on RAM upgrades as the one last essential for ST owners. Price wars are the order of the day, and guess who benefits from these RAM wranglings? You do!

Upgrade board design has progressed to the point where you simply open the ST's case and plug in the board. No soldering, no tinkering, just a straightforward plugging-in. One of the very best upgrade boards on the market at the moment is that marketed by Third Coast Technologies.

Fitting involves undoing the half dozen screws located on the underside of the ST, removing the metal shielding covering the main circuit board (straightening several twisted metal tags and pulling the shield away from the machine), plugging the board into a socket around the MMU chip (full identification diagrams contained in the documentation), then reversing the disassembly procedure.

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(*) An additional interface card is required for use with the IBM-PC (£49.95 plus VAT).

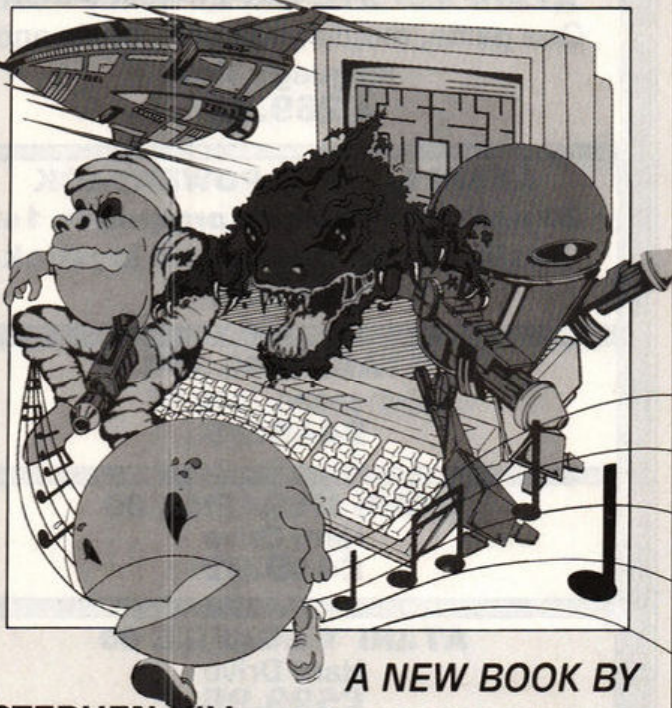
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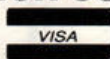
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The board comes with a utility disk containing a RAM disk program and a board tester to make sure everything is installed correctly. The big advantage of the Third Coast board over some of the rival offerings is that you can increase the memory it carries simply by unplugging the RAM chips and replacing them with those of a higher capacity. Prices for the populated board (i.e. complete with RAM chips) start at £69.99. Third Coast eagerly await your call, order and mazuma on 0257 472444.

Frontier Software also offer easy installation, solder-free RAM upgrades with a 12 month guarantee for £69.95 (unpopulated) and £99.95 (populated). For further information contact them on 0423 567140.

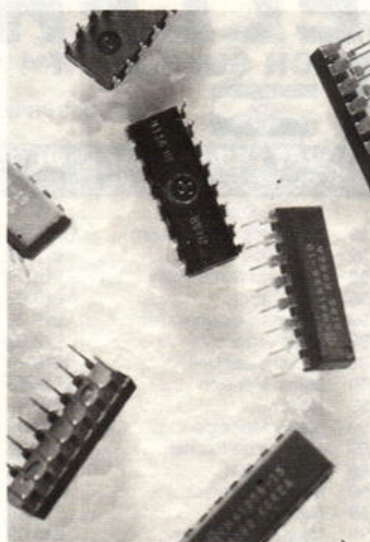
If home upgrades are to you but a step on the way to your ST ending up in broken bits, then you may like to have the RAM fitted by a competent professional, fully versed in the art of dismembering STs. Ladbroke offer a full fitting service with prices starting at around £90. Parcel up the machine, send it off and within a couple of weeks your machine should be returned safe and sound and bulging with extra RAM. Contact Ladbroke Computing on 0772 203166.

speed

● Let's face it, speed is sexy. You don't want to hang around all weekend waiting for your ST to do stuff in its own sweet time: you want it done, and you want it done now. Fortunately, there's a whole heap of hard- and software that significantly increases the operating speed of any ST, from the 520STFM right up to the Mega 4.

The upgrade that everyone wants to get their hands on – well, everyone except Mega owners – is the blitter chip. Promised as a plug-in upgrade by Atari for longer than anyone cares to remember, the blitter (Block Line Transfer) moves around whole blocks of the display rather than individual pixels, speeding up animation and freeing the processor for other work. Unfortunately, the blitter has never been widely available and if you want one for your ST, you must upgrade to the Mega.

■ The most ambitious of the speed increasers is the HyperCache ST board from Third Coast Technologies. This plug-in board is a processor accelerator which increases the speed of your system by pushing the CPU clock rate to its maximum. The 68000 central processor at the heart of your ST usually runs at 8Mhz. With the HyperCache board, the processor runs



at 16Mhz. Third Coast guarantee a speed increase of at least twice that of the original ST.

Should you find the machine bowling along too quickly to cope, there's a switch to enable you to revert to standard system speed. Available in kit form for £189 or fitted at £209, HyperCache ST comes from Third Coast on 0257 472444.

■ If two hundred big ones is a teeny weeny bit expensive, how about a software blitter, a little program hidden in memory, which does in software terms what the blitter does using hardware? TurboST from popular language programmers HiSoft is a cheap yet very effective software blitter which, once used, is hard to live without.

With it installed in memory, GEM becomes fast and efficient and your whole machine runs at a cracking rate. On boot-up, it automatically loads into memory, hides and does its stuff. It costs £34.95, is compatible with almost all GEM applications, is installed simply by including the program on your boot disk, and you can get it from HiSoft on 0525 718181.

tos

● The Operating System controlling the basics of your ST – Desktop, file selector boxes and suchlike – could equally well be called The 'Orrible System. Software programmers have complained unflinching with each new version and you've only got to scour the PD to see how frustrating the variety of operating systems have been: there's a different version of the same program for most TOS versions.

Some versions of TOS have gone beyond being merely unhelpful and have

actually been bugged. Type an Underscore character in the top line of a file selector box in some TOS versions, for instance, and the machine reacts like you've just squirted speed (see S, above) up its nostril.

The Desktop has also been criticised. It's impossible to move files without copying and deleting them, and the file selector won't even let you look at a different drive without resorting to the keyboard.

Atari have attempted to resolve these problems in "Rainbow TOS," version 1.6, now found inside the STE. TOS 1.6 has resolved these problems and also performs much needed faster disk-to-disk copying. But it's come with its own batch of complications. Programmers, particularly in the games field, have used undocumented commands in their software to either achieve a particular effect or to work around a problem. Since these commands are undocumented, TOS 1.6 won't support them and the software doesn't run. Read our STE story on page 11 for more details of software that isn't running and what programmers are doing about it.

utilities

● Upgrades don't have to cost megabucks. Sure, everyone wants a whopping great hard drive to hang off their system, but between £3 and £30 can buy you a heap of useful utilities, all of which increase productivity and your enjoyment of the ST.

■ BakPack from Computer Concepts is a plug-in cartridge that provides you with ten pop-up utility programs you can use while operating other applications. The programs range from a calculator, notepad and clock to a RAM disk and print spooler – and because they're cartridge-based they use none of the ST's RAM. Computer Concepts await your call on 0442 63933 with baited breath.

■ If you too have found Atari's mouse less than wonderful, but can't afford the Naksha or the Cordless (see M for Mouse), you'll be pleased to know you can turbocharge the timorous wee beastie for next to nothing. QMouse is a tiny utility program that greatly enhances the speed of the ST's be-tailed companion. Simply include it in the Auto folder of your favourite boot disk and watch that cursor zoom across the Desktop!

QMouse was given away free on the Cover Disk of ST Format issue 5 (back copies still available), and can also be

■ Looking like silicon centipedes, these little chips can give your ST an elephantine memory (see R for RAM)

obtained from public domain libraries, one of the very best of which is Goodmans PDL (0782 335650).

video digitising

● OK, so you want to grab stills from video cameras and recorders – big deal, right? Well, actually it is rather a big deal. Grab a video frame, port it into one of the many quality art packages available for the ST, and the way ahead is clear to create unbelievable video collages, surreal stills – even entire movies!



■ The Realizer from Third Coast is a breakthrough, offering colour digitising on the ST – even if you only have a mono camera!

Not known for its graphics capabilities, the ST is nonetheless well supported in the video digitising field, with several major suppliers marketing digitisers.

The latest of the video frame grabbers is the first colour digitiser available for the ST. Realizer originates in Germany, supports all STs and with the aid of three little filters, provides you with full colour digitised pictures from a video recorder, colour camera or even a black and white camera! That's right, pictures in glorious technicolour from a black and white source. The Realizer received a full hands-on review in issue 7 of ST Format, so suffice it to say the device offers reasonable results, is cheap (£149.99 from Third Coast Technology on 0257 427444) and relatively easy to use.

If your needs – or cash – stretch only to black and white, then there are plenty of options available. Rombo's Vidi-ST offers 16 grey scales and a sequencing option, works with any ST and costs just £99.95. (Rombo – on 0506 414631 – are currently developing a colour add-on to be released very soon.)

widgets

● Ah, those itty bitty slivers of silicon! You know, the ones that promise to increase the performance of the standard ST by adding all the options computer manufacturers don't consider necessary. Speech synthesisers, track counters, control line boards, you know the kind of stuff. It's akin to putting a tachometer in your Escort. You don't need it, but it impresses your pals and gives you some blinking lights to stare at.

■ When parallel printer ports were included as standard in home computers, the SPO speech chip really came into its own. Seven bits of data and a strobe line is all the chip needs to produce the kind of speech that the robots in *Flash Gordon* produced back in the 1930s. Almost unintelligible at first hearing, their dulcet tones quickly become familiar, and there's nothing more satisfying than booting your machine and hearing it tell you that it will "obey your every command, O great and beautiful mentor of the Universe."

■ Way back in the days when ST Format was still being held back by something called *Amiga Format*, the magazine printed a complete guide to building your own speech synth with cheap parts, bare hands and the ubiquitous kitchen table. Unfortunately back copies of ST/Amiga Format are no longer available, but get along to any branch of WH Smith's and you'll be able to buy the latest catalogue from Maplin, the electronic components supplier with branches up and down the country. The catalogue offers speech synth chips for sale at a few pounds and provides example synthesiser circuits.

Anyone with a modicum of technical hoo-jar ought to be able to put together their very own talking module within a few hours.

Be honest. How many times have you watched the little light at the front of your ST's drive flickering on off and thought to yourself, "I wonder which track the read/write head is currently passing over?" I know I haven't on lots of occasions. If however, this information is indispensable to you, you need the Track Analyser from ST Format issue 3, which contained exacting information detailing the complete construction process of this much-needed device.

■ Thrilled by the thought of robot arms? Just think what your ST could manipulate given the required appendage. Chess pieces, glasses of water, the evening newspaper or your slippers, all placed quickly and efficiently before you by the faithful ST.

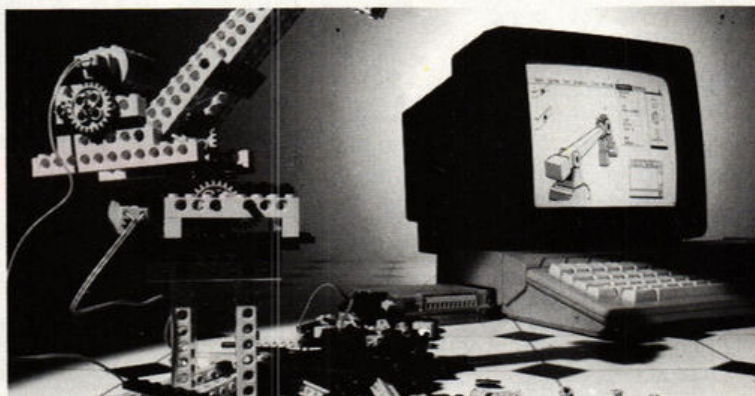
Robokit from Silica Shop provides everything – except the Lego – you need to equip your ST with an arm or leg. Unfortunately, it costs an arm and a leg to buy it, but that's another story. Fancy shaking hands with your ST? Robokit costs £99.99: call 01 309 1111 (and see the review in ST Format issue 6).

xmodem, ymodem & wait for it... zmodem!

● If you're still struggling with XMODEM as the medium for file transfers across the airwaves, then struggle no more.

You need YMODEM, the updated, upgraded version of that original error correction and transfer program. And ZMODEM? More of the same. Upgraded, improved, whiter

than white. In fact a new, blue whiteness that... All three file transfer utilities are available from bulletin boards and all good PD libraries (see P above). ■



■ Robokit may look sinister (see W for widgets), but in fact it's a great fun item, if somewhat expensive – I mean, have you seen how much Lego costs these days?

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Midistudio 20 track ST Midi sequencer

Midistudio is an attractively priced, 20 track Midi Sequencing package. It can record up to 682 bars per phrase (pattern) on up to 100 phrases. Any phrase can be placed on any track. Tracks can be soloed and muted and tracks and phrases can be named. Program numbers can be displayed in a variety of ways including 0-127, 1-128, in banks from all-b88 or a01-b64. The Disk features sliders to set relative volumes on each track and you can even do a mix on the fly. Midistudio also has a clock to display the length of the last playback. Step time note edit functions are available including copy, split, merge, append, and transpose, velocity editing (including a humanize function), full controller editing and different levels of quantizing. Midistudio works in medium and hi res and a demonstration disk is available for just £3.99.



£49.99

IMG scanner Scan at up to 1000 Dpi

The IMG scanner is a realistic, low cost scanner which can offer high quality graphics digitising for a tenth of the cost of other scanners. This simple unit plugs into the cartridge port of the ST and accepts scanned information via optical cables which fix easily to the head of any Epson compatible dot matrix printer. The software allows grey scales to be replaced with colours, 4 in medium resolution and 16 in low resolution and offers scanning resolutions of 75, 150, 216, 300, 360 and 1000 dots per inch horizontally. Best results are achieved with photocopies. Greater than screen resolution images are saved in IMG file format and can be edited with any compatible art package. Screen resolution images can be saved in Raw data, Degas or Neochrome formats and edited with compatible art packages.



£59.99

Midistudio Master. 30+ new features £129.99

Low resolution demonstration disk £3.99

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* All these printers carry a 12 months on site maintenance warranty and come complete with cable. On site warranty UK mainland only. All printers are top quality products for the UK, not cheap imports.

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Please note, ST's case requires modification for this internal drive.		
A/B boot switch, fitted.	(ST)	£24.99
Cumana 1Mb slimline, disable switch, through port.	(Amiga)	£74.99
Ladbroke's 1Mb, disable switch, through port.	(Amiga)	£69.99



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Megafile 30	(ST)	£499.99
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Supra 30Mb	(ST)	£474.99
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Third Coast 65Mb	(Amiga)	£659.99
Vortex 40Mb	(ST & Amiga)	£499.99



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We have a range of high quality ST hard drives at affordable prices. All have the following minimum specification. Full metal case (same size as Mega ST), 60 watt PSU and room for a second mechanism. The low power, controller is full SCSI and can support up to 8 drives. The software includes Autopark, Autoboot from any partition, partition size up to 1 Gigabyte, any number of partitions, 100% AHDI 3.2 compatible driver and write protect any partition.

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Amiga Batman + pack	£399.99

Explorer pack includes a game, Metacomco Basic and tutorial disk.

Power pack consists of Organiser software, First Basic, First music and games including, Afterburner, R-Type, Gauntlet II, Super hangon, Space harrier, Mousetrap, Buggy boy, Super huey, Eliminator, Nebulus, Pacmania, Predator, Bombback, Bombuzal, Xenon, Double dragon, Blacklamp, Outrun, Stargoose, Starry.

Hyper pack includes Hyper Paint art package, Hyper draw vector drawing package, Borodino strategy game and Metacomco Basic.

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10	£6.99	£7.99	£9.99
100	£64.99	£74.99	£89.99

All disks are Sony, Maxcell or Kao and carry an unconditional lifetime guarantee. Please add 60p P&P for each pack of ten disks.

Connectors & Dustcovers

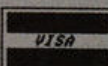
ST Centronics lead	£9.99	Monitor covers from	£4.99
Atari Monitor lead	£5.99	LC-10 printer cover	£7.99
Pair of Midi leads	£7.99	Hard drive cover	£4.99
Amiga Scart with sound	£14.99	ST cover	£3.99
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Atari DMA cable	£15.99	Disk drive cover	£2.99

Disk boxes from £4.99. Phone for care kits.

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Atari PC4 (80286)	£ 1383.99
Atari PC5 (80386)	£ 2121.99
DTP Mega 2 pack	£ phone
DTP Mega 4 pack	£ 2049.99
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This high quality 200dpi flat bed scanner is also a thermal printer and photocopy. It can scan high resolution images in up to 16 grey scales. ST or Amiga software allows capture, printing, load & save of images in a number of formats. This is probably the most cost effective piece of office equipment you could own. Cable included.



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DESKTOP

FONSTASTIC PD

GDOS fonts are a standard type of font which can be used in many applications. Degas Elite and Microsoft Write both use GDOS fonts and these can easily be interchanged using the fonts in other software. Mark Incognito from Norfolk has written in, asking if it's possible to purchase additional fonts. Several of the PD libraries contain GDOS fonts, as do various bulletin boards. Try the South West Software Library (PO Box 562, Wimborne, Dorset BH21 2YD) who sell the Calligraphy font, among others.

KEYBOARD CRAZY

After last month's query on how to connect a PC keyboard to an ST, we've received this advice from a German subscriber, Tom Steed. The German company RTS Elektronik provide a modified PC keyboard which can be connected to a Mega ST. RTS Elektronik can be reached on 010 49 7234 6915 or 5232.

The Germans love customizing STs and lots of other companies specialise in performing major surgery on your machine. Hard & Soft at 010 49 2305 157 64 provide similar PC keyboards and Lighthouse at 010 49 7131 78480 let you transform an ordinary ST into a Mega.



■ A modified keyboard for the Mega ST



■ Transform your 520ST into Mega

A DODGY SOURCE

If you try to perform an ordinary disk-to-disk copy by dragging the A drive icon over the B drive icon, the destination disk must be in the same format as the source disk. This is fine provided both disks have been formatted using the Desktop Format option, but if you start formatting some disks to maxi-format you won't be able to simply drag the icon.

George Homatopoulos from Harwich has found a way to fool the ST into thinking that the destination and source disks are in the same format. Simply leave your source disk in the

Put our sound advice to work and who knows what your ST will be doing. This month we take our last look at file formats and answer your GFA Basic problems

LINE INPUT

If you want to use GFA's LINE INPUT command to input data into a program, you're limited by certain operations. For example, you cannot specify that the ESC key should take you out of the input statement and you cannot select LINE INPUT to ignore certain codes such as numeric characters. The way around this is to write your own data entry routine and use that instead on LINE INPUT. Surprisingly, it isn't that difficult.

This GFA Basic routine must be entered

```

PROCEDURE inp
LOCAL t%,p%,b$
t%=LEN(a$)
PRINT AT(x%,y%);a$;
p%=TIMER
DO
i$=INKEY$
EXIT i$=CHR$(13) OR i$=CHR$(27)
IF i$=CHR$(8) AND t%>0
a$=LEFT$(a$,t%-1)+MID$(a$,t%,1)
p%=0
DEC t%
ENDIF
IF i$=CHR$(0)+CHR$(75)
DEC t%
IF t%<0
t%=0
ENDIF
ENDIF
IF i$=CHR$(0)+CHR$(77)
INC t%
IF t%>LEN(a$)
t%=LEN(a$)
ENDIF

```

with five parameters. X% and Y% are the x and y co-ordinates of the text. They should be treated as if they're the parameters used in a Print At(x,y) statement. A\$ is the character data, put forward to be edited. This is also the returned character string. Z% is the maximum permitted length of A\$. Finally, B\$ are the permitted characters which can be used in the string. For most applications, this would be set to contain the full set of alphanumeric characters. The subroutine ends when either Return or ESC is pressed.

```

ENDIF
IF i$=CHR$(127) AND t%<LEN(a$)
a$=LEFT$(a$,t%)+MID$(a$,t%+2)
p%=0
ENDIF
IF INSTR(1,b$,i$)>0 AND LEN(i$)>0
AND LEN(a$)<z%
a$=LEFT$(a$,t%)+i$+MID$(a$,t%+1)
p%=0
INC t%
ENDIF
IF TIMER>p% AND TIMER<p%+60
PRINT AT(x%,y%);a$;" ";
ENDIF
IF TIMER>p%+100
PRINT AT(x%+t%,y%);".";
IF TIMER>p%+150
p%=TIMER
ENDIF
ENDIF
LOOP
PRINT AT(x%,y%);a$;" ";
RETURN

```

drive when it asks you to insert the destination disk (leave the write-protect on to be safe). This is the only time GEM checks to see if formats are the same so you can easily trick your ST into copying all the files onto the disk.

2-PLAYER - HERE WE COME

Last month we looked at the range of 2-player games available and we pointed out that the cheapest method was to purchase an RS-232 lead and link it directly to your friend's machine. But what if you can't afford the £15 which an RS-232 lead costs? You can make up your own

lead for less than £5, but there's a considerable amount of hassle involved in soldering all the connections together.

Nevertheless, if you want to proceed, you need two 25-way, female D-connectors and five core wire. Link both pin sevens directly together. Then swap pins two and three over so that the data transmitted from one ST goes into the received data line of the other. Perform the same trick with pins four and five. Most applications don't use these anyway and if you choose to leave them out, just link pins four and five directly together on both STs. And there

HINTS AND TIPS

you have it. Plug one end into each ST and away you go.

JOY DIVISION

Want to find a way of accessing the joystick port from within GFA Basic? If you're using version 3 then you have the STICK command which reads the joystick port into a variable, but in earlier versions this command was omitted, as **David Maddox** from Suffolk discovered.

The way around this problem is to resort to using direct memory calls. *Atari ST Internals* from Abacus Software is recommended reading before performing this kind of operation. Briefly, the memory locations \$14-\$19 report on the condition of the joystick. Read these locations and see how they change as the joystick is moved.

SCART AT THE BEGINNING

The occasional television features a SCART socket. Using a special lead you can connect this to the monitor port on the back of your ST. **Stuart Wheeler** from London wants to know to what extent the picture quality is improved.

The standard TV port on the back of your ST takes the different red, green and blue signals and combines them. This signal is sent to your television, at which point the different colours are separated causing the picture quality to suffer. If you use the SCART socket, the red, green and blue signals are never combined so you get stronger colours and a sharper picture.

This picture will never be better than using a straight monitor because the TV resolution isn't as high, but it's certainly the preferred option if you have a suitably-equipped television.

Most local computer stores will stock the lead but if you have any trouble, give SDL a ring on 01-309 1111.

METAMORPHOSIS

P. Singh from Cornwall wants to find a circuit which converts his television into a monitor with the option of a green screen. He complains that a colour monitor is too expensive.

The reason monitors are expensive is because they output signals at an exceptionally high resolution. If you can bear a lower quality picture then connect the ordinary RF output on the back of your ST to the aerial socket on your television. But you don't get something for nothing. Some TV's come with a SCART socket (see tip above) which give a better quality picture but it's still not up to the standard of a monitor. If

you want a green screen, the best advice is to get a sheet of cling-film, paint it green and place it over the screen.

MEDIOCRE STE

As reported in last month's news item, it's not that easy to make the STE boot up in medium resolution. However, **Norman Laird** from Aberdeen has found a way to do this.

The answer is to switch into medium resolution and save the Desktop as normal. Now use a simple text editor to edit the DESKTOP.INF file. This is arranged as a series of lines labelled with a letter. Find line E and it should look something like this: #E D8 01. Change the last digit to a 3 and now resave the file. Re-boot your STE and the Desktop magically appears in medium resolution.

HELPLINE - EMPTY BOXES

If you've ever tried using the GFA Basic menu commands to call a Desktop accessory, you'll have noticed that the window occupied by the accessory is replaced by a green "hole" when you exit from it.

Simon Hudson from Hull wants to know if it's possible to GET the screen before the accessory is accessed and then PUT it back again when you exit. The way around this is to intercept the accessory call from Basic but how do you do it? If anyone can help, send your tip to the usual address (below).

CARTRIDGE CRAZY

The ST's cartridge port looks an appetizing port to play with, especially when you look at the pin out diagrams and see what each line does. But what can you do with it, asks **D. Plows** from Suffolk?

Many applications such as digitisers, scan-



■ Lakmeyer's EPROM programmer

ners, and even languages, plug into the cartridge port which is treated similarly to an additional, read-only disk drive. If you insert a cartridge, set up a drive c icon (note, it must be in lower-case) and double-click on it, you can see various programs there. If you try loading a PRG file, depending on the application, it should load instantly.

But what if you want to put your own programs on cartridge? You can buy an EPROM blower, a CMOS chip and an empty cartridge. There aren't too many EPROM blowers available for the ST, but Lakmeyer sell a good one. Combine this with the empty cartridge from Dattel and you'll have just the kit you need. The process works by "burning" up to 128K of software onto a chip. Any type of program or data file can be placed there, but once on the chip, it's impossible to remove it.

For more details about the EPROM blower, contact its distributors, J.E Sinclair, on 01 316 1779.

WHIZZING PAST

README files often whizz straight past your eyes without pausing after one screenful, particularly if they contain printer codes. **Mr Vest** from County Durham wants to know if it's possible to prevent this from happening.

There are three solutions: the first and easiest method is to load the file into a word processor and read it that way; the second is to look through the file with a text editor, chop out all the control codes and re-save it; the third and hardest solution is to write your own program to do the job. It should read in a character at a time, ignore any code below CHR\$(32) and above CHR\$(126) and print the remainder ■

WIN LOADSA DOSH

If you're having trouble with your ST or if you have any hints or tips which you think other ST owners will drool over, send them immediately to: Desktop, ST Format, Beauford Court, 30 Monmouth Street, Bath BA1 2AP.

Each month we give away £30 for our favourite tip so if you're looking for some extra dosh, get writing. **Norman Laird** wins this month's coveted prize for his STE advice.

MACPAINT FILE FORMAT

Our last look at picture file formats concentrates on MacPaint documents. It's only intended to be a general look at the construction of MacPaint files. If you intend writing software to convert picture files, you'll need to play with the codes to properly understand the picture construction.

These picture file formats have been enormously popular. If you want Desktop to examine other types of files or if you have any information about the construction of program or sound file types, drop a line to Desktop at the usual address (listed above) and you could earn yourself some money.

header:

1 long

version number (if zero, entire header is ignored)

38 X 2 long

pattern data

83 long words

reserved

(total 160 longwords for header)

< 51200 bytes compressed bitmap data

< 51716 bytes total

Bitmap compression:

The bitmap data is arranged for a 576 pixel

by 720 pixel monochrome image. All data is stored as a sequence of records with each record consisting of a control byte followed by one or more data bytes. The control byte is arranged as follows:

For a given control byte, x:

0 < x < 127 Use the next x + 1 bytes literally (no repetition) -128 <= x <= 0 Use the next byte -x + 1 times

There are 72 bytes per scan line with each bit represents one pixel; 0 = white, 1 = black.

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- 250 or more disks - 48p a disk
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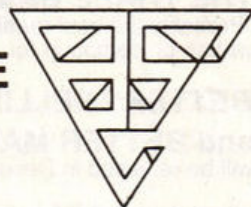
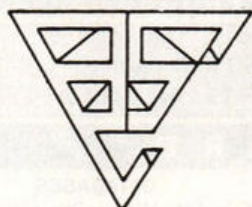


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SEQUENCER DANCING

STORY Jon Bates

Two MIDI sequencers with a prodigious array of features are released this month; you certainly get more music software for your money now than you did twelve months ago!

Sequencer One

MACHINE: ALL STs

PRICE: £79

FROM: GAJITS MUSIC SOFTWARE

CONTACT: 061 434 2768

Sequencer One is a 32 track sequencer with a high level of recording accuracy/resolution – no less than 192 clicks per quarter note. This means that for each quarter note (crotchet), the ST records it to an accuracy of 192 and it takes 192 clicks to make up a beat.

The main screen is divided into several sections. On the left-hand side is the list of tracks recorded. You see 10 of them at any one time but can scroll up or down to see others. The right-hand side is occupied by a cue sheet. It's a great idea allowing any position in the piece to be copied from the song position counter and put into the cue sheet together with your own references and comments. To locate a point in the song simply click on the appropriate part in the cue sheet. It's so simple and lets you find your way around songs so quickly, I can't believe no-one has thought of it before.

The bottom section of the screen is taken up by the usual tape recorder controls with various options of auto rewind. Go to the beginning or end of the piece by double-clicking on the rewind buttons. As well as a bar/beat counter Sequencer One also registers the time elapsed from the start of recording or playback. To the right of these are the start and end position counters/markers. These are more important than they first appear because all editing, looping, cut and pasting routines are defined by them.

MOUSE TAPPING

A nice idea which speeds things up is the ability to drag bar positions from one counter to another: for example, from the cue sheet to the start and end locators, which saves you fiddling around with numbers to match up positions.

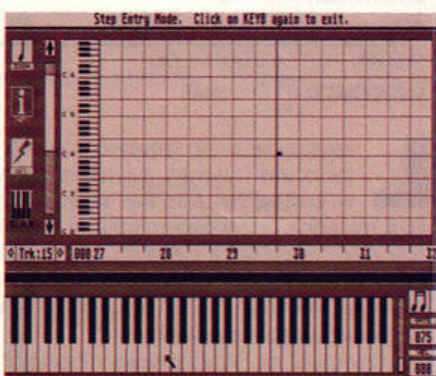
In the centre of the lower screen is the tempo display. This can be set in three ways. A single click lets you type in the tempo and double-click lets you use the mouse as a slider to find the tempo you want. The third option is rather smart: select Click Tempo from the



■ The main screen of Sequencer One playing Beethoven's *Eroica*. Instruments are listed on the left of the screen



■ The cue sheet on the right enables any point within the piece to be dragged to either song position or locator marks



■ The note editing screen has an unfussy arrangement – just hit the keyboard on the screen and the notes appear on the grid

Options menu, simply tap the mouse button at the speed you think the piece will feel best at and presto, the correct tempo appears. To round things off there is an animated bar graph style display in the bottom left corner which shows you which MIDI channels are currently in operation.

Recording is easy. Select the track you want, hit record and play away. There's an internal metronome which plays a MIDI note (definable) on your instrument that keeps you in time. You can overdub parts on each track or put it in loop mode and keep going over the section until it sounds right. A provision for count-in bars would have been a useful additional feature here.

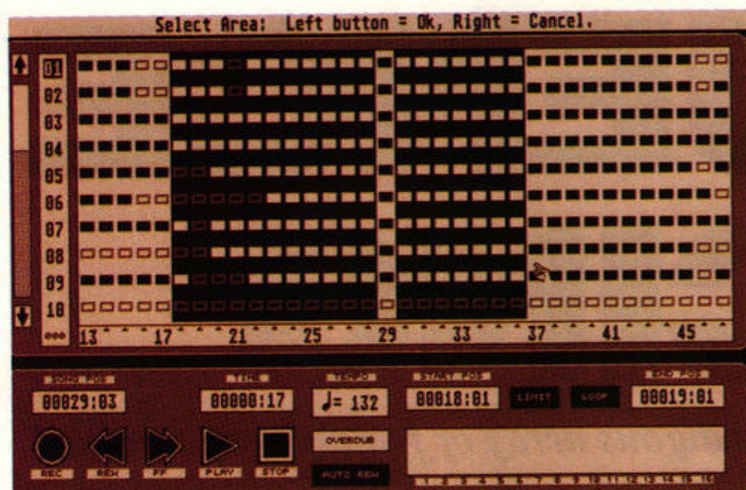
Each track has a generous 16 character name space. To the left of the name is a space to put in the patch number. This is excellent – usually you have to look at the edit page to find out what sound you're using and with a few multi-timbral modules running simultaneously this is time consuming stuff. The idea of simply altering the patch number on the main screen gets my vote. It would be nice to have an "audition" feature here so that it actually sent the patch change as you dialled it on screen, allowing you to hear it before you played or recorded the track. For each track you can call up a Track Info box giving you further details such as pan and volume settings and number of events.

ACTIVE TRACKS

A black triangle indicates active tracks and a black circle denotes the one you're recording (the same icons as Play and Record). Any track can be muted by clicking on the triangle. A Solo feature would have been useful because flicking through a dozen tracks and turning them off is frustrating.

After recording you need to tidy up the timing by using the Quantize operation. Although you can select any value to quantize to, the program only gives you two options. You can move the complete note or just the starting time of the note. More features, such as a percentage of accuracy to remove the robotic feel that the quantize options give you, would have been useful.

The note editing screen shows the contents of a track in graphic form – the notes scroll from right to left on a grid. The horizontal lines



■ **Sequencer One's block editor enables you to select tracks and put them anywhere within the piece. The shaded area on the left is about to be cut and pasted – a useful feature for choruses or repeated verses**

represent pitch and the vertical lines definable time intervals. A keyboard running down the left-hand side of the window gives you the pitch and can be scrolled up and down. It displays five octaves at a time but allows access to a full ten octaves. The corresponding bar numbers roll under the scrolling screen. Using the cursor you can jump to any point and change track while in edit – a great time saving feature.

NOTE ZAPPING

The step editing is a little tedious. The principle is that you click on a note, an info window appears and you adjust the note either in pitch, velocity, timing or length. The problem is that you're still altering notes numerically and can't drag notes around the screen. Even worse is the fact that you can't hear notes – and many people like to hear the note being changed so they can fit it into the composition better. Sorry Gajits, but it's very slow in comparison with other available editing screens.

Delete is achieved by changing to delete mode and zapping any note that offends. It's a once and for all process with no come back should you inadvertently delete a perfectly good note. There is a step time recording feature on the same screen which is easy to use and is very quick for knocking up drum tracks.

The other screen is a bar editor – a cut and

paste screen that gives you an overview of the tracks and allows you to shuffle sections around, copy, delete and so on. You can work on tracks individually or in total, which is very handy for setting up verses and repeated choruses. Any defined block is automatically set up in the locator markers should you want to add extra parts or process it in another way – like transpose the whole section or alter the velocity of the notes.

Sequencer One has several other features that make it very good value for money. It alters incoming MIDI data – changing, say, a pitch bend to a volume controller. It can respond to, and send out, MIDI synchronization and it can strip off superfluous MIDI data. Most of the major functions can be operated from qwerty controls and there's a help screen if you're not sure of anything. Each song has a dialogue screen for noting down additional information and it files away default set-ups for working with your own configurations of instruments.

A song can be stored in either its own format or MIDI file for importing and exporting to other ST sequencers. Sequencer One also stores individual tracks or blocks. It supports GEM-based desk accessories and therefore works with other music accessories like universal librarians and sound editors.

Apart from the note editing, Sequencer One is excellent value for money and very easy to understand and use. If you're in any doubt about pricing £79 from your piggy bank, why not take a fiver out and get a demo version? Bet you buy the full version afterwards!

Prodigy

MACHINE: ALL STs

PRICE: £129.95

FROM: THE DIGITAL MUSE

CONTACT: 01 586 3445

Last summer a new sequencer called Virtuoso was launched. It featured plenty of exciting concepts like an amazingly high resolution, a complete rewrite of the ST operating system which meant it could do disk operations at the same time it was playing or recording and some pretty fancy editing (see ST Format issue 3 for review).

Prodigy is the slimmed down offspring of Virtuoso and it's on offer at the knock-down price of £129.95. The first thing to note is that Prodigy has very much the same appearance

as its predecessor and uses the same environment. It does however, run on the 520, which is something that Virtuoso wouldn't do – albeit not in medium resolution. The major difference between them is the number of clicks per quarter note. Virtuoso has a staggering 480 and Prodigy a modest 120. There's also been a reduction in the number of tracks from 99 on Virtuoso down to 32 on Prodigy.

Prodigy has the same operating system as Virtuoso, so recording and playback can continue as work is saved to disk or data printed out, all of which which saves time and prevents disruption of your work. All files and on-screen track names can take up to 12 characters. The mouse actions are duplicated on the qwerty keyboard and there are no drop-down menus. Everything is either on screen or in window-type areas. Numeric increments are committed in the usual manner of holding down left or right buttons – the screen cursor changing to plus or minus. There are instances when a typed in number would have been an advantage. Flipping from screen to screen is incredibly fast and doesn't interfere with the running of the program.

VELOCITY BAR

Prodigy is divided into several functions/pages. The main area of activity is the Block page. 32 tracks can be used in each block and these run from the top of the screen scrolling either in fast or slow mode or called up numerically. A block is a section or piece and each track is a separate instrument. You can assign the MIDI channels for specific instruments and these will automatically come up in the track assignment slot. The screen design is easy to follow with the controlling icons set to the right along with the counters and section markers. Tracks can be cleared, copied and removed completely although there is no prompt window to confirm this, and tracks or even blocks can be wiped out if you're not careful.

All active tracks have a velocity bar meter and can be turned on or off or "soloed" which mutes all the other tracks. Select the track, choose to have a count in or not and hit record. Once the track is laid down the options for real-time processing are excellent; being real-time it's not altering the actual track data in this page – for permanent alteration you use the Process or Edit screen.

Apart from quantize and volume control there are lots of options for each individual track available to the right of the track list: program change, pan position, looping, digital delay, transpose, velocity and MIDI filters either in or out. Most of these functions are set from

EVENT TIME	EVENT TYPE	CH	DATA	MIDI	RECORD
0001:02:01	Chan. aftertouch	1	2		
0001:02:08	Note off	1	E1 0		
0001:04:11	Note on	1	D1 100	Len 000:01:024	
0001:02:02	Note off	1	D1 0		
0001:02:06	Note on	1	D1 100	Len 000:01:024	
0001:02:08	Note off	1	D1 0		
0001:01:00	Note on	1	C1 91	Len 000:01:025	
0001:02:02	Note off	1	C1 0		
0001:02:06	Note on	1	C1 91	Len 000:01:022	
0001:02:08	Chan. aftertouch	1	3		
0001:02:07	Chan. aftertouch	1	2		
0001:02:08	Note off	1	C1 0		
0001:01:00	Note on	1	D1 100	Len 000:01:022	

■ **Prodigy's "data stream" style of editing – note the hex option and chord mode**

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an on-screen slider or a numerical input. There is a handy auto-cycle mode which either overdubs as the track re-cycles or jumps to the next assigned track (prepared beforehand) and record whole sections without having to stop. By building up a number of tracks, you create a section of music – a Block – which you can then file away to the Library page for assembly at a later stage into a whole song.

PIANO ROLL

Prodigy edits either graphically or in a data stream. The graphic editing is performed in the manner of a piano roll. The notes scroll down against a grid as squares or oblongs and the pitch is indicated on a piano keyboard under which the display passes. The keyboard is movable in all directions and can be shown either in part or in full.

Deleting notes is easy: highlight the delete button and zap the offending note with the cursor. Adding notes is performed from the edge of the keyboard, which is awkward because it's not clear exactly where you're actually adding them. Digital Muse should have designed the same method for both delete and add.

Although you can play the edit page at full tempo and indeed scroll through it at double speed, you can't scroll through sections slowly and hear what is playing. This makes pin-pointing errors difficult. You can enter notes either from qwerty or MIDI keyboard in step time.

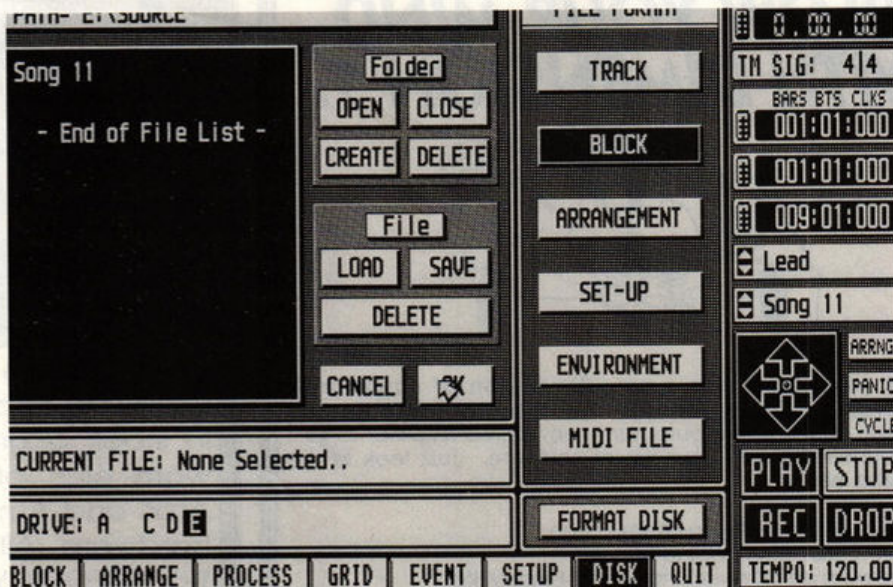
The other method of editing is by data stream which shows all the data relevant to every MIDI event numerically. This tends to be used for fine tuning individual notes and MIDI commands and has a separate page entirely devoted to itself.

"FEEL" FUNCTION

The Process page is a clever editing tool that works on pre-defined sections all at once instead of the single note editing available from the grid and event pages. Quantize is data altering here with an extremely wide range of options. Notes can be captured around a definite beat to user-definable amounts by using Quantize Strength. There are useful features such as deleting all double notes, lining up chords to start together plus a "feel" function which adds a percentage error to mechanical tracks in any one of eight different ways. Other goodies include transposition, re-scaling the volume over pre-defined periods, mixing and de-mixing tracks, plus the usual cut and paste facilities. All alterations are repairable using Undo, which goes back one step in the process, or Restore, which returns you to where you started.

Name	Chan	Status	Value	Parameter	MIDI Note
1 Bass	1	ON	16	Quantize	TH SIG: 4/4
2 Lead	2	ON	56	Prog No.	001:01:000
3 Lead II	3	ON	112	Volume	001:01:000
4 NEW TRACK	4	off	< 13	Pen pos.	001:01:000
5			000:01	Loop end	001:01:000
6			1NF	Loop count	001:01:000
7			-00:00:003	DO	001:01:000
8			-3	Transpose	001:01:000
9			+9	Vel offset	001:01:000
10 Planner	8	ON	ON	In filter	001:01:000
11 Bd/So	16	ON	OFF	Out filter	001:01:000
12 Hats	16	ON			001:01:000
13					001:01:000
14					001:01:000
15					001:01:000
16					001:01:000

■ The business end of *Prodigy*: input the music into pages known as blocks and alter the data in real-time



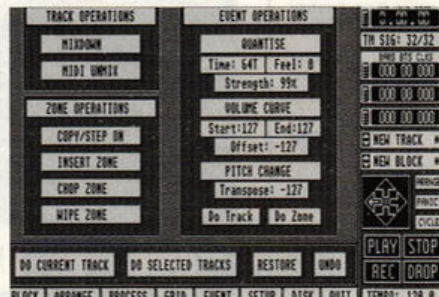
■ Store part or all of your composition while the program continues working

DOWN THE DRAIN

Blocks from the library are stitched into a full-blown piece in the Arrange page. Tempo shifts can be inserted here, although transposition can't. The blocks are pulled from the library list which appears in an adjacent window. Deletions are dragged to another part of the screen to be posted down the toilet icon! Very easy and simple to use. One interesting feature is the use of a Composer label which is loaded as part of the default setting. Once set up, it stays there when an arrangement is saved. Even if loaded into another *Prodigy*, the composers name is un-editable. Essential for all budding composers paranoid of plagiarists.

Prodigy saves in its own format or MIDI file format. Whole songs, blocks and set-ups can be saved or you can save the whole "environment" in one go. It can format disks while the program is running and is, of course, fully compatible with *Virtuoso*. You can upgrade simply by paying the difference between their retail prices.

Digital Muse report there are new developments on the horizon. There will shortly be a series of modules available for both *Prodigy* and *Virtuoso* including a GEM accessory, score editing and a MIDI monitor. It's also envisaged that both programs will be available in modular form themselves. This means that you can choose which parts of the program you use the most, plus the other modules, and tailor the program to your own needs. One clever feature will be that modules can either exist in memory or partly on disk, and since disk operations

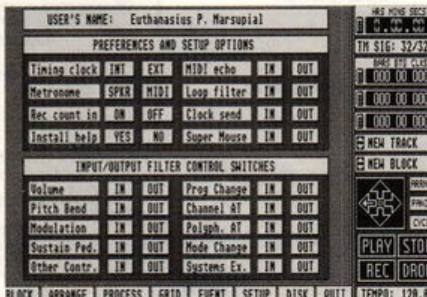


■ Fixing the quantize permanently and merging selected tracks or marked areas is a simple process

FORMAT RATINGS PRODIGY	
Features	95%
Has many features that you would not expect at this price – though the 120 clicks per quarter note could be improved	
Speed	99%
Incredibly fast	
Ease of Use	87%
Once you adapt to the non-wimp environment it's straightforward	
Results	97%
Very good – no problems at all	
Format Value	92%
Priced at the top end of the middle price range it's a program with a lot to offer. The news that it will soon support a GEM environment makes it a serious contestant in the creative music market	
The Competition	
The nearest price match is <i>Master Tracks Junior</i> at £99, available from most outlets, info from MCM on 01 724 4104	

don't interfere with the working of the program it could put a lot of options into the hands of 520 owners who are currently strapped for memory space.

The GEM module will put all the usual GEM music accessories such as voice editors from other software houses at the disposal of *Prodigy* owners by returning to GEM environment and letting you pull in desk accessories. ■



■ *Prodigy* has prodigious features: the set up and preference page can be heavily customized

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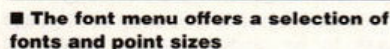
**FLEET STREET
POSTSCRIPT
CALAMUS
HELVETICA**

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.

When you buy a new desktop publishing package, the price doesn't include the skill to use it. In the second part of our DTP series, we load Timeworks DTP and show the way forward

It's not easy to put these various elements together, and even harder to do it with any degree of style, but understanding the terminology certainly helps, and some idea of current "good practice" can mean the difference between being noticed and being ignored.

The simplest single document you're likely to want to create is an advertising flyer. This can be a notice for a dance or a handbill advertising goods. It's likely to contain a headline in a large font size, a short piece of informative text and possibly some clip-art to reinforce the subject of the page.



Although you have a lot of electronics at your disposal with an ST and a good DTP package, it's best to draw up a rough outline of your design on paper. Get a feel for the relative sizes of the page elements. Draw them as boxes to start with because this reflects the frames on your DTP page. You can't print to the edges of a sheet of paper with most computer printers, and certainly not with a laser, so allow for a border of white space around your design.

Pay attention to the justification of text. Although it may seem a good idea to justify a block so the text aligns with both margins, it can result in unacceptably large gaps between words, giving an amateur feel to the page. Hyphenation helps because by splitting long words you increase the number of words per line and reduce the interword gaps. In most cases it's probably best to leave blocks of text left justified, with main headlines centred.

Justification in *Timeworks DTP* is handled through style sheets, which we'll cover in detail next month. For the moment, think of them as a way of applying typographical and layout controls to a body of text by a single command.

Most DTPs have the flexibility to handle single sheet page make-up in this "point and shoot" way, as well as offering facilities to produce more complex documents through style sheets and page masters.

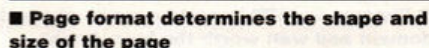
If your main requirement is for single sheet DTP such as flyers, though, check you're not hampered by your program's over-sophisticated working method.

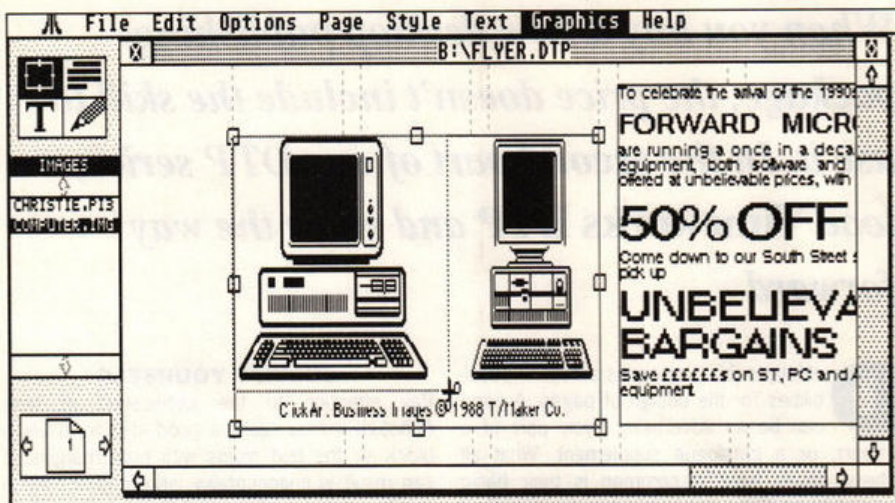
The first thing is to specify the page size. Some DTPs won't let you change the size once you've started adding elements to it, and several of the US products default to US letter size rather than A4 dimensions. The orientation of the page also needs to be set, as does the provision of a gutter for facing pages. Pages can be printed in portrait (long sides vertical) or landscape (long sides horizontal) orientation.

Once the page has been sized, frames can be created according to your design. They don't have to be exact at this stage, because they can be freely resized at any time.

There are three things to consider when choosing a font: typeface, size and style. These attributes can either be set before starting to type or by highlighting a section of existing text and applying them.

A typeface is the design of the characters themselves – Times, Helvetica, Courier and Zapf Chancery are examples. Most DTPs come





■ Cropping is an integral part of arranging an eye-catching visually pleasing design

with at least two typefaces (Times and Helvetica) to choose from.

The size is partly governed by the amount of text you need to get into a given space and partly by the emphasis you want to give it. The larger the size, which is measured in points and therefore often called the point size, the more eye-catching it will be.

Text styles should be used sparingly and mainly for special effects. Styles include bold, italics, outline and underline and add emphasis to text printed in them.

Graphics and text can be added in any order, but it's usually easier to complete the text before adding images. *Timeworks DTP* can import a range of graphics formats, including GEM IMG, Neochrome and Degas. Clip art is available from a number of different PD sources and is well worth the investment.

THE CUTTING EDGE

When you import a graphic into *Timeworks*, it only appears on the page if there's a frame open and selected at the time. If not, its name is added to the browser below the toolbox on the left-hand side of the screen. It can then be added to the page by selecting a frame and clicking on the graphics filename.

It's quite likely that the graphic you import will not be the right shape or size for its target frame and it's necessary to scale or crop it to fit. The cropping tool allows you to drag a secondary frame over the image from the top left-

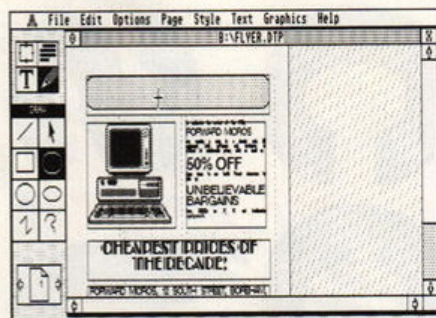
hand corner. When you release the mouse button the enclosed area of the image is resized to fill the whole graphics frame. You can then drag the frame handles to resize the cropped image to fit the specific area of the page.

By now the page is looking lively, but it would be good to add further emphasis to the headline, in this case the name of the fictitious computer dealer. This is particularly true in the case of *Timeworks*, which only offers fonts up to 36 point high. One way of adding emphasis is to surround the text with a rectangular box. This can be done using the graphics box tool, but remember that a frame has to be open before the graphics box is opened within it.

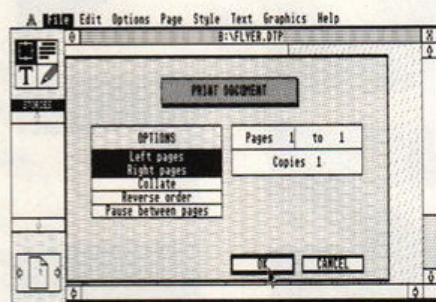
Timeworks places each new frame on top of all others. The tinted box needs to sit behind the headline, so deft use of the "Send to back" function is necessary to put things in the right order. Problems aren't over yet, as the background to the headline text frame shows white on top of the tinted box. Switch this to "clear" from the frame tint selector box and it allows the tint to show through.

A second frame, around all the others, can be given a frame of its own to set off the finished advertisement. Again it needs to be "sent to back" so it doesn't obscure the other frames.

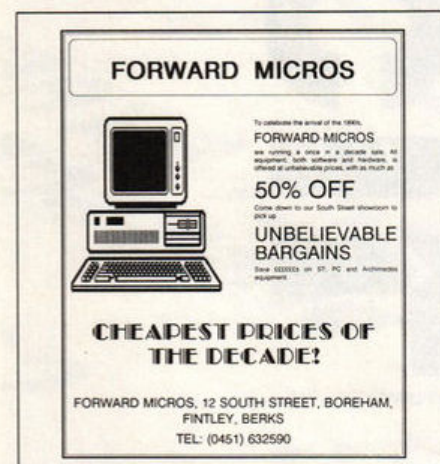
The final stage is to print the page. The print selection box lets you specify the page numbers to be printed and the number of copies required. The finished product is a well-designed flyer, guaranteed to increase sales! ■



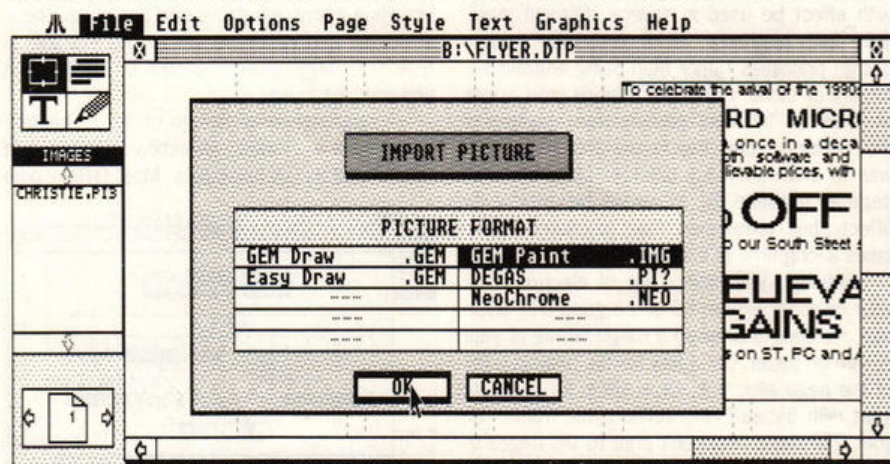
■ Boxes can be tinted to give them extra emphasis or to separate them from the main body text - see how the *ST Format* art team uses box tints in their page design



■ Use the print menu to designate which pages are to be printed



■ The finished flyer. No masterwork, but a presentable advert which could be expected to drum up extra business



■ *Timeworks DTP* imports a range of graphic formats. Clip art is available in the public domain and well worth the investment

JARGON KILLERS

We clear up the mystery behind some of those forbidding DTP terms:

CROP: trimming a picture or other graphic to fit a particular space on the page

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

JUSTIFY: short for "fully justified," it means text aligned at both ends of each line

POINT: a unit of measurement in typesetting, equivalent to 1/72nd of an inch. Primarily used to measure the height of text characters

TYPEFACE: a particular design of text characters, eg. Swiss, Times, Helvetica.

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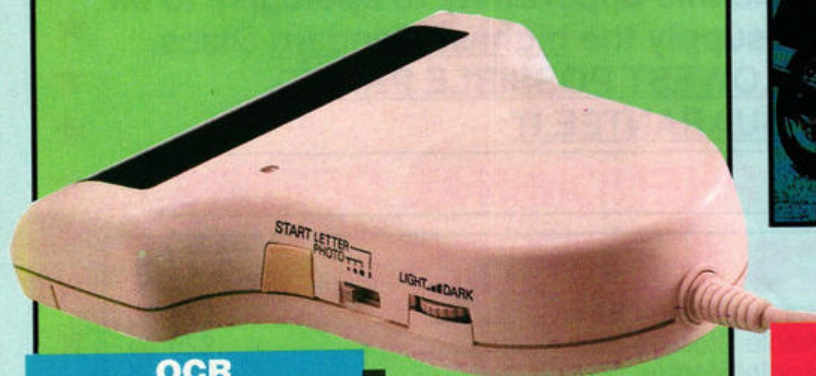
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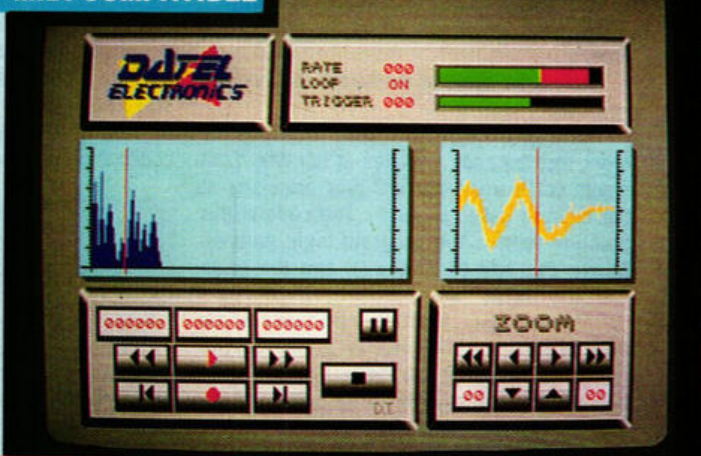


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This month we're looking at a fun program involving a simple electronic organ to teach you something about programming the ST in C. For this program we need to:

- access the keyboard via the operating system at the BIOS, GEMDOS and system variable level;
- access the timer via standard C functions;
- calculate the frequencies of the notes using floating point arithmetic;
- access the sound chip via the operating system at the XBIOS level;
- use more features of the C language;

You'll find the source code for the program on the Cover Disk as "music.c" and printed below. The code is heavily commented to make it easy to understand. The executable program is on the Cover Disk as "music.prg."

The program has four basic steps:

1. Display the operating instructions;
2. Initialise the sound chip and the keyboard;
3. For each key press, sound the appropriate note;
4. Restore the state of the sound chip and the keyboard.

Let's go through the C code roughly in the order that the code executes at run time. Last month you learned that a C program starts at the function called `main()`. The code in this function follows the program logic outlined above. The call to `intro()` and the code therein is simple stuff.

The `setup()` function introduces some new features. `Giaccess` is a call to the operating system at the XBIOS level. In C the operating system's functions are called just like any other function. Use `Giaccess` to access the sound chip registers, in this case to initialise it.

The operating system's keyclick procedure interferes with what we're trying to do with the sound chip. Avoid this by turning off the keyclick at the start and restoring the status at the end. The keyclick status is found in the

PROGRAM IN C - #2

STORY
Warwick Grigg

Insert the Cover Disk and dive into part two of our definitive hands-on beginner's series. This month we explore the C language with the help of an electric organ

documented system variable at address 0x484. The system variables can only be accessed in the privileged "Supervisor" mode. This is why the operating system's GEMDOS function is called `Super()`.

The largest part of `main()` gets the key codes and works out the number of the note to

be played. `Play_note()` contains the algorithm for the frequency of each note in the chromatic scale (you can find the theory in physics text books). The floating point library functions are described in the file "specs" on disk two of the Sozobon C disk. For the benefit of the sound chip, the frequency is translated into the high bits and low bits of the period.

While writing this program I wanted the note to play for as long as the key is held down but couldn't find any appropriate documented system call. So the code waits until another key is pressed or until the end of the time allowed. The note is turned off by setting the volume register to zero. You can find a description of the timer functions, and the other standard library functions for Sozobon C, in the file "dlibs.doc" on disk two of the Sozobon C disk.

The program uses pointers in several places. A pointer is a variable containing an address of an area of memory. A declaration; `fred_t *p` declares `p` as a variable which may contain the

SOZOBOON C

The package consists of two double-sided disks containing PD Sozobon C compiler (conforming to the Kernighan and Ritchie specification); GEM bindings; Library functions; Gulam shell; and RAM disk. In addition we've printed out all the documentation - always a great source of irritation if you have to do it yourself.

The first disk is ready to use straightaway. The second contains the documentation and compiler source code (excellent educational material, by the way, for A level and degree course Computer Science).

C TUTORIAL PROGRAM #2 "MUSIC.C"

```
#include <osbind.h>
#include <stdio.h>
#include <math.h>
#include <time.h>

/*
 * Layout for organ keys.
 *
 * A# C#D# F#G#A# C#D#
 * A B C D E F G A B C D
 */
(1)

char *kcp; /* Pointer to keyclick system variable */
long supsp; /* Supervisor stack pointer */
char clicksav; /* Place to save status of keyclick */
int volume = 12; /* Sound chip volume setting */
int r7save; /* Place to save contents of sound
            reg7 */

static void intro()
{
    printf("\n");
    printf("ST Format C programming tutorial,
    Example 2 \n");
}
```

```
printf("Simple sound chip organ\n");
printf("\n");
printf("    KEY MAPPING\n");
printf("  a  d  f  h  j  k  ;  \n");
printf("A#  C#D#  F#G#A#  C#D#\n");
printf("A B C D E F G A B C D\n");
printf("\\ \\ z x c v b n m , . \n");
printf("\n");
printf("Press 'q' to quit\n");
}

static void setup()
{
    /*
     * Setup sound chip
     */

    r7save = Giaccess(0, 0x07); /* Save contents for later */
    Giaccess((r7save & 0xc0) | 0x3e, 0x87); /* Enable
                                           channel A only */

    /*
     * Setup key click status
     */
}
```

■ The program continues over the page and is repeated on the ST Format Cover Disk

address of an area of memory of type;

fred t.

If later on we say;

***p = *p + 1**

this means add one to the data at the memory location pointed to by p.

Pointer arithmetic is allowed. In C pointer arithmetic, one unit corresponds to one item of the type to which the pointer refers. So, **p++** would increment **p** by one byte if ***p** is of type **char**, but would increment **p** by one word (ie two bytes) if ***p** is of type "int." C's pointer arithmetic is powerful, combining the power of assembler with the expression of a high level language: you're allowed to manipulate pointers, but you don't have to remember the sizes of the data items. We'll be using pointers extensively over the next few months.

Three new data types have been introduced: **char**, **long**, and **float**. A **char** is the smallest unit of memory able to store the machine's character set. On the Atari ST this is a byte. A **long** is an integer, but able to store a wider range of values. For *Sozobon C* on the Atari ST this is equivalent to a **long** in 68000 assembler (ie 32 bits).

Although integer types are signed by default, attaching the prefix "unsigned" will declare a variable that can only take positive values. Thus if an "int" can take a value between

32767 and -32768 an "unsigned int" can take a value between 0 and 65535.

A float is a floating point number. This is stored internally as an exponent and a mantissa (like the scientific notation on a calculator), so that numbers of very small magnitude and very large magnitude can be manipulated with the same degree of precision.

ARRAY DECLARATIONS

In the program, **kbd** is an array of elements, each element of type **char**. This can be generalised;

```
fred t      a[10];
```

declares an array of 10 elements, each element of type **fred t**. Elements are identified as **a[0]**, **a[1]** ... **a[9]**.

There's a connection between arrays and

TECHNOBABBLE

What are BIOS, XBIOS, and GEMDOS? The BIOS is a module containing the operating system's lowest level code, which drives the Atari ST hardware. The XBIOS contains miscellaneous extensions to the BIOS. In theory, GEMDOS provides interfaces to the operating system and hardware that are independent of hardware. In reality the boundaries are slightly blurred.

pointer arithmetic which will help you understand some of the thinking behind C's elegant design: in C, the item **a[i]** is the same as ***(a+i)**. An example of a two dimensional array declaration is;

```
int a[10][3]
```

FUNCTION ARGUMENTS

The function **play_note** has one argument of type "int." Multiple arguments can be defined, for example;

```
fred(a, b)
```

```
int *a;
```

```
float b;
```

Completely opposite to FORTRAN, all arguments are passed by value (ie. if the function alters these, this will not alter those of the caller).

If you want a variable passed "by name," you declare an argument which is a pointer to the variable. Initially, PASCAL programmers hate this, but after a while you can get to like it!

As floating point arithmetic is used in the music program, the library containing the maths routines (**libm.a**) needs to be included in the compile statement:

```
cc -O libm.a music.c -o music.prg
```

■ Stay tuned! Next month we begin a pinball simulation project in C.

C-TUTORIAL: (continued)

```
supsp = Super(0L); /* Enter privileged supervisor
mode */
kcp = (char *)0x484; /* Pointer to keyclick system
variable */
clicksave = *kcp; /* Preserve keyclick status*/
*kcp = *kcp & 0xfe; /* Turn off keyclick */
Super(supsp); /* Return to user mode */
}

static void play_note(note)
int note;
{
    static float Afreq = 440.0; /* Frequency of A note
= 440 Hz */
    float freq; /* Frequency of key
pressed */
    int period; /* Period for sound
chip @ 125kHz */
    clock_t note_time; /* System clock time
when note started*/

    /*
    * Play note, then wait till key press
    */

    freq = Afreq * pow(2.0, note/12.0);
    period = floor((125000.0/freq)+0.5);
    Giaccess(period&255, 0x80);
    Giaccess(period>>8, 0x81);
    Giaccess(volume, 0x88);
    note_time = clock(); /* Remember time */
    while (!Bconstat(2)) { /* Until key press*/
    if (clock()-note_time >= CLK_TCK/10) { /* Time
out? */
        break; /* 0.1 seconds gone */
    }
    }
    Giaccess(0, 0x88); /* Turn off sound */
}
```

```
static void tidy_up()
{
    supsp = Super(0L); /* Enter privileged supervisor
mode */
    *kcp = clicksave; /* Restore keyclick status */
    Super(supsp); /* Return to user mode */

    Giaccess(r7save, 0x87); /* Restore enable register*/
}

static char kbd[] = "\\azxdcfvgbhnjmk,.;'";
/* ST keys in order of pitch*/

main()
{
    char *p; /* Search pointer */
    int c; /* Buffer for reading key press */
    int ix; /* Index into keyboard array */

    intro(); /* Inform user */
    setup(); /* Setup sound and key click */

    while ((c=(Bconin(2)&0xFF)) != 'q') { /* Until quit
requested */

        /*
        * Find keypress
        */

        p = &kbd[0]; /* Start of note sequence */
        while (*p!='\0') { /* Do until end of string */
            if (*p == c) { /* If this is the key code */
                ix = p-&kbd[0]; /* Pointer arithmetic */
                play_note(ix);
                break; /* Stop searching for key code*/
            }
            p++; /* Next note in sequence */
        }
    }
    tidy_up();
}
```

NOTES: (1) Kcp is a pointer to a char
(2) Now kcp points to the keyclick system variable
(3) Notice the use of the pointer "p" in this function
(4) Notice the use of pointer arithmetic

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TRIBAL SECRETS

Fingers still tingling after all those hours stick wagging over issue 7's stunning Cover Disk game *Skate Tribe*? Waggle no more, because **Neil McChrystal** has stomped on all-comers to battle through to the end. And just for you dear cheat, he's kindly agreed to share the *Skate Tribe* secrets. Let 'em have it, Neil... Here are tips for all nine levels of the game.

Level 1: This is probably the hardest of the early levels. Don't worry too much about the money, concentrate on keeping your lives intact.

Level 2: The Trojan bridge. A programming fault allows you to go into the middle of the road and just sit back until you reach the end of the level.

Level 3: The broken bridge. This level takes a bit of practise but soon becomes easy. Always travel a bit before jumping. This is the easiest way to time the jumps right. Don't try to jump straight across any holes – if it can be done it's very difficult.

Level 4: The railroad slide. Don't keep looking at the board. Just move right and left every half second or so and keep an eye on the bottom of the screen for breaks.

Level 5: The manic metropolis. Instant reaction to this level is panic! Don't. Keep across to one side and jump over each car as it comes towards you. If there's any chance of a car hitting you, jumping straight up sometimes proves a successful evasive tactic.

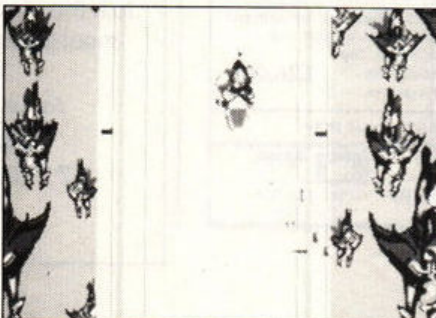
Level 6: The air-o-pede. A difficult level. Fortunately the collision detection is a bit dodgy. You don't have to kill all of the monster to progress, but your cash bonus depends on how many bits you kill.

Level 7: The strato snake. Trial and error is the

only way to tackle this level. Eventually, you can learn the movements of the snake. One tip is to initially get over to the right-hand side.

Level 8: The desert scene. Just zig-zag across the screen until you reach the edges and you should easily avoid the bikes.

Level 9: The street party. Don't worry too much about the money. It's much harder to get this time because it bounces off the edges. If anything comes near you, jump – and keep jumping!



SHARE YOUR SECRETS!

You've spent hours burning the midnight oil nosing out all the little wrinkles in that arcade corker, and now you'd like a reward for all that hard cheating, right?

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If you're the month's best sneak, trumpets sound, drums roll, you'll have everlasting fame and the aforementioned fabby prize. Don't say you weren't warned...

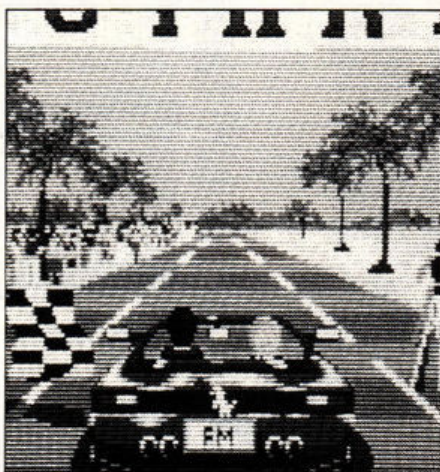
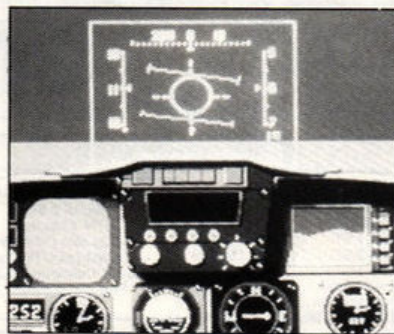
BOMBER

And now, for keyboard pilots everywhere, **John Bevan** of Basildon in Essex presents his playing tips for Activision's *Bomber*. Take to the skies...

■ When choosing your plane, take the F-15 or the Phantom F-3a because they carry more bombs and mavericks. Always arm your plane with side winders in case of any enemy planes. Choose the F-15 Tomcat as your enemy. This plane is easy to kill. If you should get any enemy aircraft around you, fly slowly and don't move around much. Fire lots of flares and when the enemy is behind you, fly right around.

■ Always use the sidewinders, but use the gun to conserve missiles. When you get to the mission Bridge End, use afterburners. When you get to top speed, switch off your engine. Slow down to 250km and put your after burners on. Keep doing this until you near the target. When the Sam Site fires, use your afterburners, fire four mavericks and keep using the flares until it's destroyed. You must fly very low to hit the bridge.

Ask not for whom the fanfare fans, it fans for you John Bevan. A dull thud on the doormat will signal the arrival of the computerish trinket currently winging its way to you.



AFTERBURNER AFTERMATH

Alistair Sheffield of Malvern, Worcestershire has the audacity to state that he can improve on an *AfterBurner* tip which appeared in issue 7! What do you think, readers? Should we believe him? OK Al, strut your stuff...

After typing AGES skipping levels becomes possible, right? But type G and you can get extra missiles! And if you type N, you will be granted infinite levels. Wow Al, you certainly proved your super sneak status with that one.

But what's this? There's more?

In *Outrun*, type Starion as you're driving along. Press Q and you'll be given information about the game. Press T and you get a ten second time bonus and if you press E, you get extended time.

And more... Press all the function keys together while playing *StarGoose* and infinite lives will be yours. If only it was so easy in real life... ■

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SPECTRUM OF OPINION

Adventure specialists Magnetic Scrolls recently joined forces with Virgin/Mas-tertrons and are aiming to take the adventure market by storm with a revolutionary new title in Spring. We talked to Magnetic Scrolls' Anita Sinclair about the competition the new team are facing and the current state of the adventure scene.

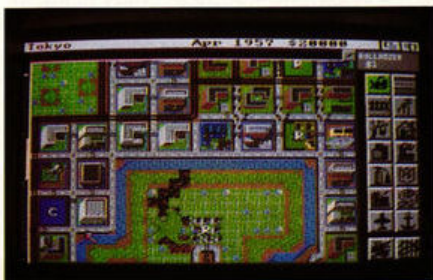
In ST Format's January issue, Level 9's Pete Austin was attracted by the sales of Sierra games ("They sell in very large numbers. We thought, right, we can do this stuff to our own designs and produce a technically much better product."). What do you think about Level 9 emulating Sierra's successfully selling games?

All that Level 9 have ever done is repeat themselves. What they do, they do very well, and they're clever, talented people, but they haven't come up with an original way of doing anything. They've obviously looked at the sales of Sierra and thought, "they sell well so that's the way to go." What Level 9 haven't taken into consideration is the fact that Sierra sells so well because they have a very special relationship with Tandy in America. It's a unique arrangement that means when a new Sierra product comes out the Tandy chain takes 50,000 units. That's why Sierra are selling so well.

I believe Pete Austin's wrong. If all you ever do is look at best-selling products and copy them, you're never going to come up with anything original and produce a truly successful game. The really successful games appear because people sit back and allow their brains to go into free mode. If you look at recent successes, like *Populous* and *Sim City*, they're not based on anything that's been done before. They are not looking at what's around and saying "Wow let's copy that."

You used to be an Infocom fan, do you see them as serious competitors?

Infocom got stuck in a rut and never got out. They were too in love with their own system and wouldn't break away from it. They had a very powerful system but it was written ten years ago. I think they did everything they could with it. You get past the age of 30 and something seems to happen to people. You lose the edge somehow. You get comfortable, your wages are being paid, you've got a family and a roof over



■ *Sim City*: a unique and successful idea

STORY Mike Gerrard



■ Anita Sinclair speaks her mind about the complete lack of adventuring spirit in commercial software houses

Anita Sinclair isn't holding back her comments about other adventure companies. She sends shock waves through the adventure scene with her caustic remarks about narrow-minded self-satisfied software houses

your head – they were bought by Activision, didn't have to worry any more, and that was that.

And Sierra On-Line?

I think they're very good, very well put together. The graphics leave a little to be desired. Well, the graphics are downright awful, but otherwise they're extremely good games.

They're a clever company, they did something new and it worked. They've been doing it a long time now and they're a well-known name in the industry, but I think their approach is severely limited.

How do you think games houses widen their approach?

As a games player and a games designer, if you take the approach that all you can do is based on the graphics then you'll have a very limited selection of puzzles, because they have

to be represented on the screen. With the text approach you've got an infinite number of things you can do, an infinite variety of games designs.

What people are bored with is the format. They've got an exciting new machine and they don't want to play games on it that they played two years ago. They want games they couldn't possibly imagine playing two years ago, so you have to deliver something really dynamic, something which exploits the full potential of their machine. We did that very successfully with *The Pawn*, and we're going to do it very successfully with our next game.

So what does the future hold for the dedicated adventure player?

I think the future for adventure games is positive, but it can only be positive if people stop copying each other. If all people ever see is Level 9 repeating themselves, then nobody is going to buy new games. Look at the film industry: if they were still producing black and white silent movies, no-one would be going to the cinema anymore.

800 HOURS!

When Anita Sinclair does find a game that excites her she doesn't play it half-heartedly. "*Populous* was the last game I got hooked on. When it first came out I asked Electronic Arts to send me a copy but that immediately got requisitioned by someone in the office who took it into a corner and refused to be parted from it. I had to ring up and ask them to send another. It's the most phenomenal game. I spent so much time playing it that in the end I just had to erase the disks. Would you believe I spent 800 hours playing the game? I don't play *Populous* any more."



■ *Populous*: an 800 hour attention-span

No doubt some *ST Format* readers were unfortunate enough to belong to the Adventurers Club Ltd, whose organiser Henry Mueller disappeared without trace about a year ago. Letters went unanswered, as did the telephone, and software orders were left unfulfilled.

Mr Mueller recently re-emerged with a letter and a leaflet which must deserve some sort of award for optimism. While apologetic about his temporary absence, Mr Mueller has the gall to ask long-suffering members who haven't had a club for umpteen months to hand over even more money to him!

The annual membership rate has gone up to £24 per annum in the UK, and on top of that new

MISDEED OR MISADVENTURE?

members are required to pay £7.95 for their Reference Book of Adventure-Deluxe Binder, that is supposedly "... manufactured to high and durable standard, in an elegant deep green colour, with the club's logo and name embossed in luxurious gold lettering..." So that's why it costs so much.

But there's more: it's another £2 for the Starter Pack, which is "indispensable to enable you to manage the Reference Book of Adventure efficiently."

Anyone prepared to hand over £33.95 to join a club that's likely to disappear for months at a time must have more money than brain cells.

Naturally this isn't how Henry Mueller sees it. He admits there was a "six month" interruption of services to subscribers, but claims that only "about 20 persons" were unhappy with what happened. Of the people who replied to his offer, he says, some 1,200 or 75% have decided to take the upgrade and 20% have not. "People vote with

their cheque books," he told us.

Mueller's version of events is that the Adventurers Club Ltd was simply not financially viable, only producing a profit of £10 a year. There were two options: either to wind up the company, call in the receiver and distribute the remaining capital among the creditors, or salvage what he could and be optimistic. "I am guilty," he admits, "of botching the PR aspect of things. I ought to have informed key people of what was happening, but I didn't."

Still, he says, no-one will lose anything: subscriptions are being honoured, and there's no obligation to part with any more money. In the end you must decide for yourself. If you think the club is a sound bet, go for it. Personally, I have my doubts.

HARLEQUIN AND WHO?

Rob Steel used to write about adventures for something called *The Games Machine*. With his writing buddy Nik Wild he's set up an adventure club called Inter-Action.

There's a telephone helpline available Monday-Friday, 17.00-19.00, and a magazine called *Harlequin and Steel*. It's better than the average fanzine, nicely DTP'd and laser printed, though the design needs a certain something... like a designer? The content is varied, with a news section, reviews of ten new

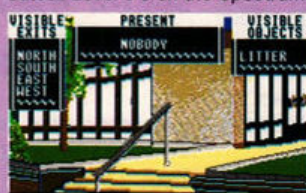
games, adventure hints, a map of *The Lurking Horror* and so on.

Good solid stuff, if no surprises, though I'm not sure players of the "thinking games" it aims to cover will really be thrilled to know that Lesley Mansford, the PR person at Electronic Arts, has a shower every morning and likes "Blind Date."

It deals with all machines, but has a strong 16-bit bias and a strong ST bias within that. For more details, interact with Inter-Action, The Cottage, Ashford Carbonell, Shropshire SY8 4DB.

ZENOBI TRILOGY

Zenobi Software are an independent adventure label who have established themselves in the Spectrum market. If you think "home-grown" software means small-time software, I should point out that Zenobi's games outsell Level 9's on the Spectrum!



■ *Whiplash and Wagonwheel*

The company have made their move into the ST adventure market by releasing three games. One's a text-only trilogy snappily titled *Domes of Sha/ Mutant/ Hammer of Grimmold Trilogy*. Also available is *The Jade Stone*, a STAC adventure by authoress Linda Wright, and one of the few games to feature a female as its main character. Finally there's the exotically named *Whiplash and Wagonwheel*. All the games cost £7.49, from Zenobi Software, 26 Spotland Tops, Cutgate, Rochdale, Lancs OL12 7NX.

What kind readers! With very little prompting, and not a thought for monetary reward, you've been sending in hints just for the unadulterated pleasure of helping other people.

LES MEETS THE BLOODWYCH

Les Ridden of Faversham in Kent says, "the following is a list of tips for *Bloodwych* gained through many hair-pulling hours and late nights." What a pretty sight he must look now, all bald and bleary-eyed.

1. Choose the four characters you wish to use but don't recruit them. Recruit all the other characters, strip them of their inventory and kill them! Then recruit your own characters. This gives you a good stock of money, food and weapons to begin your adventure.
2. All excess items can be sold to the creatures you meet on your travels. A good stock of money is essential to purchase the spells you'll need.
3. There are a number of spells you must buy to complete the game: Magelock (to open certain doors), Levitate (to cross pits), and Trueview (to see magic walls) – unless one of your characters already has a diamond.
4. Mapping isn't essential but the corridors can

HINTS AND TIPS



■ *Bloodwych* causing hair-tearing angst

become very confusing.

5. Run around adversaries and attack their sides and rear, and save the game regularly.
6. Use the Vitalise spell to act as a food substitute when your characters are hungry.

HAWAY THE BATS

Adventure players are thoughtful folk, sensitive intelligent creatures, not like those awful rowdy

arcade types. There's always the odd exception, though, and here's a letter from someone signing himself "The Bat" to prove it. In very neat handwriting, considering a bat's disadvantages, he offers some tips for *Jinxter*.

To reach the chandelier, let the water run into the rooms so that you can float up to it. To get into the clockmaker's shop you must throw the can at the oil lamp, then when you get inside you Oojimy the stool.

KINGS QUEST IV

A mysterious letter with no signature and a Wolverhampton postmark offers an amazing selection of tips for *Kings Quest IV*. This is just the tip of the iceberg:

On the far side of Genesta's island you can find a peacock feather. To get close to the unicorn shoot it with Cupid's bow. Examine the painting in the study of the old house.

To get the minstrel's lute, give him the book on Shakespeare. Then play a tune for Pan. The fisherman wants the pouch of gems. To get the worm you need to be very quick – it's near the weir on the far right-hand side of the screen. To catch the fish you need to be patient: just keep fishing. Finally, remember to save the game after each discovery. ■

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35-44 45-59 Over 60

2. Are you:

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520STE ☒
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	(a)	(b)
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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)
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Art	☐	☐
Comms	☐	☐
Database	☐	☐
DTP	☐	☐
Games	☐	☐
Music	☒	☐
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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 % 95
Serious (wp/business/education) % 5
Creative (art/graphics/music) % 5

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:

STUNT CAR RACE

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

NA

13 Rate out of ten the computer magazines you read

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

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

RAND RACE CAR
MODEL CAR

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 10/10
Desktop 6/10
Gamebusters 10/10
Games reviews 10/10
Graphics 7/10
Hardware reviews 7/10

Music 1/10
News 6/10
PD 6/10
Readers' letters 8/10
Software reviews 8/10
Adverts 8/10

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 6
Serious software points 1
Public Domain programs points 2
Reader contributions points 2
(Total 10 points)

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

STE About the

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) subscribe ☐
(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.)

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.

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Maths Mania

MACHINE: ALL STs

PRICE: £22.95

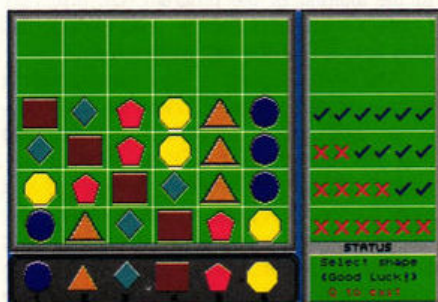
FROM: SCHOOL SOFTWARE LTD

CONTACT: 010353 6145399

A disk containing five programs might look like value for money but when two of the five have nothing to do with mathematics and the other three all cover the same ground of multiplication and division, the value factor tends to plummet. Addition and subtraction are not dealt with at all, so the comment on the cover that the "main emphasis is on multiplication and division" is putting it mildly.

Poor marks for presentation too. There are no machine specific instructions on the accompanying leaflet, which was obviously printed before ST versions were available. It may be helpful reading about the 20 or so other School Software programs that are available, but it would be even more helpful if you knew which were available for your machine and at what cost.

Loading instructions are on an adhesive label stuck on top of the disk label, so when the time comes to eject the disk from the drive you'll need a pair of tweezers to haul it out. Each program contains optional instructions, though these oddly refer to the ST's function keys as "the keypad." Typing mistakes add to the overall sloppy presentation; "a grid will be drawn [sic] on the screen" and "the time settings maybe [sic] changed."



■ **Mind Power from Maths Mania** – not the most stimulating aid to mathematics

All programs are aimed at the broad 8-12 age range. The instructions for the first program, *Mind Power*, are clear as mud and I was surprised to find the game itself is merely a variation on *Mastermind* – the board game not the TV version.

A number of shapes are placed across a board and concealed from the player. The player guesses the correct order and is told which guesses are right and which wrong. By a process of deduction you work out the correct order of the shapes. Each shape is used only once and with five shapes on the beginner's level and six for the expert, whether you're a moron or a Mensa member you should be able to guess the order in three or four attempts, rendering the whole exercise virtually redundant. The maths content? Probably limited to working out the odds on whether the next program's going to be as mindblowingly tedious.

Blast Off also tests memory rather than maths skills. This time five shapes are placed at random on a 5x6 grid and you're given a cer-

DON'T COUNT ON MATHS

STORY Mike Gerrard

Asking a micro to teach maths is like asking Viv Richards if he can play beach cricket; everything a computer does is based on simple binary mathematics – but do the programs available make the grade?

tain amount of time to remember where they are. You set the time limit for between one and nine seconds, although how anyone not blessed with a photographic memory can remember five shapes in one second I don't know.

On the easy level you only need to remember which squares in the grid contain shapes, but the "expert" is also expected to place the right shapes in the right squares. Get it right every time and a rocket blasts off into space, but get it wrong once and the whole thing grinds to a halt. If the shapes were replaced by numbers it might make it easier and justify its inclusion as a maths program.

The three genuine maths programs all have different names but are otherwise indistinguishable – a bit like Bananarama, really. About as exciting too. All three have different skill levels (easy, medium, hard) and options to test either multiplication or division.

Driver displays a train with a sum written on the carriages. Get it right and the train chuffs off, picking up speed as your score mounts. The simple graphics will appeal to anyone under eight years old but are unlikely to have the average 12 year old gasping with astonishment.

Where all three programs fail badly is in their attempt to grade sums as easy, medium

or hard. In the *Driver* program 6x8 was considered an easy multiplication whereas 18/3 was a hard division sum.

In *Brain Boxes* the sums are on a pair of scales rather than the side of a train – and you can imagine how that really tests the graphic abilities of the ST. If the train is plain, consider how immensely engaging a pair of kitchen scales is going to be.

Again 6x8 is categorised as an easy multiplication, along with the likes of 4x1 and 2x1. Switch to the hard grade and you get questions like 15x3 and 4x1 again. A medium question? 6x8 came up twice in 10 turns so that's obviously a popular sum, popping up in each program at each level. If you have a manic obsession that your child will never get anywhere in life without knowing what 6x8 makes, this is obviously the program to get.

Tables Test

MACHINE: ALL STs

PRICE: £9.95

FROM: CHILDRENS LEARNING S/WARE

CONTACT: 01 878 8761

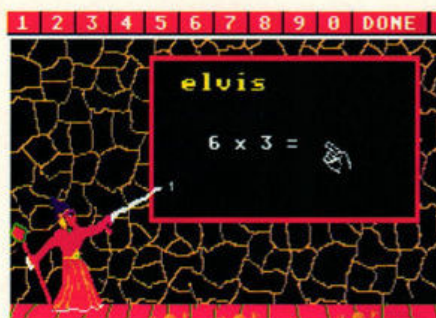
All credit to a program that tells you its limitations straightaway. This is a tables testing program and not a tables learning program, although obviously testing reinforces learning. *Tables Test* does make some use of a robotic voice to say "Hello" and makes the occasional encouraging comment, but don't expect it to chant along with you: "... five threes are fifteen, six threes are eighteen..." and so on.

After entering your name using the mouse, you choose whether to test yourself on multiplication or division. The division has been included to test whether the child can logically work backwards and realise that if six multiplied by three is eighteen, then eighteen divided by three therefore equals six.

You then choose which table you want to check, from two-times to twelve-times, or a mix-



■ **Driver from Maths Mania** – multiplying the carriages on the local train



■ **Tables Test:** hardly on the cutting edge of the ST's graphic capabilities

ture of them all. The sums are displayed on a magician's blackboard – a colour-blind magician judging by his taste in decor. Click on the appropriate number and learn whether it's right or wrong, and at the end of the session you see a list of the questions asked with the answers given. Good for monitoring progress, but no reward to encourage the child to do well. Simple, effective and expensive.

Add and Subtract

MACHINE: ALL STs

PRICE: £9.95

BY: CHILDRENS LEARNING S/WARE

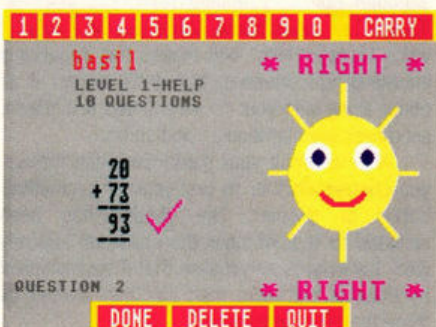
CONTACT: 01 878 8761

A companion program to *Tables Test*, but with a few more bells and whistles. Again the child clicks on the letters of the alphabet to enter its name at the start... and again the name doesn't begin with an upper-case letter.

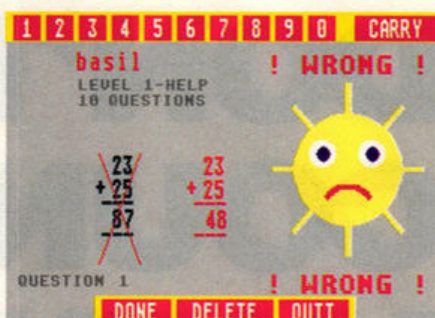
Three levels of ability are catered for in addition and subtraction so this should suit most children in the 7-11 range it's aimed at. Addition begins with the old-fashioned tens and units, adding just two figures together. It then moves on to include hundreds, and the third and final level is the addition of three figures, all in the hundreds.

Within each of these there's a hard or easy option, and unlike *Maths Mania* these are genuine options reflecting the amounts chosen. The easiest option of all is a "with help" option, so the child who's finding it difficult should also find some encouragement. Encouragement is a central ingredient in both these programs, with remarks like "well done," "keep it up" and "bad luck" to reward or console the child.

You can choose to answer from 10 to 50 questions but can quit at any time. With each correct answer a smiling face appears, and if you can't get it right by the second attempt a frowning face fills in the right answer for you.



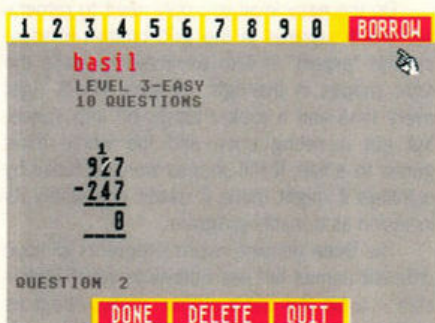
■ **The right answer gets a big sunny smile as reward**



■ **Ooops! The wrong answer gets a disappointed stare – better luck next time**

Graphically (and psychologically) not very sophisticated, a smiling face might appeal to the very youngest children, but how about a touch more humour and wackiness in educational programs by way of reward? The equivalent of Hangman or knocking someone into a barrel of water would at least engage children's interest a little more?

The subtraction sums are complicated and I'm still trying to figure out how the "borrow" function works. The "delete" option certainly doesn't work properly; make a mistake on the unit figure and you can't delete it until you've entered the ten as well, when you can clear the full amount – unfortunately if it's your second attempt then the ten figure is taken as your answer the moment it's entered so if you make a genuine mistake then it's just too bad. Highly unfair.



■ **The editor works out the tax rate on his weekly wage packet**

Apart from minor faults, the programs do their job well and will certainly help all children in their target range improve their maths skills. However the £10 price tag is rather expensive – twenty quid if you also want *Tables Test* – and though each program fills a single-sided disk, a two-in-one package deal might be nearer the mark.

School Time Maths

MACHINE: ALL STs

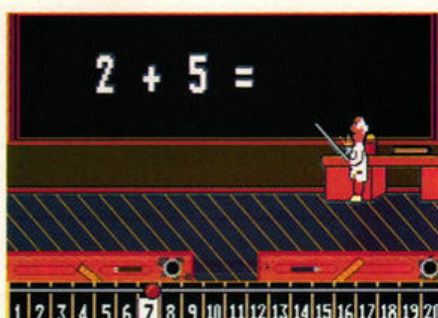
PRICE: £14.95

BY: B.WARE EDUCATIONAL SOFTWARE

CONTACT: 0455 613377

This is easily the best of the bunch, a lively program that's well put together using GFA Basic, *Degas Elite* and the *ST Replay 4* sound program. The result is a colourful and tuneful program that teaches basic maths skills to the under-eights.

The opening menu shows a lot of thought has gone into the presentation, essential if you're to encourage the child to switch on the



■ **The abacus from School Time Maths – a great aid for budding young accountants**

computer and use the program. There are seven options, each printed on the spine of a book and instead of a boring old arrow the pointer has been changed into a red ball which even bounces slightly as you move it round the screen.

Though there are seven options, all take place in the same classroom location where the teacher, for reasons best known to himself, wears a white lab coat (I always new maths was a dirty subject). The questions are presented on a large blackboard and the red ball "pointer" slides over an abacus at the foot of the screen containing the numbers 1-20. The child clicks on the appropriate number which slides onto the blackboard to complete the sum. If the answer is correct then you hear several bars from a nursery rhyme – taken from a substantial bank of them.

A speech program has been incorporated and this reads out the sums as the numbers are printed on the blackboard, which not only adds to the interest of the program, but also reinforces the numbers for the child who, at this early age, is probably still learning them.

The first program is very simple, with a number of objects being drawn on the blackboard (dogs, balls, umbrellas) and the child asked to count them. Then there are three programs covering the addition, subtraction and multiplication of objects, and three more doing the same things to numbers. No division, but that should come later because it's a more abstract concept for a primary school child to understand.

The program is good in all departments and well worth buying, but what's particularly appealing is the abacus featured at the bottom of the screen. The very young child can use this to count out the answer, starting on the first number, then moving to right or left to add or take away the second number, and clicking on the result. Multiplication can be learnt the same way, by repeated addition. After all, that's the way computers do it.

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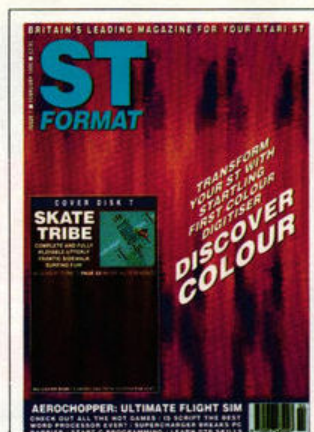
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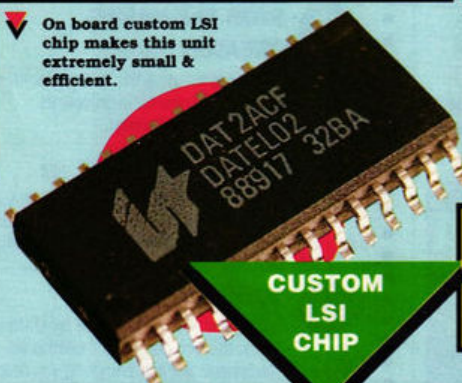


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The Editor dips into the bulging postbag, throws out all the nasty letters, and responds to the complimentary ones with diplomacy and aplomb

UPGRADE MANIA

I've owned an Atari ST for a year now and I'm seriously considering upgrading it to a 1 meg machine. However, I do have a few queries.

a) What do "populated" and "unpopulated" refer to?

b) Is it necessary to have 16 RAM chips to upgrade to 1 MByte?

c) Once upgraded would I be able to upgrade even further (that is, right up to 4 MBytes)?

Scott Wills

West Midlands

Yours is one of several dozen letters received in the past month about upgrading, improving, speeding up and generally turbocharging your ST. It seems our whacking great A-Z on the subject (beginning on page 56) is going to come in handy for a lot of people. Your enquiry about upgrading from 520K to 1040K (OK, 512K to 1024K) is covered in R for RAM.

A question of our own: why are you considering upgrading your memory? You don't say why, and while there are circumstances in which it opens up a whole new area of computing, it's not something you should do for the sake of it.

SWOTTY PANTS

I have had my 520STFM for a couple of months now and have been trying, without luck, to find educational software leading up to GCSE. Please could you tell me if you know of any already available or planned, or who I could contact to find out more information.

Paul Rose

Surrey

There is a good selection of educational software for the ST, and indeed LCL do a complete GCSE maths course called Micro Maths, which costs £24: phone 0491 579345.

We have a regular education column (see page 113), and a number of advertisers appear in the magazine. Most send out free catalogues on request.

Incidentally, in two months time we shall be featuring an educational round up, briefly outlining what is available and from whom.

THE ONLY WAY IS UP

Comms is a funny subject. There are two attitudes about it, and never the twain shall meet. If you're

on one side of the fence (the brain-the-size-of-a-planet mob) it's a piece of cake. Simple. On the other side (me, Mr average-computer-user) it's a closed door. Ask anyone qualified to give a knowledgeable answer about it and they'll say something like: "Connect two computers together, via an RS232 interface and a null-modem lead, add some software and voila!" Simple. A piece of cake.

Anyway, there's a reason why I'm rambling on about this. I need to know how to transfer my numerous and valuable ASCII files from my Amstrad CPC 6128 to my 520ST. I'm writing to you because the help I've been able to get so far has been superficial to say the least. I have the Amstrad RS232C interface, the Kermit for the ST, and a null-modem lead which I've tried rewiring in every conceivable combination.

So far I've had no luck at all. The files just won't go across. I have matched baud rate, parity and so on. Any advice, especially on exactly how the lead should be wired, would be appreciated.

Incidentally, I feel this is a subject which ST Format would do well to cover in future. The vast majority of ST users must, like myself, have upgraded to the ST from the older 8-bit machines, and many would have accumulated material which they would want to transfer.

R. W. Fickling
Lincolnshire

I sympathise, having myself moved on up from a CPC - one of the good things about doing so is being able to carry on using Protext. I'd be inclined not to use Kermit, which is perhaps a bit too fiddly if the user is someone, like you, relatively new to all this comms stuff. A simpler solution might be, for instance, Uniterm at the ST end (Softville PD, disk number COMS 1/SS: phone 0705 266509), using X-MODEM (see under 'X' in this month's A-Z). Contact the very helpful CPM User Group (72 Mills Lane, Hawley, Dartford DA2 7RZ) for the CPC end of things.

You're quite right, of course: many, if not most, of us have come to the ST via other, usually 8-bit, machines. We intend to let Mark Higham and His Performing Protocols loose on the wonderful

subject of comms again as soon as we can. Meanwhile enjoy spending this month's £25 letters prize.

PHASED OUT?

Many boys at school - and it always seems to be the Amiga owners - say that the 520ST is being phased out by the STE. Is this just an attempt to make me nervous or is it true? Are Atari going to turn millions of people's STs into doorstoppers?

If so, will all the STE software be non-520 compatible, or will they be compatible with both? This has been worrying me because I've tried to convince my friends not to buy an Amiga and when I say that, they tell me the 520ST is being phased out. I say it isn't, so please tell me what's happening so I can reassure them.

Antony Villa
Lancashire

Tell your schoolmates they don't have the faintest idea what they're talking about. At the moment there are hundreds of thousands of STs in use, and comparatively few STEs. Software houses are certainly not going to abandon ST owners for the sake of a tiny proportion of STE users - why on earth should they?

Indeed, Atari's biggest problem - even assuming they can sort out this horrendous incompatibility nightmare (see page 11) - is to convince software houses to write for the STE. If they don't succeed it's the STE, not the ST, that has the dodgy future.

Far from being a good time to sell your ST, it would actually be quite smart for newcomers to buy one. Because many people always want to upgrade at the earliest opportunity, there's a growing market for second-hand STs. Anyone with sense will be picking them up on the cheap.

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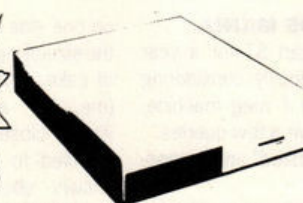
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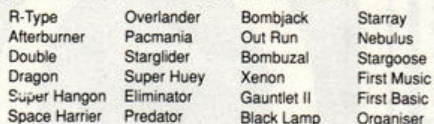
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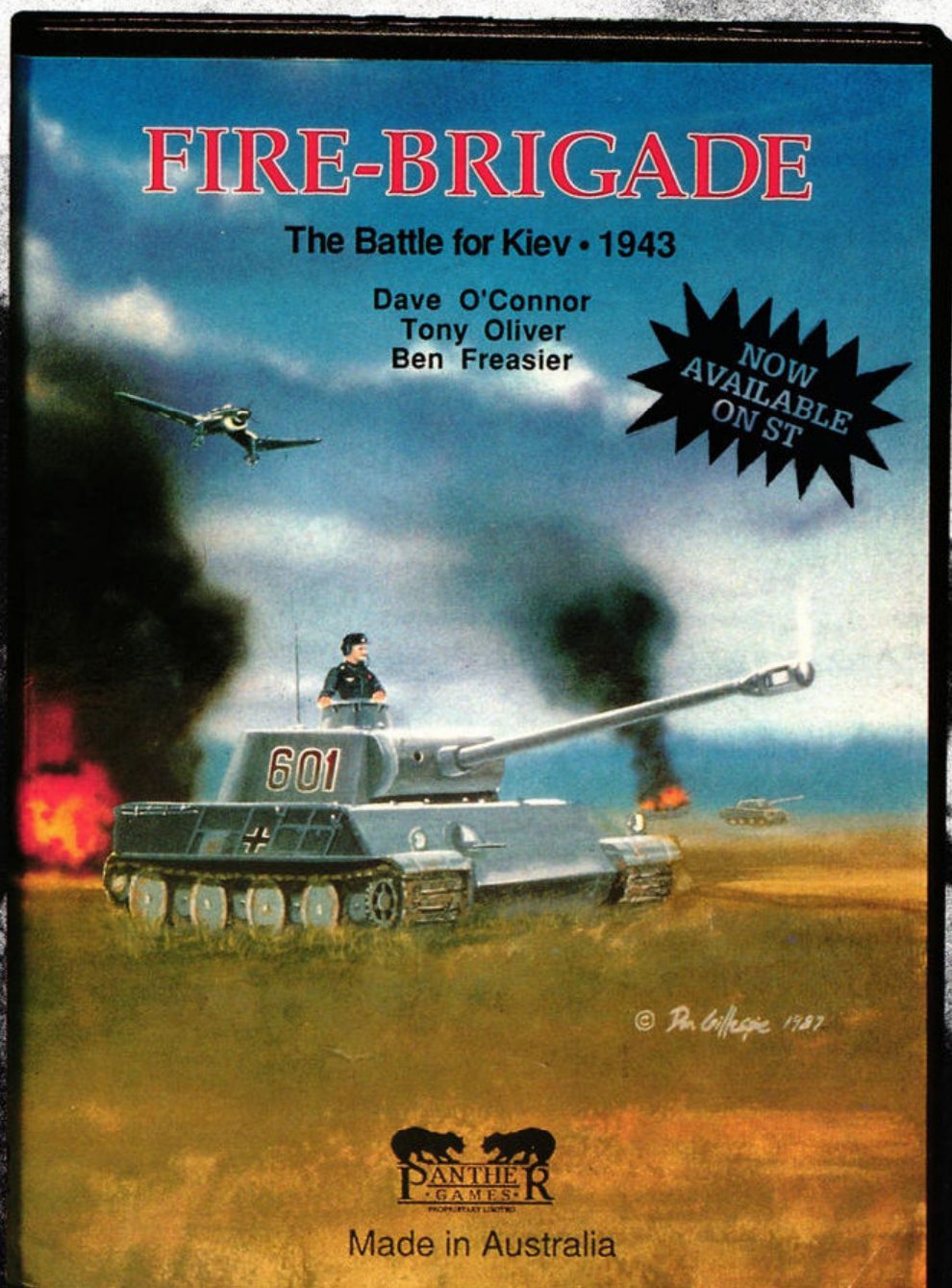
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